

Department of Transport (DOT)  
Hanoi Metro One Member Company Limited (HMC)  
The Socialist Republic of Viet Nam

**THE TECHNICAL ASSISTANCE PROJECT  
TO STRENGTHEN THE CAPACITY  
OF REGULATOR  
AND  
TO ESTABLISH OPERATION AND  
MAINTENANCE COMPANY  
OF  
METROPOLITAN RAILWAY LINES  
IN  
HANOI CITY  
  
FINAL REPORT  
(Volume 1)**

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## ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
AFC	Automatic fare collection system
AFD	L'Agence Française de Développement
BRT	Bus Rapid Transit
DGT	Direction Générale du Trésor
DOF	Department of Finance
DOHA	Department of Home Affairs
DOJ	Department of Justice
DOT	Department of Transport
E&M	Electrical & Mechanical
EIB	European Investment Bank
EPC	Engineering, Procurement & Construction Contract
HAIDEP	Hanoi Urban Development Master Plan
HAUPA	Hanoi Authority for Urban Planning and Architecture
HPC	Hanoi People's Committee
HAPI	Hanoi Authority of Planning and Investment
HQ	Headquarters
HMC	Hanoi Metro One Member Company Limited
HUTDP	Hanoi Urban Transport Development Project
JCC	Joint Coordination Committee
JICA	Japan International Cooperation Agency
MAUR	Management Authority of Urban Railways
MMPTSC	Multi-Modal Public Transport Steering Committee
MOF	Ministry of Finance
MOT	Ministry of Transport
MOU	Memorandum of Understanding
MRB	Hanoi Metropolitan Railway Management Board
O&M	Operation and Maintenance

O&M Company	Operation and Maintenance Company
O&MU	O&M Unit
OCC	Operation Control Center
ODA	Official Development Assistance
OU	Operation Unit
PMUR	Project Management Unit of Railway
PTA	Public Transport Authority
PUC	Preparation Unit for setting up O&M Company
RST	Rolling Stock
RVC	Railway Vocational College
SAPI	Special Assistance for Project Implementation
SCADA	Supervisory Control and Data Acquisition System
TRAMOC	Hanoi Urban Transport Management and Operation Centre
TA Project	Support Project to Strengthen the Capacity of Hanoi Urban Railway Regulator and Establish an Operational Organization
TA Team	JICA Technical Assistance Team
VNR	Vietnam Railway
VNRA	Vietnam Railway Administration
WB	World Bank

Note that the definitions of C/P, O&M Company, and HMC are as follows:

C/P: General name of organizations to which technologies are transferred.

O&M Company: General name of companies responsible for O&M.

HMC: One of O&M Company founded by the TA Project.

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# Part1 OUTLINE

## Chapter1 Introduction

### 1-1 Background

#### 1-1-1 Socio-Economic and Traffic Situations in Hanoi

Hanoi has been facing the rapid urbanization and associated negative effects, such as traffic congestions, accidents and air pollutions, as the result of population increase from 6.44 million (2009) to 8 million (2020). For sustainable growth and sound urbanization of the city, urban mass rapid transit systems are expected to play a significant role.

Against such a situation, JICA conducted “Hanoi Urban Development Master Plan (HAIDEP) toward 2020” in 2007. Based on the outcomes from the study, several mass rapid transit corridors were proposed in the urban transportation master plan, which obtained official approval in July 2008 by the order of the Prime Minister.

#### 1-1-2 Transport Development Plan and Urban Railway Projects in Hanoi

Two of the priority corridors listed in the master plan, namely Line 1 and Line 2 started their implementation after the loan agreement with the Government of Japan in March 2008 and March 2009 respectively. Also, two other lines, namely Line-2A with the assistance from Chinese Government, and Line 3 from ADB and AFD, are being undertaken.

Out of these, three lines, i.e. Line 2, Line-2A and Line 3, are administered by HPC (Hanoi Peoples’ Committee) and MRB (Hanoi Metropolitan Rail Transport Project Board) as the project implementation body and HMC (Hanoi Metro Company) as the operator. As the first step, Line-2A is expected to become operational in the end of 2016.

#### 1-1-3 Need for Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of Metropolitan Railway Lines in Hanoi City

However, little attention has been paid on the institutional development of the operating company and the regulating authority. In this connection, Vietnamese side requested Japan to provide assistance for establishment and capacity building of these organizations.

In response to the request, JICA carried out SAPI (Special Assistance for Project Implementation) Study on the same subject. Resultantly, agreements were made with Vietnamese side on

- Establishment of single company to manage several urban railway lines under HPC
- Introduction of common ticketing system and building of necessary institutions aiming for the convenience of passengers

Finally, function of regulator has been transferred to DOT in September 2015 in accordance with decision of HPC.

#### 1-1-4 O&M Unit and JICA Technical Assistance Project

##### (1) JICA Technical Assistance Project

Following the above study, Vietnamese side wishes to introduce the necessary systems and put into operation to be ready for the first commercial operation. In order to plan for the further assistance, JICA sent missions in March and September 2012 and decided to dispatch an expert team (hereinafter referred to as “TA Team”) to setup all necessary institutions.

##### (2) O&M Unit

By the order of HPC, a preparation unit, namely O&M Unit, was formed within MRB for setting up of the O&M Company and the Regulator. At this time, this unit itself was going to be evolved to the two entities prior to the commencement of the commercial operation of Line 2A.

The unit also works as the counterpart entity for this TA Project. The unit was changed to a department (Urban Railway Operation and Maintenance Department) later. (4<sup>th</sup> June 2014 No.3005/QD-UBND).



Subsequently, this unit was transferred to Hanoi Metro Company (HMC) upon incorporation in the course of this project. To avoid misunderstanding, it will be still called O&MU in this report.

## 1-2 Objectives of this Report

Objectives of this Report are:

- To exhibit the project outlines, particularly backgrounds, history and objectives
- To describe the result of activities according to the order of work flowchart
- To analyze issues, problem solving methods, and lessons learned in carrying out the project
- To report the accomplishments of the project goals upon completion of the project
- To make recommendations for subsequent actions to be taken by the Vietnamese side to ensure incorporation of the result to the actual service

## 1-3 Assignment of Personnel

### 1-3-1 TA Team Personnel (TA Experts)

Consumption of contract man-months (MM) from the start of the TA project to this reporting period is as shown in the following appendixes.

**Appendix 4-1** Assignment of TA Project and Consumption of Contract MM

### 1-3-2 MRB O&M Unit Personnel

Immediately after the start of the TA project, MRB assigned 13 personnel from MRB departments through O&MU. In addition, in response to a request from MRB, VNRA issued a decision document (477/CV- CĐSVN-VTPC) on April 1, 2013, stating that "4 additional personnel will be assigned to the TA project," and conducted appropriate discussions and adjustment. As a result, 17 personnel were assigned to the project in most of the project duration. Finally, all O&MU members transfer to HMC.

### 1-3-3 Coordination Meetings

Coordination meetings, namely JCC, had been held from time to time in order to report the progress of the activities and build consensus of the outcomes among the representatives of each members of the Committee. In the meantime, HPC is the final decision body according the administrative procedures in Vietnam. Designed agenda for the said JCC meetings are as follows and 8 JCC meetings were completed with the full attendance of the committee members. Minutes of the meetings are enclosed to the Appendix 7.

**Table 1-1-3-3-1: JCC Meeting Agenda**

JCC Meeting	Period	Agenda	Related Activities Items that require JCC approval
No. 1	April 2013	Inception Report	Inception Report (Approach and Methodology, Study Organization, Implementation Program)
No. 2	July 2013	Report of performed activities after the JCC meeting No.1  Activity Plan till the JCC meeting No.3	4.1 Development of transfer plan for Line-2A  6.1.1 Departments' Roles & Responsibilities (O)  6.1.3 Management & Business Plans (O)  6.1.4 Corporate Philosophy & Articles of Incorporation (O)

No. 3	March 2014	<p>Report of activities since JCC meeting No. 2</p> <p>Plan of activities up to JCC meeting No. 4</p>	<p>1.2 Organization, Functions, and Regulations Concerning Authority of Regulatory Organization</p> <p>2.1 Method of Revising Fares (including 6-4-4 Fare Setting System</p> <p>4.2 Agreement on Transfer of Line 2A</p> <p>6.2.2 Employment Rules</p> <p>6.4.2 General Transport Contract</p>
No. 4	September 2014	<p>Report of performed activities after the JCC meeting No.3</p>	<p>The necessity of the extension of TA project and the approval of PDM/PO</p> <p>3.1 Operation Plan (R)</p> <p>3.2 Procedure for Investigation of accidents (R)</p> <p>4.1 Transfer plan for Line-2A</p> <p>5 Proposal for establishment of O&amp;M Company</p> <p>6.2.3 Internal rules on HR regarding Recruiting, Salary, Sanction (O)</p> <p>6.3.4 Rules for Procurement Regarding Contract Management, Tender and Contract Process, Material Management)</p>
No.5	July 2015	<p>Report of performed activities after the JCC meeting No.4</p> <p>Activity Plan till the end of the Project</p>	<p>Rearrangement of Activity Plan till the end of the Project</p> <p>On the transfer of the C/P associated with the establishment of HMC.</p>
No. 6	Oct. 2015	<p>Correction of the MOU</p>	<p>On the approval of revised PDM/PO associated with activity review caused by a delay in Line 2A Construction Project.</p> <p>On the transfer of the C/P on the regulatory body side to the DOT.</p>
No. 7	Dec. 2015	<p>Terminal evaluation of the Project</p>	
No. 8	Feb. 2016	<p>Follow up actions by C/P</p>	<p>Post evaluation</p> <p>Remaining missions to be performed by VN Side</p>

## **Chapter2 Government’s Priorities and Objectives and Scope of the Project**

### **2-1 Government’s Priorities**

After a period of fast and stable development, several obstacles were occurred in Hanoi City, and the biggest problem is the capacity and effectiveness of urban transport system. To deal with this problem, Hanoi City Master Plan till 2020 in 1998 (Decision no. 108/1998/QĐ-TTg) stressed on the development of Urban railway system: *“Give priority for the construction of urban railway system to create backbone for public transport network in the capital city, including elevated and underground lines. In short term, the line along Van Dien – Hang Co – Gia Lam – Yen Vien should be constructed, and then Ha Dong – Nga Tu So – Hang Co, Hang Co – Cat Linh – Km Ma – Thu Le – Nghia Do – Phu Dien – Minh Khai, Giap Bat – Ring road No. 3, Thang Long Bridge – Noi Bai and Kim Ma – Lang Trung – Hoa Lac lines.”*

The Construction Master Plan of Hanoi City till 2030, vision to 2050 (Decision no. 1259/QĐ-TTg dated July 26, 2011) kept on emphasizing to “prioritize the construction of UMRT, BRT, Bus system to satisfy major demand of the transportation in the capital city.”

The construction of UR system in Hanoi City is one of important priorities of the Government, in order to contribute to the development of sustainable, modern Hanoi City, which is also in compliant with Capital Law (no. 25/2012/QH13). This orientation has been clearly defined in the Strategies for social-economical development of Hanoi City till 2030, vision to 2050 (Decision no. 222/2012/QĐ-TTg by the Prime Minister), which determined to “Focus on investing and constructing infrastructures which are more advanced in comparison to the requirements of development and construction of the capital city. Complete the development of synchronic and modern infrastructures which are closely integrated in the designs and construction of different works by symbolic architectures.” Concurrently, the plan also defined an objective to have “a synchronic, modern, convenient and safe transport infrastructures, which can take account for 50-55% of transport ratio in 2030.”

Prior to such plan, the Strategies for development of rail transport in Vietnam till 2020 and vision to 2050 (Decision no. 1686/QĐ-TTg dated November 20, 2008 by the Prime Minister) asked to “Promptly develop rail transport in urban areas, urban – suburban railways, to serve as core system in public transport for Hanoi and HCMC in short term”. This document, concurrently, determined the strategy to *“Expand international relations to countries especially those have developed railway system, take advantage to obtain advanced experiences during their development of railway system, cooperate in personnel training to receive, transfer advanced and modern technologies, in order to satisfy the demand for development in the country in short term, and expanding markets to other countries in the region and worldwide in the future.”*

TA project “to Strengthen the capacity of regulator and to establish the O&M Company for metropolitan railway lines in Hanoi City”, purposing to strengthen the capacity of human resources and institutional organization for urban railways, and to train UR O&M personnel, is considered appropriate on the basis of Line-2A commencement schedule in June, 2015. This is one of important activities for realizing priorities defined by the Government.

### **2-2 Objectives of the Project**

This project aims to assist the institution and launching of two entities, namely the Regulator and O&M Company, for the sustainable development of urban railways in Hanoi and eventually contribute to the commencement of safe and reliable operations of Line 2 maintaining good harmony with the preceding 2 Lines (Line-2A and Line 3).

### **2-3 Scope of the Project**

To achieve the above objectives, scope of works of the Project drawn in the service contract include the following. Some activities were added by the decision of the 4<sup>th</sup> JCC. The details will be mentioned in Part 3 chapter 1.

- (1) Prescription of the regulator’s organization and the function & powers in the regulator
- (2) Development of fare setting method and subsidy system
- (3) Development of operation plan and safety control system
- (4) Clarification of conditions for transfer of Line-2A

- (5) Registration of O&M Company
- (6) Establishment of core departments of O&M Company, including Planning, General affairs, Safety, Human Resources, Finance, Sales, Train Operation, Rolling Stock Maintenance and Equipment Maintenance.

## 2-4 Key Missions of the Project

Key missions/activities of the Project include the following three (3) tiers.

- Tier 1 Strengthen the Capacity of Regulator (MRB) (note: the functions were transferred to DOT in September 2015)
- Tier 2 Transfer of Line 2A
- Tier 3 Establishment of Operation & Maintenance Company

Finally, some activities have been deleted as a result of 6<sup>th</sup> JCC. (Refer to Chapter 3.)

### **Tier 1: Strengthening the Capacity of Regulator (MRB)**

Activity 1	Strengthening capacity of the regulator for urban railways (MRB)
Activity 1-1	Adjustment with MOT (Ministry of Transport) regulator
Activity 1-2	Prescription of the regulator's organization and the function & powers in the regulator
Activity 1-3	Learning about policies to encourage the use of urban railways
Activity 2	Development of Fare setting Method and Subsidy System
Activity 2-1	Development of fare setting and revision method
Activity 2-2	Development of subsidy system
Activity 2-3	Consideration and determination of fares on Line-2A opening
Activity 3	Development of Operation Plan and Safety Control System
Activity 3-1	Prescription of filing an operation plan
Activity 3-2	Development of procedures for investigation of accidents

### **Tier 2: Transfer of Line 2A**

Activity 4	Clarification of Conditions for Transfer of Line-2A
Activity 4-1	Devising transfer plan for Line-2A (including technological planning adjustment)
Activity 4-2	Preparation of agreement with MRB and VNRA
Activity 4-3	Preparation and execution of transfer agreement for Line-2A

### **Tier 3: Establishment of Operation & Maintenance Company**

Activity 5	Registration of O&M Company
Activity 5-1	Proposal of establishment of O&M Company by MRB
Activity 6	
Activity 6-1	Planning, General Affairs, Safety
Activity 6-1-1	Prescription of the rules on individual departments' roles and responsibilities
Activity 6-1-2	Prescription of the organization rules regarding planning, general affairs and safety operations
Activity 6-1-3	Devising management and business plans
Activity 6-1-4	Prescription of corporate philosophy and the Articles of Incorporation
Activity 6-1-5	Prescription of the rules on safety promotion (including the formulation of safety measures / transport safety management method)
Activity 6-1-6	Prescription of draft basic rules of train operation (including the preparation of evaluation manual of train operation plan made by EPC)

Activity 6-1-7	Preparation for the introduction of office IT system(Including preparation of basic specifications and other items which will be necessary for O&M Company of office IT system)
Activity 6-1-8	HQ's work trial after establishment of O&M Company
Activity 6-2	Human Resources
Activity 6-2-1	Prescription of organization rules regarding HR management
Activity 6-2-2	Prescription of employment rules
Activity 6-2-3	Prescription of internal rules regarding recruiting, salary, and sanction
Activity 6-2-4	Prescription of the rules on division of duties, office organization and official authorities
Activity 6-2-5	Devising HR-related plans including staffing plan
Activity 6-2-6	Prescription of employee welfare-related rules, including those on staff welfare and pension
Activity 6-2-7	Devising employee education plan
Activity 6-2-8	Development of Work Procedures without office IT system
Activity 6-2-9	HQ's work trial after establishment of O&M Company
Activity 6-3	Finance
Activity 6-3-1	Prescription of organization rules regarding finance
Activity 6-3-2	Devising an accounting system
Activity 6-3-3	Prescription of rules for budget and settlement
Activity 6-3-4	Prescription of purchasing rules
Activity 6-3-5	Consideration of the measures to maintain the company's financial soundness
Activity 6-3-6	Development of work procedures without office IT system
Activity 6-3-7	HQ's work trial after establishment of O&M Company
Activity 6-4	Sales
Activity 6-4-1	Prescription of organization rules regarding sales and non-fare businesses
Activity 6-4-2	Prescription of General Transport Contract
Activity 6-4-3	Training on cash handling for station staff
Activity 6-4-4	Development of fare setting system and calculation of fares
Activity 6-4-5	Consideration of setting fares based on the common fare system
Activity 6-4-6	Devising non-fare business plans draft
Activity 6-4-7	HQ's work trial after establishment of O&M Company
Activity 6-5	Train Operation
Activity 6-5-1	Prescription of draft organization rules regarding train operation
Activity 6-5-2	Learning about the process of preliminary study regarding draft staffing requirements (including prescription of the plan to manage operational staff and to train them)
Activity 6-5-3	Learning about the basic skill / knowledge for train drivers' management and operation (including prescription of training plans for crews)
Activity 6-5-4	Learning about a methodology to make train schedules
Activity 6-5-5	Learning about a methodology to draw run curves
Activity 6-5-6	Collecting train operation rules for the Line-2A (including learning about the general knowledge for urban railway regarding train operation)
Activity 6-6	Rolling Stock Maintenance
Activity 6-6-1	Prescription of draft organization rules regarding rolling stock maintenance
Activity 6-6-2	Learning about the process of preliminary study regarding draft staffing requirements and maintenance budget

Activity 6-6-3	Learning about the process for implementation plan of rolling stock renewal (including the preparation of maintenance manuals and education plans)
Activity 6-6-4	Learning about countermeasures against rolling stock failures (including the preparation of rolling stock operation safety manual for dealing with circumstances such as accident)
Activity 6-6-5	Collecting maintenance rules for the Line-2A rolling stocks (including learning about the general knowledge for urban railway regarding rolling stock maintenance)
Activity 6-7	Facilities Maintenance
Activity 6-7-1	Prescription of draft organization rules regarding facilities maintenance
Activity 6-7-2	Learning about the process of preliminary study regarding draft staffing requirements and maintenance budget
Activity 6-7-3	Learning about the process for draft implementation plan of facilities renewal (including the preparation of maintenance manuals and education plans)
Activity 6-7-4	Learning about countermeasures against facilities failures (including the preparation of facilities operation safety manual for dealing with circumstances such as accident)
Activity 6-7-5	Collecting maintenance rules for the Line-2A facilities (including learning about the general knowledge for urban railway regarding facilities maintenance)

## 2-5 Review of Relevant Projects

This section summarizes the latest progress of relevant projects and development plans, particularly where HMC is involved.

### 2-5-1 Line 2

#### 2-5-1-1 Overview

The Project is to construct the urban railway connecting Nam Thang Long, in the northwestern area of Hanoi, and Tran Hung Dao, in the city center, with the approximate length of 11.5 km.

**Table 1-2-5-1-1-1: Project Overview (Line 2)**

Item	Content
Implementing Agency	MRB under HPC
Donor Agency	JICA (STEP tied loan)
Route	Phase 1: Nam Thang Long – Tran Hung Dao 11.5 km (Elevated 2.6 km, Underground 8.9 km)
Consultant	Joint Venture of Oriental Consultants et. al. (since Mar. 2011)
Note	Loan for implementation of Phase-II section (6 km) was asked to JICA

#### 2-5-1-2 Contract Packages

The construction contract of the Project includes 5 packages as illustrated in the following table.

**Table1-2-5-1-2-1: Contract Packages (Line 2)**

Contract Package	Form	Period	Contents	Fund
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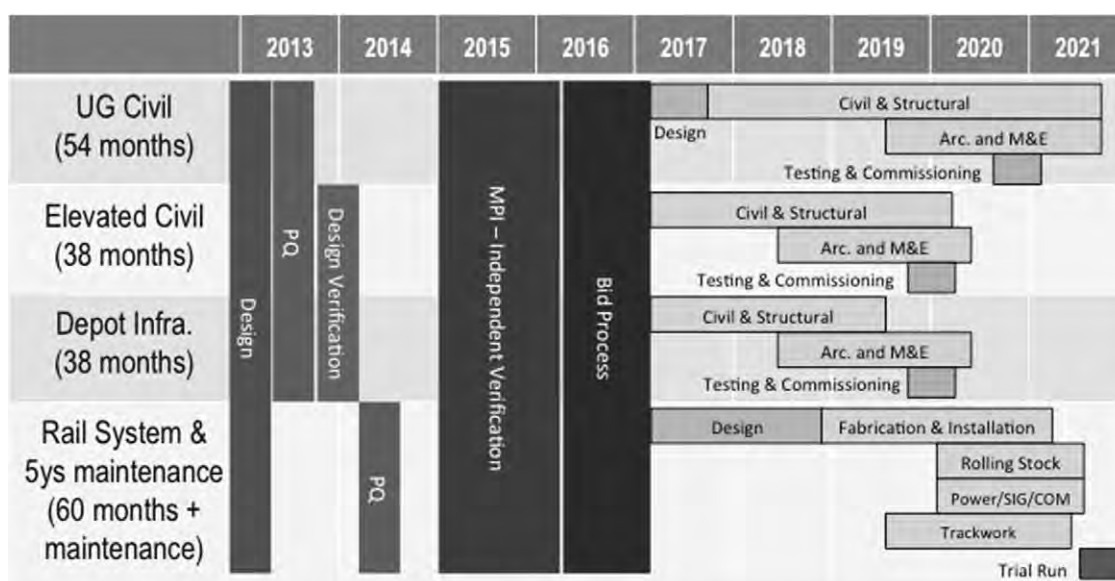
CPA 001	Underground Civil - 1 (5km)	Design Build (Yellow Book)	54 months	<ul style="list-style-type: none"> <li>3 underground stations</li> <li>Bored tunnel (3.9km)</li> <li>Cut &amp; Cover tunnel (0.7km)</li> </ul>	JICA
CPA 002	Underground Civil - 2 (3.9km)	Design Build (Yellow Book)	54 months	<ul style="list-style-type: none"> <li>4 underground stations</li> <li>Bored tunnel (3.1km)</li> <li>Cut &amp; Cover tunnel (0.3km)</li> </ul>	JICA
CPA 003	Elevated Civil (2.6km)	Construction (Pink Book)	38 months	<ul style="list-style-type: none"> <li>3 elevated stations</li> <li>Viaduct section (2.2km)</li> </ul>	JICA
CPA 004	E&M Systems and 5 years Maintenance	Design Build (Silver Book)	60 months	<ul style="list-style-type: none"> <li>Supply &amp; installation of E&amp;M systems, tracks, rolling stock and 5-years maintenance</li> </ul>	JICA
CPA 005	Depot Civil (17.5 Ha.)	Construction (Pink Book)	38 months	<ul style="list-style-type: none"> <li>Depot infrastructures</li> <li>Depot buildings</li> </ul>	JICA

### 2-5-1-3 Progress of the Project and Latest Implementation Schedule

The latest progress and implementation schedule are as follows:

- Completed Basic Design (underground civil and E&M systems) and Detailed Design (elevated civil and depot civil)
- Prepared bidding documents of the entire packages
- Finished Pre-Qualification of the contractors for all contract packages
- Substantially completed third party verification of detailed design packages
- The total investment cost must be approved by the parliament after assessment by the third party verification consultant.
- The earliest possible time to start bidding is estimated as June 2016.
- With this assumption, the anticipated schedule is depicted in the following figure.

**Table 1-2-5-1-3-1: Latest Implementation Schedule (Line 2)**



### 2-5-2 Line 2A

#### 2-5-2-1 Overview

The Project is to construct the urban railway connecting Cat Linh, in the city center, and Ha Dong, in the southern area, with the approximate length of 14 km.

**Table1-5-2-1-1: Project Overview (Line 2A)**

Item	Content
Implementing Agency	VNRA under MOT => MOT (Since Aug. 2014)  * The project owner was changed from VNRA to MOT on 13 <sup>th</sup> Aug. 2014. At the same time, PMUR, a lower branch of VNRA was reorganized as the direct lower baranch of MOT. (13 <sup>th</sup> Aug. 2014 No.3092/QD-BGTVT)
Donor Agency	Chinese Government (Chinese ODA Loan)
Route	Cat Linh – Ha Dong, 14km (all elevated)
Consultant	BUEDRI (as part of EPC Turn-Key contract)
Note	Contractor: No.6 China Construction Company  Contract sign: 2008, Construction: since 2010)

**2-5-2-2 Contract Packages**

The construction contract of the Project includes single package as illustrated in the following table.

**Table 1-2-5-2-2-1: Contract Package (Line 2A)**

Contract Package		Form	Period	Contents	Fund
P-1	Designing, supplying equipment and material, and construction	EPC  (Silver Book)	84months	<ul style="list-style-type: none"> <li>▪ Technical design</li> <li>▪ Construction of civil and architectural infrastructure</li> <li>▪ Supply and installation of E&amp;M systems, track and rolling stock</li> </ul>	China

**2-5-2-3 Progress of the Project and Implementation Schedule**

The latest progress and implementation schedule are as follows:

- Construction of viaduct and station structures is in progress.
- Accidents occurred several times during construction of viaducts.
- The progress of works faced with additional delays due to accident investigation and strengthening of safety control.
- Ministry of Transport established a special working group to inspect and evaluate quality and progress of construction works.
- The rolling stock contractor (Beijing Metro Rolling Stock Company) delivered and displayed a mock up car in November 2015 for public comments
- The estimated commencement of the service is December 2016.

**2-5-3 Line 3****2-5-3-1 Overview**

The Project is to construct the urban railway connecting Nhon, in the western area, and Hanoi Station, in the city center, with the approximate length of 12.5 km.



**Table1-2-5-3-1-1: Project Overview (Line 3)**

Item	Content
Implementing Agency	MRB under HPC
Donor Agency	ADB, EID, AFD, DGT (co-financing)
Route	Phase 1: Nhon- Hanoi Railway Station 12.5 km (Elevated 8.5 km, Underground 4 km)
Consultant	SYSTRA (since November 2007)
Note	

**2-5-3-2 Contract Packages**

The construction contract of the Project includes 9 packages as illustrated in the following table.

**Table 1-2-5-3-2-1: Contract Packages (Line 3)**

Contract Package		Form	Period	Contents	Fund
CP1	Elevated Line	Construction (Red Book)	20 months	▪ Elevated Line (8.5km)	EIB/AFD
CP2	Elevated Stations	Construction (Red Book)	36 months	▪ Elevated Stations (8.5 Stations)	EIB/AFD
CP3	Tunneling & Underground Stations	Construction (Red Book)	43 months	▪ Underground Line (3.6km) ▪ Underground Stations (4 Stations)	ADB
CP4	Technical Infrastructure at Depot	Construction (Red Book)	18 months	▪ Depot Site Preparation (15 Ha.)	AFD
CP5	Depot Buildings	Construction (Red Book)	35 months	▪ Depot & Workshop Buildings	AFD
CP6	Rail Systems and Rolling Stock	Design Build (Yellow Book)	44 months	▪ RST, SIG, COM, Depot Equipment, OCC/SCADA, Power	DGT
CP7	E&M Systems	Design Build (Yellow Book)	36 months	▪ Ventilation, Lift & Escalator, etc.	EIB/AFD
CP8	E&M Systems at Depot	Design Build (Yellow Book)	35 months	▪ Trackwork for entire line & depot	ADB/AFD
CP9	AFC Equipment	Design Build	42	▪ Automatic Fare Collection	DGT

		(Yellow Book)	months		
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Note: D&B – Design & Build Contract, Con. – Construction Contract, RST – Rolling Stock, SIG – Signalling System, COM – Communication System, OCC – Operation Control Center, SCADA – Supervisory Control and Data Acquisition System, EIB – European Investment Bank, AFD - L'Agence Française de Développement, DGT - Direction Générale du Trésor, ADB – Asian Development Bank

### 2-5-3-3 Progress of the Project and Implementation Schedule

The latest progress and implementation schedule are as follows:

- Depot civil works, started since October 2010, are mostly completed.
- Dealim and POSCO (Korea) are the contractors for the elevated sections, CP1 and CP2, respectively.
- CP3 bidding contract for underground section is during evaluation term.
- Thanh Long (Vietnam) engages in earthworks in depot under CP4 package.
- Han Corp. (Vietnam) engages in architectural works in depot under CP5 package.
- Alstom (France) won the contract for procurement of railway systems and rolling stock under CP6 package with tied loan from DGT.
- No contractors are selected for CP7 (E&M system procurement) and CP8 (depot equipment) at this reporting period.
- Thales (France) won the contract for procurement of AFC systems under CP9 with tied loan from DGT.
- HPC agreed on the extension of the Project till the end of 2018.
- Korean Government and ADB are preparing for financing for Phase 2 Section (7km stretch from Hanoi Station to south eastern region).
- MVA (a subsidiary of Systra, France) and TEDI are jointly conducting Feasibility Study on the Phase 2 Section.

### 2-5-4 Planned Projects

The latest development of the planned projects, including extension projects, are summarized as follows.

**Table 2: The current status of lines under planning**

Route (Phase)	Latest Development	Reference Documents
Line 2 (Phase 2) Tran Hung Dao – Lang	New HPC decision was issued on new additional activities to supplement Feasibility Studies (because of alignment change at the end of the Section).	Decision No. 1567 on Additional activities of Line 2 Extension (March 24, 2014)
Line 3 (Phase 2) Hanoi Railway Station – Hoang Mai	<ul style="list-style-type: none"> <li>• FS is intended to be finalized is in progress by MVA and TEDI under ADB and KOICA funding.</li> <li>• The Study will complete in early 2016.</li> </ul>	
Line 5	<ul style="list-style-type: none"> <li>• The route is expected to apply BRT technology instead of MRT. A new study on this corridor is being prepared by JICA.</li> </ul>	

## **2-5-5 Special Assistance for Project Implementation (SAPI) for Establishment of an Organization for the Operation and Maintenance of Metropolitan Railway Lines in Hanoi City**

### **2-5-5-1 Background**

This study was carried out as a SAPI (Special Assistance for Project Implementation) for Hanoi City Urban Railway Line 2 project, starting from August 2011 until December 2012.

Accordingly, the Vietnamese Government applied for Japanese ODA loans on “the Hanoi City Urban Railway Construction Project (Line 1)”, and “the Hanoi City Urban Railway Construction Project (Nam Thang Long-Tran Hung Dao Section) (Line 2). Both are currently under implementation in order to cope with the increasing demand for transportation by constructing urban railways. The Line-2A (Cat Linh-Ha Dong), which receives assistance from China, and the Line 3 (Nhon-Hanoi Railway Station), which receives assistance from the French Government, AFD, EIB, and ADB, are under construction, with operation scheduled to start earlier than Line 2. Under these circumstances, there is an urgent need to establish an organization for the operation and maintenance of the Metropolitan Railway lines in Hanoi (hereinafter referred to as “O&M Company”).

In order to develop a system to operate and maintain urban railways in Hanoi, there is an urgent need for assistance in establishing an appropriate O&M Company headquarters. Hanoi city requested Japan to support these developments strongly, then, JICA had determined to carry out the SAPI.

### **2-5-5-2 Objective**

The objective of this study is to establish an O&M Company for the railways in Hanoi by gaining a thorough understanding of the current status of the project, with a particular focus on the schedule, and identifying the functions that O&M Company should have at each stage. Specifically, the aim of this study is to propose an urban railway O&M Company that can provide sufficient service in an efficient manner by carefully considering the intentions and opinions of the project owners and donors. The following is a summary of the tasks to be accomplished by this study.

- (1) Devising a basic plan for O&M Company for urban railways in Hanoi.
- (2) Devising a roadmap up to the commencements of operations.
- (3) Devising a detailed working plan for the establishment of the O&M Company.
- (4) Investigating the relationship between O&M Company and other organizations or agencies.

### **2-5-5-3 Output**

A single operation and maintenance (O&M) company for urban railways in Hanoi should be newly established under the auspices of the HPC to manage all urban railway lines in Hanoi except Line 1, which shares tracks with the inter-regional trains under the auspices of VNR in on-going projects.

## **2-5-6 The Institutional Strengthening of TRAMOC and Creation of PTA (WB)**

### **2-5-6-1 Introduction of the Program**

Program of the Institutional Strengthening of TRAMOC and Creation of PTA is under Hanoi Urban Transport Development Project – HUTDP. The project started in Apr. 2008 with the following main objectives:

- (i) Increase use of public transport in selected traffic corridors in targeted areas in Hanoi (thereby increasing corridor capacity);
- (ii) Reduce travel times (by all the modes) between the city center and the west and northwest sections of Hanoi;
- (iii) Promote a shift to more environmentally friendly-sustainable transport modes and urban development plans;
- (iv) Promote the replication of these approaches in the country and the region;
- (v) Global environment objective: Lower Hanoi's Transport-related greenhouse emissions relative to a business as usual.

In this project, "Institutional Strengthening of TRAMOC and Creation of PTA" program has direct relationship with public transport of Hanoi City in the future. The program has been carried out since July 2012, with the overarching objectives as below:

- (i) To assist TRAMOC in the start-up and the first year operation of BRT;
- (ii) To create a strong, financially secure, independent agency staffed by capable skilled personnel to coordinate and manage all public transport planning and operations for Hanoi.

Donor: World Bank.

Consultant Association of Consia Consultants (Denmark), Contrans AS (Sweden) PACO Trading and Investment Consulting Company Ltd (Vietnam). Program carried out by TRAMOC.

### **2-5-6-2 Current context of the Program**

In the framework of implementation of the program, on 15 Apr. 2013, the World Bank held a workshop "Model for Hanoi PTA and a detailed action plan for establishment of the PTA." The workshop was attended by the representatives of Transport Department, Transerco, MRB, AFD, ADB, JICA, TA team, IMV (Urban specialized training project), Consultants and a number of other agencies.

In this workshop, much of the content has been presented, however, the content of the roles, positions, and the steps of PTA establishment are interested by most parties. Summarizing the workshop, World Bank representative stated:

- PTA establishment study is, but not so urgent, initially necessary to focus on improving the capacity of Tramoc;
- The program needs to integrate the current status of programs, projects, and other stakeholders to identify more clearly about the subject and approach of the project;
- Additional research will be carried out for component "strengthening the capacity of Transerco" to operate BRT system.
- It is required to obtain HPC's comments on orientation and model of traffic management institutions in Hanoi.

### **2-5-6-3 Initial evaluation**

The first task of the Program "Institutional Strengthening of TRAMOC and Creation of PTA" is to manage the first BRT route expected to be operated in 2016. In management of BRT, there are cases where management that is different from ordinary bus management is necessary, for example, road management, signal processing and the fare collection method, etc. Therefore, it is necessary to improve the State management capacity of Tramoc (firstly State management for services, units operating BRT).

TRAMOC planed to manage both current bus system and BRT lines at the same time initially requests the establishment of PTA. In big cities around the world, PTA plays an important role in the institutional system of the city / region, from policy making, planning, financial balance, investment, management and operation, etc.

Orientation to establish Hanoi PTA is consistent with the actual requirements, however, with the "Institutional Strengthening of TRAMOC and Creation of PTA" program eventhough the main object is new BRT routes, and there is no component of strengthening capacity of operation and maintenance agency at the same time. The project approach is from the viewpoint / position of TRAMOC, mobilization of extensive involvement of the Department of Transportation, and especially from the City Council has not been carried out yet.

Therefore, this program will maybe firstly focus on the management and synchronization system bus and BRT lines through strengthening capacity of Transerco and Tramoc.

Technical Assistance Project to "Strengthen the Capacity of Regulator and to Establish Operation and Maintenance company of Metropolitan Railway lines in Hanoi city " first aimed at putting the first urban railway lines into operation, including establishing urban railway operation and maintenance company and strengthening the capacity of MRB. The resources for this major two operations have been basically prepared. It started from "Proposal for establishment of operation and maintenance unit for urban railway

lines in Hanoi City" which was submitted to HPC Nov. 2012 and currently is implementation steps of the previous study results. As a result, destination is more clear and practical.

Moreover, in the future, the urban railway system will play a backbone role of public transportation systems of Hanoi. The other transport modes will be adjusted and supplemented to enhance the performance of the urban railway system.

Thus, although the TA Project will actively discuss and coordinate in conjunction with the programs and other projects, it is necessary to perform the actions and tasks as planned.

## **2-5-7 Project for Support on Setup of Operation & Maintenance Company of Urban Railways in HCMC**

### **2-5-7-1 Background**

This technical cooperation (TC) project was established to prepare the setting up of O&M Company which will manage urban railways in HCMC. This company is planned to be ready in time for the opening of the Urban Mass Rail Transit (UMRT) Line 1. The counterpart for this project is the Management Authority for Urban Railways (MAUR), which established the Preparation Unit for Setting up of O&M Company (PUC) for this TC project.

This project consists of two phases: Phase 1 has a duration of two years until the establishment of O&M Company and Phase 2 will be implemented for three years until the opening of Line 1. For the first phase 55 person-months of expert inputs have been completed from the end of March 2011 until March 2013. This report covers the activities and results of the first phase and a brief description is provided below and in succeeding pages.

### **2-5-7-2 Main Output and Outcomes**

In this TC project, the concrete targets were (i) to develop O&M Company's charter, general transport contract, and basic internal rules for the planning, safety, human resources, financial and sales departments, as well as (ii) to enhance the potentials of PUC staff through study tours in Japan and other activities. These internal rules were developed as scheduled. In the study tour in Japan, participants gained precious experience which cannot be obtained from ordinary study tours: Participants rode in the train drivers' cabin and worked at a train station for an entire day until midnight.

Discussions with relevant authorities were indispensable in setting up of O&M Company. After the discussions with relevant authorities based on the documents prepared by the PUC, there have been substantial progress in the preparation for establishing O&M Company. Major outputs are shown below.

- (1) Approval by the HCMC-PC of the Establishment Plan for O&M Company in HCMC has become Possible

In the beginning, the HCMC-PC had no plans to set up an O&M Company to manage urban railways in the city. But through this TC project, the HCMC-PC's approval of the Establishment Plan for O&M Company can be said to be within reach. Although this plan is part of the approval procedure, it is very important for consensus building, and its approval will prove that this project was satisfactorily carried out.

- (2) Consensus on the Payment of the Initial Investment and Interest will not depend on fare Revenue

When reviewing bankrupt urban railway companies in Southeast Asia, it was found that the development of an appropriate financial scheme is important to ensure sustainable financial management. The adoption of a financial scheme wherein the payment of the initial investment and its interest does not depend on fare revenue was confirmed with the representative of relevant departments of the HCMC-PC. This occurred after sharing the results of a simulation which showed the expenditure does not include the depreciation cost for the initial assets. Based on this scheme, subsidies from the HCMC-PC is not needed, except when replacing or increasing assets and assuming that affordable fare levels can be agreed upon by representatives of relevant departments and secured, and that substantial inflation will not take place.

But because bus fares have been maintained at low levels, it is highly possible that fare levels for trains will likewise be suppressed by the HCMC people's council. If the HCMC-PC will subsidize O&M Company to reduce or avoid deficit, the latter's motivation to pursue financial soundness while ensuring

safety, as well as maintain self-governance, will decrease.

### (3) Driver Training and Licensing System

The relevant authorities for driver training are the Vietnam Railway Administration (VNRA), which has the power to interpret relevant laws and regulations, and MAUR, which has to provide the drivers for the UMRT Line 1 opening. Vietnam and Japan have their respective concerns about the training system for drivers. Accordingly, the JICA Project Team and representatives of the general consultant for Line 1 participated in a meeting with the Vietnamese side to explain the concerns of the Japanese side. As a result of this meeting, the VNRA issued a letter to MAUR, about a special arrangement regarding driver training, which could cover the requirements of the Railway Law as well as include the conditions of the JICA Project Team.

## Chapter 3 Implementation Schedule of the TA Project

### 3-1 Project Period

The implementation period of the TA Project had been two years as described in the MOU. Due to a large delay in Line 2A Construction Project, however, at the 4th JCC in Sept. 2014, the MRB requested the extension of the project implementation period, to which JCC agreed. The implementation period of the TA Project has consequently been changed to three years.

### 3-2 Key Dates and Progress

The table below shows the key dates of the TA Project at the completion of work. The key dates have been changed affected by a delay in studying the establishment of the O&M Company in the City of Hanoi and a large delay in Line 2A Construction Project. Section 3-3 shows the details.

**Table1-3-2-1: Key Dates of the TA Project**

	Inception Report	This Report	Difference
Project Period			
- Beginning of the Project	2013.2	2013.2	None
- End of the Project	2015.2	2016.2	+12 months
Key Dates			
- HPC's approval on the establishment of O&M Company	Unknown	2014.11	-
- Establishment of O&M Company (registration)	2014.1	2015.4	+15 months
- Completion of Institutions for O&M Company	2014.1	2015.6	+17 months
- Recruitment of Line 2A O&M personnel	2013.6	2014.11 (not yet)	+17 months
- Commencement of commercial operation of Line 2A	2015.4	End of 2016.	+21 months

### 3-3 Implementation Program based on the MOU

During the implementation of the TA Project, the changes below were made to its basic plan which consists of PDM and PO in the MOU at the 4th and 6th JCC. At the latter JCC, changes to the MOU were

also made.

- Project period

  - Original: 2 years

  - After the change: 3 years

- Changes to activities

  - + Activities 1-4, 2-4, 3-3, 6-1-9, 6-2-10, 6-3-8, and 6-4-8 were canceled.

  - + Activities 6-1-6, 6-4-3, 6-4-6, 6-5-1, 6-5-2, 6-5-6, 6-6-1, 6-6-2, 6-6-5, 6-7-1, 6-7-2, 6-7-3, and 6-7-5 were changed to “planning.”

Main reason for the changes: A major premise for the design formation of the TA Project was the development of the concurrent urban railway project (preceding Line 2A Construction Project), but a large delay in the Line 2A Construction Project caused difficulty in implementing the above activities.

Appendix 1-1 PDM/PO shows the basic plan that was finally implemented. Appendix 1-2 shows the minutes of JCC where the changes to the MOU were decided.

In the meeting where the changes to the MOU were discussed, the transfer of the C/P was also mentioned and decided as follows:

- C/P body

  - Original: MRB (regulatory body, O&M Company)

  - After the change: DOT (regulatory body), HMC (O&M Company)

  - \* Refer to Appendix 1-2.

All of the C/P previously under control of the MRB were transferred to HMC.

## Part 2 Activities

### Chapter 1 Strengthening capacity of the regulator for urban railways (MRB)

#### 1-1 Adjustment with MOT

##### (1) Objective

The current Vietnam Railways Law (No. 35/2005/QH11) stipulates that local governments (People's Committee) shall manage (as well as construct and invest in) urban railways (Article 55). Local governments are also supposed to set fares and subsidize railways (Article 62). In addition, Hanoi People's Committee decision made in 2012 (No. 925/QD-UBND) instructs MRB to not only construct but also manage Hanoi City urban railways after commencement of operations.

The statutes enacted thereafter, however, have not necessarily clarified the details of the "management of urban railways" described in the Railways Law and the above decision. Holding consultations with MOT and other relevant ministries and agencies, we hence study and propose the roles of Hanoi People's Committee and MRB as an administrative and regulatory body of urban railways, respectively.

##### (2) Progress and outputs

Major work outputs here include defining a) the general role of the Regulator of urban railways, and b) the sharing of responsibilities for safety management.

The major roles of the Ministry of Land, Infrastructure and Transport, the Japanese railway regulatory body, are as follows:

- Business licensing (Articles 3, 4, and 5 of the Railway Business Act; the same applies hereafter)
  - Appropriateness of operation
  - Appropriateness of transportation safety
  - Appropriateness of business planning and performance ability
- Construction permission, track use permission (Articles 8 and 15)
  - Construction plans
- Construction completion inspection, Railway facility and vehicle inspection (Articles 10, 11, 13)
- Approval of (maximum) fares (Article 16)
  - Less than a reasonable profit
- Acceptance of submitted operation plans (Article 17)
- Acceptance of submitted safety management rules (Article 18)
  - Business operation policies
  - Business implementation and management systems
  - Assignment of safety managers
  - Assignment of train operation managers
- Acceptance of submitted accident reports (Article 19)
- Business improvement orders (Article 23)
- Suspension of business and cancellation of business license (Article 30)
- Levy of reports (Article 55)
- On-the-spot inspection (Article 56)
- Conducting audits (Rules for Auditing Railway Businesses)
  - Safety audits



- > Ensuring transportation safety
- > Facilities, vehicles, etc.
- Business audits
- Compliance with transportation statutes
- Fares, timetables, etc.
- Accounting audits
- Compliance with accounting and property statutes
- Business plans, financial plans, etc.

We also surveyed the functions of urban railway regulatory bodies in the world (Table 2.1.1).

**Table2-1-1-1: Functions of urban railway regulatory bodies**

Function	Urban railway regulatory body						
	Grenoble/SMTC	STIFF/Ile-de - France	SYTRAL/ Lyon-Rhone region	CRTM/ Madrid	LTA/ Singapore	Railway bureau MLIT (Japan)	This project (Under consideration)
Quality management of transportation service	x	x	x	x	x	x	x
Fare rules	x	x	x	x		x	x
Subsidization	x	x	x	x			x
Policy implementation for railway use promotion	x	x	x	x	x	x	x
Regulating infrastructure management					x		x
Planning, investment, and maintenance for public transportation	x	x	x	x	x	x	x
Management for ensuring safety	x	x	x	x	x	x	x

Source: Materials prepared by O&MU

Based on the above table and the current Vietnamese Railways Law, we made HPC a proposition described in Appendix 8-1-1 on role sharing on urban railway regulators and central/local governments in Vietnam. The table shows the roles of Regulators stipulated in the current Vietnamese Railways Law and makes a proposal for the Ministry of Transport, HPC, MRB, and the O&M Company about how to involve in activities in urban railways.

We initially planned to prepare rules for MRB's organization, functions, and authority as the activity in Section 1-2 after obtaining agreement with the Vietnam Railway Administration, Ministry of Transport (VNRA), the current railway regulatory body, on this role sharing. During discussion with MRB-O&MU, the C/P of this project, it was suggested that we needed to overview the general picture including Section 1-2, submit it to Hanoi People's Committee (HPC) for approval, and then coordinate with relevant bodies such as MOT. We hence decided to proceed in that way.

Four staff members from VNRA are participating in O&MU, in addition to MRB staff. Using their experiences having worked for the railway regulatory body, we revise the outputs of Appendix 8-1-1 and

Section 1-2 as appropriate based on their personal opinions.

The Prime Minister approved to establish O&M Company (Hanoi Metro One Member Limited Company or HMC) on November 2014. Since the MOU has been changed in October 2015, the counterpart of this TA project was moved from MRB to HMC and all activities related to the Regulator on this TA project were transferred to DOT (Department of Transport) under HPC.

The following summarizes our activity schedule:

March 2013:	Assignment of Vietnamese staff. Start of specific work.
August 2013:	Completion of a draft report “Functions and Authority of Urban Railway Regulatory Bodies” prepared by the Vietnamese side.
November 2013:	Submission of the report to MRB.
March 2014:	Proposing at 3rd JCC.
August 2014:	Submission of the report to JCC members.
September 2014:	Reproposing at 4th JCC.
October 2014:	Preparation of submission of the report to the local governments. Approval procedure of Appendix 2.1.2
August 2015:	Submission of the report to HPC by MRB
September 2015:	The role as a regulator as well as tasks for completing this activity of this project were transferred from MRB to DOT by changing the MOU.

This activity is finished and the outputs of this activity are shown in the following material:

**Appendix 8-1-1** Report on Clarifying Responsibilities for Governmental Management of Urban Railway in Hanoi

## **1-2 Prescription of the Regulator’s Organization, and the Functions & Powers in the Regulator**

### (1) Objective

As for the strengthening of the ability of urban railway Regulator, it is required to obtain the decision of Hanoi People’s Committee on their specific roles and authority. We need to prepare a plan showing their organizational positioning, timing, and budgets to obtain approval from HPC. We then prepare draft rules for Urban Railway Regulator’s specific organization, functions, and powers. The proposal needs to obtain the decision of Hanoi PC after gaining approval from JCC.

### (2) Progress and outputs

The functions and authority of HPC were taken up as one subject of discussion at the 3<sup>rd</sup> JCC meeting, and as the conclusion, it was decided that this will be submitted to HPC by the end of June. After that, the discussion on this issue was held at 4<sup>th</sup> JCC and the resubmission procedure to HPC is on-going as of now after receiving comments from JCC members. In addition, the roles and functions of MRB as a regulator was slightly modified to the fact that Vietnam Register under MOT is examining a new system for a safety certificate for urban railways.

This activity is finished and an outline of outputs are as follows:

### **(Functions and authority of DOT as an urban railway regulatory body)**

DOT cooperates with relevant bodies to submit railway operation companies’ annual operation, maintenance, and management plans to HPC and obtain its approval. MRB also has functions and authority on the following items as an urban railway regulatory body:

#### 1) Quality control of transportation service

- a) DOT is responsible for making sure that railway business operators comply with the government and MOT rules on the quality control of urban railways. During the process, it provides advice and

reports to HPC, as well as instructs and controls railway business operators to comply with laws and regulations.

- b) In coordination with relevant departments and bureaus, MRB makes a contract with railway business operators on behalf of HPC for the entrusted items of transportation service plans. It also conducts inspection and audit to check whether business is operated in compliance with the contract.
- c) DOT approves train operation plans containing the following, and requests railway business operators to change the plans as necessary.
  - Travel time between stations
  - Stop time at stations
  - Transportation capacity
- d) DOT conducts the following inspection and audit on the service levels of urban railways:
  - Facilities, equipment, machinery, and materials used by passengers
  - Conditions of train crew and station staff
  - Whether trains are operated according to submitted diagrams. Check items include delay, peak congestion rates, etc.

The objective of the above inspection and audit is to check the consistency of the service level required by the City with operational service levels by railway companies.
- e) Based on the transportation service contracts exchanged between HPC and railway business operators, DOT gives HPC advice on the establishment of reward and punishment rules for better quality control.
- f) Having periodic meetings with railway business operators, DOT shares information with them on issues to maintain the service levels of urban railways.
- g) DOT conducts statistical surveys and prepares reports. It issues periodic reports to evaluate the service levels of urban railways by inspecting documents.
- h) DOT conducts passenger surveys on the quality of service provided by railway business operators.
- k) DOT has a general responsibility for managing the service levels of urban railways under the control of HPC. In consultation with relevant departments and bureaus such as the Bureau of transport and the Bureau of Planning and Architecture, etc., DOT studies the possibility of improving the overall quality of public transportation services such as connection to other modes.

## 2) Management for ensuring safety

DOT cooperates with relevant bodies to assist HPC in the safety management of Hanoi City Urban Railways.

- a) DOT has a responsibility to have railway business operators comply with the laws and regulations set by MOT and relevant bodies on safety management in the operation, maintenance, and management of urban railways.
- b) DOT advises HPC, whereas it instructs and audits railway business operators. In light of the current situation of Hanoi City and in view of existing laws and regulations, MRB works with relevant departments and bureaus to give HPC suggestions on the establishment of new rules or the revision and supplementation of existing rules for the safety management of urban railways.
- c) DOT has railway business operators include safety plans (safety management rules) into transportation service contracts, and advises HPC on signing contracts with them.
- d) DOT inspects and audits the following items to improve railway business operators' safety:
  - Subjects to be inspected/audited

- > Compliance assessments of the Railways Act and other rules, the MOT safety technical criteria, the HPC rules for the safety of urban railways, etc.
- > Compliance assessments of the safety plans (safety management rules) included in transportation service contracts between HPC and railway business operators.
- Timing of inspection and audit; either periodic or non-periodic depending on rules.
- If serious safety problems are found, MRB can suspend business and cancel business licensing.
- e) DOT deals with and reports urban railway accidents and incidents. It accepts reports from railway business operators, and reports the results, combined with statistical data, to HPC, MOT, and other relevant bodies.
  - Periodic reporting items: Statistical data are summarized and reported every 6 months.
  - Non-periodic reporting items: In the case of serious accidents and incidents having a significant effect on human lives and train operations, MRB should immediately report to MOT and HPC.
- f) DOT develops emergency response plans.
  - Establishment of rules requiring railway business operators to develop plans for emergency response practices and systems, emergency reporting and rescue systems, coordination with external organizations, etc.
  - Auditing of railway business operators' emergency response practices

In addition to the above, DOT has the following functions and authority on urban railway safety management:

- g) DOT coordinates with relevant bodies and mass media to educate train passengers on safe train use.
- h) DOT advises HPC to legislate laws to ensure passenger safety.
- i) DOT coordinates with relevant bodies such as the Bureau of Transport and the Bureau of Architecture Planning on ensuring the safety of connection between urban railways or with other public transportation systems.
- j) To ensure safe urban railway operations, DOT coordinates with the MRB and railway business operators to have residents comply with rules restricting access to railway infrastructures.

### 3) Implementation of fare and subsidy policies (refer to Chapter 2 of this Part for details)

A fare policy supports decision making on setting and changing fare structures and levels. It is decided by its objective and guideline. The objective of the fare policy is to show general goals for Hanoi City achieved by fare structures.

The fare policy of the urban railway system of Hanoi City should achieve the following goals:

- Securing a sufficient number of urban railway users
- Changing the mindset of people about urban railways. Understanding the latest transportation culture. Strengthening urban railways' competitiveness against private transportation modes.
- Securing railway business operators' sufficient incomes from operations. Increasing motivation to invest in urban railways and participate in their operations.
- Correction of citizens' income gaps. Consideration for the poor, war victims, and disabled persons.

Based on these criteria, Hanoi City develops rules for the fare policy through DOT and other relevant bodies to carry out integrated operations. DOT's responsibility and authority are as follows:

- a) DOT coordinates with each relevant department and bureau to advise HPC on the fare policy including the following items:
  - Fare structures
  - Fare types

- Base fare levels
  - Rules for railway business operators to set fares
  - Fare revision plans
- b) DOT coordinates with each relevant department and bureau to take the lead in approving railway business operators' business plans (including train operation plans, maintenance and management plans, and safety management plans).

DOT's functions and authority to subsidize urban railways are as follows:

- a) DOT coordinates with railway business operators to calculate necessary subsidy amounts, and asks for HPC's approval.
- b) In the case where the railway business operators' burdens of expenses for the addition or renewal of equipment and materials in the future are considered to be heavy, DOT calculates subsidy amounts.

#### 4) Implementation of policies to accelerate the use of urban railways

At the initial stage, the network of urban railways is incomplete. In the stage where only one or two lines have been completed, travel by rail is not very convenient, and hence it is not easy for urban railways to attract citizens. At this stage, taxing and controlling private transportation companies can hardly be implemented. At the initial stage, therefore, DOT carries out the following policies as an urban railway regulatory body:

- a) DOT coordinates with relevant departments and bureaus to advise HPC on the implementation of gradual and continual policies encouraging citizens to use urban railways.
- b) DOT coordinates with the Bureau of Finance and the Bureau of Planning and Investment to advise HPC on the subsidization of transportation expenses for citizens. It is started with public servants and the employees of state-owned companies and gradually expanded to private corporations.
- c) DOT coordinates with the MRB and the Bureau of Architecture and Planning on smooth connection between urban railways and other public transportation systems to realize a unified and strongly connected network.
- d) DOT coordinates with the Bureau of Transport to create proper parking spaces in front of train stations.
- e) DOT coordinates with the Bureau of Transport and mass media to educate ordinary citizens about the benefits of using general public transportation systems and urban railways.

In the future, urban railway networks will be completed to some extent, and operations satisfying citizens' needs will be carried out. In that stage, DOT coordinates with the Bureau of Finance and the MRB to give HPC the following suggestions aiming to discourage citizens from using private transportation systems.

- Revision of taxation systems such as taxes on owning private transportation systems (e.g. car registration tax), gasoline tax, peak hour road pricing, etc.
- Taxation for the purpose of investment in public transportation systems on policies for private transportation systems such as bridges, highways, and tunnels.
- Tax reduction or tax benefits to subsidized commuting allowances for workers and businesses using public transportation systems.
- Taxation on real estate values arisen from the construction of public transportation systems.

#### **(Structural change of DOT)**

With developments of urban railways, we make DOT a proposition to set up a new "Urban Railway Business Management Center" in DOT for the purpose of adding the above functions and authority. Under the instruction of the Director-General of MRB, this department has the following functions:

- a) The center studies the publication of the rules for urban railway management, and gives the Director-General suggestions on their publication. It also approves business plans.
- b) It sets up activities for quality control of transportation services.
- c) It sets up activities for quality control of safety management.
- d) It surveys and proposes fare policies and subsidy policies.

With the setting up of this department, the existing organization of DOT is strengthened at the same time (details are omitted).

It is desirable to start this “Urban Railway Business Management Center” with 10 to 15 staff members (including one general manager and three managers). The following gives the number of persons required for each job:

- Person in charge of transportation services: 3
  - > Specialist in railway technology: 1
  - > Specialist in the general management of transportation services: 2
- Person in charge of safety management: 3 - 5
- Person in charge of fares and subsidies: 3
- \* The implementation timing of this plan may be changed depending on the results of more detailed study in the future.

### **1-3 Learning about Policies to Encourage Use of Urban Railways**

#### **(1) Objective**

In Hanoi City, many citizens use bikes as their primary mode of transportation. Changing the transportation mode from bikes to urban railway trains is difficult until railway networks are completed to some extent. Doing nothing, however, results in the waste of the railways constructed by investing a huge amount of money.

Railway companies must make efforts and Hanoi City must take certain measures to increase the number of passengers who use the railways constructed by injecting a lot of public funds. The following are some possible measures:

- Reduction of the burdens of individuals through the dissemination of commuting allowances for passengers using public transportation systems and treating the allowances as deductible expenses.
- Increase in taxes levied on private transportation systems such as motorcycles.
- Restricting/charging cars entering the City (Road Pricing).

Coordination with other bodies such as MRB, HAPI, and DOF is needed to implement the above measures, and a system to study it should be established. Some measures can be immediately implemented and others may need to be gradually implemented. The objective of the City is, therefore, to think out a policy menu that an organization that administers urban railways can propose before the railways start business in 2015.

#### **(2) Progress and outputs**

October 2014:	Studies on cases in the world and existing reports in Hanoi
September 2015:	The role as a regulator as well as tasks for completing this activity of this project were transferred from MRB to DOT by a decision of HPC.

This activity is finished and the output is as follows.

**Appendix8-1-3** Urban Railway Use Incentive Policy Study Report

### **1-4 Work Trial towards the Opening of Line 2A**

#### **(1) Objective**

MRB is not established just for Line 2A, but it is also a fact that Line 2A is the first line that MRB controls. We therefore support MRB to deal with various events that might occur after Line 2A starts business.

(2) Progress and outputs

Actual work starts after the above plan is approved by HPC and consultations with MOT and VNRA are finished. This activity has been deleted because of a temporal restriction.

## **Chapter 2 Development of Fare Setting Method and Subsidy System**

### **2-1 Development of Fare Revision Method**

(1) Objective

In the future Hanoi metropolitan area, and continuing socioeconomic development and motorization will bring a tremendous increase in potential transportation demand for urban railways. Encouraging the use of urban railways is a major issue in the future, and various approaches are needed to secure high service levels. Meanwhile, fare pricing is one of the factors for passengers to choose routes and transportation systems and form the basis of railway business. Fares reasonable for both passengers and railway business operators should be studied. Based on passengers' intentional amounts to pay, this activity aims to develop an appropriate fare revision system, taking account of the influence of economic indexes such as inflation rates on service provision costs.

(2) Progress and outputs

In accordance with the agreed PO, following activities were carried out:

From the beginning of the project till ITR-1

- Review of fare policy and fare adjustment mechanism in selected Asian countries
- Review of the existing policy of public transportation fare in Vietnam
- Development of fare policy framework, preparation and update of work plan
- Development of fare policy objectives and fare policy goals
- Assessment of appropriate fare level and structures from various perspectives
- Evaluation of fare price regulation/adjustment methods in selected countries and proposal of the same for Hanoi City.
- Proposal of institutional and organizational framework by stage on fare regulation, preparation of a roadmap
- Preparation of the report on fare policy for use on urban railway lines in Hanoi

From ITR-1, till ITR-2:

- Development of transfer pricing and discount schemes
- Detailed proposal of fare products and ticket medias
- Preparation of the basis for development of AFC systems
- Lectures and technology transfer to, and consultations with persons in charge of C/P
- Enhancement of the fare policy proposal to be used by Hanoi City urban Railway.
- Coordination with the persons involved (development of regulatory bodies, finance, business, and station services) in the TA team and AFC project personnel.

From ITR-2, till this reporting period:

- Circulation of the said report to JCC members for comments

- Response in writing to the comments on the report
- Supplement, revision and finalization of the said report incorporating the comments
- Coordination meetings with DOT after completion of the transfer of the regulatory functions to DOT as changing the MOU of this TA project.
- Receipt of 2nd commentary from DOT and response in writing to the same

March 2014:	Proposed at 3rd JCC (Fare policy proposal First draft)
August 2015	Submission of the draft report to HPC for consideration
September 2015:	Receipt of comments from JCC member agencies and response to the same
October 2015:	Transfer of works and products to DOT from MRB
October 2015:	Coordination meetings with DOT
November 2015:	Receipt of 2nd comments from DOT and response to the same
December 2015:	Basic agreement of JCC members regarding the final report
December 2015:	Submission of the final report from MRB to HPC and waiting for the comment of relevant department of HPC

The following are needed to be considered on decided the fare policies:

- Pursuant to the decision of HPC, DOT becomes the regulatory and supervisory body for comprehensive urban public transport systems in Hanoi instead of MRB. Meanwhile, DOT stressed ownership of the study remains to be at MRB according changing the MOU of this TA project.
- TA proposal on fare policy is basically agreed, however, DOT is of the opinion, due to inability to estimate reliable cost of service, which the initial fare price and structure of the first urban railway in Hanoi should be the same as bus service, where the operator heavily depends on the subsidy from the government. Continuous monitoring is needed till the fare policy is decided.
- Keys for operational readiness on fare regulation are to ensure DOT to take full responsibility to finalize and enforce the fare policy as appropriate with good understanding of the proposal by TA project.

This activity is finished and the output is shown in the following material:

**Appendix 8-2-1** Final Fare Policy Proposal: Enhanced in response to the comments from MRB (HMC after transfer of O&M-U) and relevant agencies

The structure and description contents of the proposal are shown in the table below. In preparing the proposal, important points to keep in mind were the comparisons of the fare policies of Asian countries, the recognition of their pros and cons, and being concise and all-inclusive. This proposal will be firstly accepted by the General Director of MRB, and later the proposal was submitted to HPC for coordination with JCC member agencies.. In addition, the TA consultant prepared answers to 2nd commentary from DOT after transfer of the regulatory / supervisory functions to them from MRB.

**Table 2-1-1-1: Structure and description contents of the Fare Policy Proposal**

Chapter 1: Legal Bases and Backgrounds	- Backgrounds related to Hanoi City Urban Railway - Necessity of developing fare policies
Chapter 2: Objective and Range of Survey	- Objective of survey - Structure of fare policies - Plan for survey implementation
Chapter 3: Goals of Fare Policies	- Economic goal



	<ul style="list-style-type: none"> <li>- Financial goal</li> <li>- Social goal (from users' viewpoint)</li> </ul>
Chapter 4: Fare System	<ul style="list-style-type: none"> <li>- Fare levels</li> <li>- Fare structures</li> <li>- Fare (ticket) types</li> </ul>
Chapter 5: Fare Regulatory Framework	<ul style="list-style-type: none"> <li>- Regulation of fare prices</li> <li>- Fare revision mechanism</li> <li>- Subsidy system</li> </ul>
Chapter 6: Implementation System	<ul style="list-style-type: none"> <li>- Stepwise scenario for implementation system development</li> <li>- Decision making process</li> <li>- Timing of fare review and revision</li> <li>- Public involvement</li> </ul>
Automatic Fare Collection System	(A reports or a proposal is separately prepared.)

Study issues on fare revision (Chapter 5) described in the Fare Policy Proposal are shown below:

#### Existing fare revision systems

- In the case of existing bus and national railway businesses, HOC or MOT makes a final decision on railway operators' fare revision proposals following a recommendation by HPC or the central government's relevant departments and bureaus. There is no rule that sets out which organizations review the proposals based on which judgment criteria, and there is no accountability to ordinary citizens.

#### Fare price regulation

- As a method of fare price regulation, we compared between the "adjustment system," "total cost system," and "price cap system," and proposed the price cap system that connects socioeconomic indexes to the maximum fares.
- The reasons are as follows: (1) It is desirable to give companies management freedom to operate independently; (2) A system allowing relatively simple judgment is desirable due to the lack of experience of regulatory bodies.
- Another reason is that, if the total cost system is adopted, incentive regulation such as the yardstick system cannot be introduced in Hanoi City where only one urban railway operating company exists and hence it cannot conduct operations efficiently and independently.
- Towards the introduction of the price cap system, we proposed setting a preparation period of about three to five years after starting business, where adopting the adjustment system to reduce the risk for the railway business operator and set benchmarks for fare receipts, operational costs, and maintenance costs.

#### Decision-making mechanisms

- The survey results on the decision-making mechanisms of other countries are as follows: (1) Giving independent authority to quasi-governmental bodies (e.g. Singapore), (2) Recommendation by law-based councils (e.g. Japan), (3) Setting a conference with ordinary citizens (e.g. USA), (4) Verifying appropriateness by third-party certification (e.g. Hong Kong), (5) Direct and efficient fare setting by the government (e.g. Korea, Taiwan). Many countries construct a system by combining the above mechanisms.
- The existing decision-making mechanism is based on complicated and unclear administrative and bureaucratic procedures, and needs to be gradually changed to a system like the above. With the establishment of PTA, introducing a system close to (1) is expected.

#### Judgment criteria of fare revision

- The international community (CoMET) consisting of railway business operators of each country ranks the judgment criteria of fare revision. The result in the descending order from the best is as follows: (1) Strict application of a formula for fare revision criteria, (2) Setting of efficient fares by a highly independent organization, (3) Connection with an inflation rate plus something, (4) Connection with an inflation rate minus something, followed with flexible application of a fare revision formula, compensation for an operational loss, compensation for a company loss, and no clear revision criteria in that order.
- This proposal recommends (1) [(2) is also acceptable on the premise of the establishment of PTA].
- TA consultant proposed the fare adjustment formula of (fare adjustment rate) = (rate of change in CPI) x  $\alpha$  + (rate of change in Wage Index) x  $\beta$ , where  $\alpha + \beta = 1$ . Upon opening of the system to the public, this formula should be used flexibly as a reference indicator and, after 3-5 years of benchmarking period, this should strictly be applied.
- Also, TA consultant proposed interval of fare view, i.e. yearly, and fare adjustment, i.e. 3 years to avoid frequent changes in fare. Decision of fare adjustment will take place when the fare adjustment rate according to the above formula exceeds a certain range, e.g. 5%.

## 2-2 Development of Subsidy System

### (1) Objective

The objective of this activity is to study a framework needed for Hanoi City to provide financial support to the O&M Company.

### (2) Progress and outputs

#### - Type of contract signed with Hanoi City

A decree (130/2013/ND-CP) published in July 2013 classified public services including subsidy systems provided in Vietnam into the three types: “bidding,” “ordering,” and “plan assignment.” Under this decree, the public transport in urban area shall be performed through “bidding” or “ordering”. HPC provided, however, its opinion that it should be implemented under “plan assignment” at the beginning stage, since Vietnam has no experience of managing urban railway system.

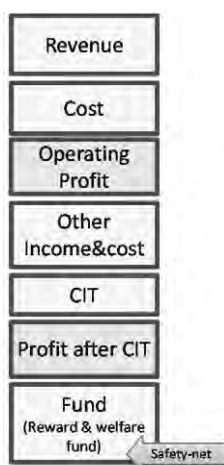
Under the circumstances, MRB submitted a two-stage scheme proposal to set up an O&M Company (187/BC-DSDT) to HPC on October 10, 2013. In the proposal, MRB adopts the plan assignment type for three years after the start of business and then moves to the ordering type.

The subsidy system under the above decree is explained using the concept of a profit and loss statement used in accounting as follows: The “plan assignment” and “ordering” cover up to the welfare fund<sup>1</sup>, an item of appropriation. A company can expect a certain level of profit.

Thus, if “plan assignment” or “ordering” are chosen, in Vietnam, the subsidy system has already established because HMC can make sure of some profit without depending on fare revenue. (Figure 2-2-1)

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<sup>1</sup> The decree (09/2009/ND-CP) stipulates the method of appropriation of state owned enterprises, and the welfare fund is an item included in it.



**Fig. 2-2-2-1: Coverage by type of contract**

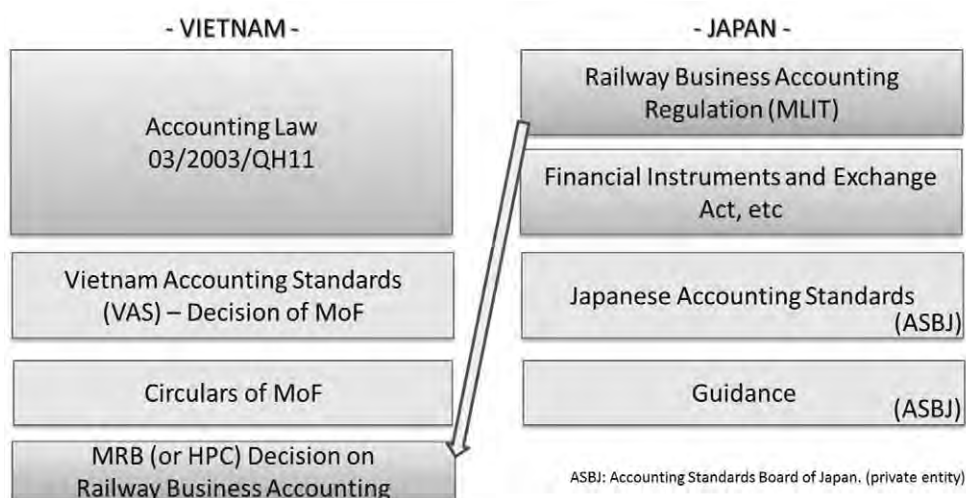
**- Cost calculation**

The above decree treats costs as necessary expenses for providing public services and insists the importance of cost measurement. In case of HMC, adding unnecessary costs must be avoided because HMC is not granted a subsidy only related railway service. Therefore, TA team explain to C/P how to be able to make an application for subsidy immediately, focusing on a method of cost calculating.

In Japan, there is the established Railway Accounting Rules. Each railway business operator reports revenue and costs under certain rules. It facilitates easy comparison between business operators and contributes to efficiency measurement. It may take some time before two or more business operators start operations in Hanoi City. Under the concept that the validity of submitted financial reports prepared under certain rules can be verified through time-series comparison, we introduced the above rules to C/P in the early stage of this project (May - June 2013).

Japanese Accounting Principles put the rules defined in each business field on the highest position, and therefore business-specific accounting procedures are applicable to cost calculation. Since the existing Accounting Law is provided on the highest position according to the Vietnamese Accounting Principles, we stick to the application to cost calculations under the existing law. (Fig. 2-2-2-2)

In 2014, MOF Circular (25/2014/TT-BTC) newly stipulated the costing methods and items for goods and services provided by the State entities. It makes the items discussed in this TA project more understandable from the legal administrative viewpoint.



**Fig. 2-2-2-2: Difference between Vietnamese and Japanese accounting principle structures**

Based on such backgrounds, the two points<sup>2</sup> are most helpful in the Japanese Railway Business Accounting Rules: (1) The account title system consisting of four classes: title, item, subitem, and detail; (2) The allocation basis for allocating indirect costs to items.

As for the account title system of the former, we are studying the segmentation based on the system specified by the circular of the Ministry of Finance (200/2014/TT-BTC). To be more specific, we introduce the system based on the above circular up to the second class, the classification of business fields in the third class for enabling segment disclosure<sup>3</sup> by the O&M Company when it is listed, and the line-wise concept in the fourth class for verifying revenue and expenses.

Left to company discretion

Publicized Purpose (200/2014/TT-BTC)			For Segmentation (VAS 28)	For Internal	Remarks
Level 1	Level 2	Level 3	Level 4	Level 5	
67	511	5111			goods sales (Non-fare business)
			51111		Kiosk
		5113			
			51131		Fare Business
				511311	Line 2a
				511312	Line 2
				511313	Line 3
			51132		Advertisement (Non-fare business)
				511321	Line 2a
				511322	Line 2
				511323	Line 3

**Fig. 2-2-2-3: Account title system (proposed) for verifying the validity of revenue and costs**

#### Allocation basis

The allocation basis for common expenses between fare and non-fare business has been proposed in referring to that specified in the Japanese Railway Business Accounting Rules.

This activity is finished and the outputs of this activity are included in the outputs of activity 2-1.

### 2-3 Consideration and determination of the Fares on Line 2A

#### (1) Objective

As mentioned above, fare pricing is one of the factors for passengers to choose routes and transportation systems and form the basis of railway business. Fares reasonable for both passengers and railway business operators should be studied. Initial fares should be set based on estimated costs for providing services, the fares of other transportation systems, and the values of economic indexes such as price increase rates. Based on these considerations, this activity aims to set initial fares.

#### (2) Progress and outputs

TA consultant conducted the following work following the schedule set by PO.

- Review of the fare levels of existing public transportation systems (buses and taxis)
- Review of the proposed fare levels of each project (SAPI, Line 2A GC, and Line 5 GC)
- Review of the survey conducted by Ministry of the Environment Government of Japan on the intention to pay fares for Lines 1 and 2 - Benchmarking of the fare levels of public transportation systems (railways, buses, taxis) in Asian countries (considering GDP per capita, average fares paid by public and private employees, line lengths, etc.)

<sup>2</sup> The Railway Accounting Rules includes other rules specific to railway business, but they cannot be applied to The Vietnamese Accounting System.

<sup>3</sup> The Vietnamese Accounting Standards stipulate that businesses with revenue over 10% of the total shall be disclosed individually. The same applies to the Japanese Accounting System. It is commonly called segment reporting.

- Coordination with the persons involved (development of regulatory bodies, finance, business, and station services) in the TA team

This activity is finished and the output is as follows.

**Appendix8-2-1** Final Fare Policy Proposal: Enhanced in response to the comments from MRB (HMC after transfer of O&M-U) and relevant agencies

The following are needed to be considered on decided the fare policies:

- In the case of calculating fare levels from operating and maintenance expenses, cost overruns may meteorite companies' financial positions or exceed passengers' intentional amounts to pay. In the case where initial demand after the start of business significantly decreases, companies' financial positions deteriorate as well.
- In the case of calculating fare levels from passengers' intentional amounts to pay, survey subjects may not properly understand service levels and correctly measure intentional amounts to pay because of the nation's first urban railway services.
- In the case of calculating fare levels from comparison with other public transportation systems in Hanoi City, railway fares may be affected by them if, for example, bus fares are politically set at a very low level.
- In the case of calculating fare levels from the benchmarking results of each country's public transportation fares, economic indexes may not necessarily reflect intentional amounts to pay public transportation fares.
- Fare level setting must therefore be judged from economic, financial, and social (users') viewpoints.
- Result of each estimate is summarized in the following table.

**Table 2-1-3-1: Result of Estimate**

The way to calculate	Initial Fare (per average length of ride 5.3km)
Fare based on Willingness-to- Pay	VND 8,723
Fare based on Total Cost	VND 7,735 – 10,314
Fare based on Comparison with other Modes	VND 7,808 – 9,594
Fare Price Benchmarking	VND 6,534 – 12,112

From the results of estimate, the proposed initial fare is illustrated in the following table.

**Table 2-2-3-2: Fare Calculation Formula**

Year	Fare Calculation Formula	Average lead	Average fare
2016	$6,000 + 600 \times (\text{distance [km]})$ [VND]	5.3 km	VND 9,200

**Table 2-2-3-3: Proposed Fare Table of Line 2A (at the time of opening in 2016)**

(Left Bottom: Distance [km], Right Up: Fare [x VND1000])

Sta.1	7	8	8	9	9	11	11	12	12	14	14
0.7	Sta.2	7	8	9	9	10	11	12	12	13	14
1.6	0.9	Sta.3	8	8	9	9	10	11	12	12	13
2.7	2.0	1.1	Sta.4	8	8	9	9	11	11	12	12
3.9	3.2	2.3	1.2	Sta.5	8	8	9	9	11	11	12
5.0	4.3	3.4	2.3	1.1	Sta.6	8	8	9	9	11	11
6.4	5.7	4.8	3.7	2.5	1.4	Sta.7	8	8	9	9	11
7.5	6.8	5.9	4.8	3.6	2.5	1.1	Sta.8	8	8	9	9
8.8	8.1	7.2	6.1	4.9	3.8	2.4	1.3	Sta.9	8	8	9
10.0	9.3	8.4	7.3	6.1	5.0	3.6	2.5	1.2	Sta.10	8	8
11.4	10.7	9.8	8.7	7.5	6.4	5.0	3.9	2.6	1.4	Sta.11	8
12.5	11.8	10.9	9.8	8.6	7.5	6.1	5.0	3.7	2.5	1.1	Sta.12

The above discussions have been described in the Fare Policy Proposal. Also, a final fare level proposal was made in the said report. Upon submission of the report to DOT, who is mandated to have become the regulatory and supervisory body on urban railway fare, DOT expressed an opinion to apply the same fare level and structure for the time being after opening of the system to public. In response to this, TA consultant disagreed the opinion of DOT with the following reasons, and DOT basically agree the TA opinion.

- Bus and urban railways must have different Level of Service and cost profile. This will necessitate application of different fare level and structure.
- Once too affordable fare level is introduced, significant rate of subsequent fare adjustment will face negative and severe feedback from the general public as the practice in overseas prove.
- Urban railway service should seek, instead, different approach from the existing bus service through charging sufficient fare by offering quality and satisfactory service. Otherwise, cost and revenue stream will be worsened and resultantly service quality will be worsened. Eventually, the operator will face negative spiral.

The following are needed to be considered on decided the fare of the starting operation:

- Regulation on fare and function of administration for public transportation have already transferred to DOT according to revision of MOU. Meanwhile, DOT insists that study for policy and system on fare should be continued by MRB.
- Although basically agreement with proposal by TA team has been made, DOT proposes that fare system should be same as that of existing bus transportation, and urban train service depends on government subsidy for a while.
- It is indispensable that DOT has entire responsibility for finalizing and introducing optimum structure and level on fare after understanding proposal by TA team.

## 2-4 Work Trial towards the Opening of Line 2A

### (1) Objective

The Metropolitan Railway Management Board (MRB) is not established just for Line 2A, but it is also a fact that Line 2A is the first line that MRB controls. We therefore support MRB to deal with various issues on fares and subsidies from Hanoi City that might occur after Line 2A starts business.

## (2) Progress and outputs

This activity has been deleted because of a temporal restriction.

## Chapter 3 Development of Operation Plan and Safety Control System

The urban railways playing an important role in supporting the nation's capital Hanoi is not only positioned as mere social infrastructures but also required to always offer quality transportation services meeting passengers' needs. They are mass transportation means, and once a traffic disturbance due to mechanical failures or staff mistakes occurs, it has a serious effect on urban functions. It means to seriously damage the reliability of railways.

To avoid such cases and establish highly reliable and comfortable transportation systems, the following two points must be given sufficient consideration:

- Development of train operation plan reporting systems
- Development of accident investigation procedures

### 3-1 Prescription of Submission Procedure for Train Operation Plan and Safety

#### (1) Objective

In preparing train operation plans, railway business operators must keep in mind that regulatory bodies can always grasp whether safety operation is ensured and demand for transportation capacities is properly taken into consideration.

#### (2) Progress and outputs

In Japan, the Railway Business Act and its Enforcement Regulations stipulate the submission of train operation plans. When studying a system for submission to administrative bodies in Hanoi, it is hence better to study its relevant rules together with other submission items rather than developing it separately.

The item "Project Objectives" in Project Design Matrix (PDM) includes Approval for Fares and Service Levels. In the above sense, it might be better to develop rules like "Submission Rules for Service Maintenance" including submission of "train operation plans" together with "fares," and use the rules as legal bases for regulatory bodies to regulate railway business operators. It is also possible, however, to regulate railway business operators based on contracts between regulatory bodies and the O&M Company. We need to study which way suits Vietnam better.

October 2013: Preparing train operation plans and study how to create rules on obligation to submit them.

September 2015: The tasks for completing this activity of this project were transferred from MRB to DOT.

This activity is finished and the output is as follows,

**Appendix8-3-1** Form of Public Service Framework Contract for Passenger Transport by Urban Railway in Hanoi City

### 3-2 Development of Procedures for investigation of accidents

#### (1) Objective

Systems are constructed not to cause accidents, but in actuality various troubles occur. It is essential to make local staff inexperienced in working for urban railways understand that there are risks of accidents caused by mechanical and human factors even if systems are well organized. It is also important to develop a Safety Standards and an Accident Time Procedure Manual prepared for assumable events, and based on them to eliminate differences in the safety management levels prepared by each EPC.

#### (2) Progress and outputs

On August 4, 2009, MOT issued an official notice Regulations on Railway and Road Traffic Accident Treatment (15/2009/TT-BGTVT). We believe that accident investigation procedures are determined based on it. A manual suitable for Hanoi's urban railways needs to be studied referring to this notice and Japanese Railway Accident Reporting Rules. Actual progress and outcome of the study are as follows:

We have been studying the above notice from and after July 2013.

September 2015: The tasks for completing this activity of this project were transferred from MRB to DOT.

This activity is finished and the output is as follows.

**Appendix 8-3-2** General regulations on handling with urban railway incidents, accidents

### 3-3 Work Trial towards the Opening of Line 2A

#### (1) Objective

The Metropolitan Railway Management Board (MRB) is not established just for Line 2A, but it is also a fact that Line 2A is the first line that MRB controls. We therefore support MRB to deal with various issues on train operation management and safety management that might occur after Line 2A starts business.

#### (2) Progress and outputs

This activity has been deleted because of a temporal restriction.

## Chapter 4 Clarification of the Conditions for the transfer of Line 2A

### 4-1 Development of Transfer Plan for Line 2A

#### (1) Objective

Hanoi City is responsible for the operation management of Lines 2, 2A and 3 out of the urban railway development businesses under construction. The Line 2A construction project was approved by the decision 3136/QĐ-BGVT dated October 15, 2008. MOT-VNRA as the project owner is engaged in construction through EPC contracts with China. The line starts at Cat Linh (junction with Line 3) and ends at Ha Dong. Its total length is 13.05 km, and 12 stations will be built along the line.

As mentioned above, the construction project owner of Line 2A is VNRA. In order for Hanoi City to operate and manage Line 2A, it must accept constructed railway facilities as well as educated operation and maintenance staff based on the EPC contracts transferred from VNRA after the completion of the construction.

Activity 4-1 supports transferring the facilities and staff by devising a transfer plan as the workflow for the following inspection and checking from the viewpoint of ensuring the safety of railway operations:

- (1) Quality of each piece of equipment conforms to specified uses and performance characteristics.
- (2) These pieces of equipment are perfectly functional as part of railway systems and continuously usable under proper maintenance and management.

Main transferring items are shown as follows.

**Table 2-4-1-1: Main content of transfer of Line 2A**

No.	Item related to	Remarks
1	Structures	Main bodies of structures, railway lands
2	Railway facilities	Rolling stock, electric equipment, communication systems
3	Transferred technologies	Train operation procedures, maintenance



		procedures, maintenance manuals
4	Operation management systems	Management systems on equipment and materials, documents, finance, information, personnel management, safety, etc.
5	Assets to be transferred	Ownership, rights to use
6	Staff	Personal documents, certificates, licenses, records of education
7	Responsibilities and obligations	Defect responsibilities and obligations between the parties concerned such as construction project clients, contractors, suppliers, etc.

## (2) Progress and outputs

We prepared a “transfer process proposal” focused especially on the commissioning related to railway structures, rolling stock, and equipment to share with C/P basic procedures and required time from the viewpoints of safety assurance and the clarification of responsibilities.

The following are the conditions for the preparation:

- (1) VNRA as the construction project owner has checked all inspections performed during construction works needed for commercial operations.
- (2) VNRA as the construction project owner conducts all inspection and checking related to the completion of the contraction project, and transfer Line 2A to Hanoi City after accepting it from contractors.

Implementing the transfer to Hanoi City after VNRA’s completion of inspection is important to clarify transfer-related responsibilities, and the transfer to Hanoi city can be positioned as the reassurance of the inspection required for starting commercial operation conducted by VNRA. We are therefore going to propose the confirmation items and required number of days that Hanoi City is supposed to conduct as the minimum requirement on checking the quality, performance, and safety of on-site railway facilities. Actual progress and outcome are shown below.

In and after May 2013: Preparing a transfer process proposal and explaining it to C/P, referring to the practical examples of Tokyo Metro’s new line inspection for commencement of operation. Promotion of basic understanding before preparing a transfer plan. Supplying to C/P a proposal for the document list to be transferred such as design and completion documents, quality/inspection reports, etc.

In and after June 2013: Mutual confirmation of the structure of a Line 2A transfer plan and instruction to prepare the plan.

This activity is finished and the output of this activity is shown in the following material:

### **Appendix8-4-1-1** Comprehensive Alternatives of line 2A Transfer

We proposed Comprehensive Alternatives of Line 2A Transfer at the second JCC. The important points are as follows:

- 1) VNRA carries out the commissioning conducted under EPC contracts to clarify the responsibilities at the time of transfer. Hanoi City carries out the commissioning again on necessary items after the completion inspection of the construction project is finished.
- 2) Line 2A is the first urban railway for Hanoi City. In addition to checking facilities and equipment, the city includes trial operations in their commissioning such as trial runs by operation and maintenance staff members who have finished EPC’s education and training, as well as emergency response training in cooperation with relevant organizations in Hanoi city. The commissioning period is planned to be 70 days (Detailed commissioning activities and processes will be prepared in Activity 4-2).

- 3) In order for Hanoi City to understand the Line 2A construction project correctly, we preliminarily obtain technical documents starting with obtainable ones and prepare for smooth transfer, prior to actually implementing the transfer.

(3) Others

In parallel with the preparation of a transfer plan, MOT and HPC agreed on Line 2A Transfer Policy including cooperative systems between relevant implementation bodies in the period from the preparation to implementation of the transfer.

#### 4-2 Preparation of Agreement Document between MRB and VNRA

(1) Objective

In Activity 4-2, we support the preparation of component transfer plans describing objects to be transferred, reference materials, transfer conditions, contingency plans, etc., in a sector-wise manner after breaking the transfer plan explained in Activity 4-1. Then MRB and VNRA mutually agree to properly implement the transfer according to the plan.

(2) Progress and outputs

As for structures, rolling stock, facilities and equipment, we prepare maintenance rules to maintain them properly. Through the activity of preparing the rules, C/P can better understand important things to be checked when accepting objects to be accepted. The transfer plans for each field will be prepared based on these understandings. Together with this, we provide information on the processes until the commercial operation start of a new line of Tokyo Metro as an example to deepen the understanding of C/P on the flow of confirmation inspection until the commercial operation start of a new line.

In parallel with the progress of railway facility construction work, contractors educate and train the staff engaged in the operation and maintenance of Line 2A. These staff recruitment and training plans are issues to be coordinated between VNRA as the project owner and contractors, but since these staff members will eventually be transferred to Hanoi City after commissioning, we are asked to give our opinions on the numbers of staff of each division. Actual progress and outcome are as follows:

In June 2013:	Mutual confirmation and preparation instruction on the structures of individual transfer plans.
In and after July 2013:	Referral of opinions on Line 2A Staff Recruitment and Training Plan (Proposal) prepared by EPC.
In and after Sep. 2013:	Preparation of confirmation items of each company, subjects of the examination held by the Ministry of Land, Infrastructure and Transport, and process description materials, based on the new line business start inspection processes of Tokyo Metro.
In November 2013:	Explanation to C/P about new line business start inspection process examples based on the above materials. Study of inspection items needed at the time of transfer, details of trial operations, and the required period.
In March 2014:	Proposing MASTER PLAN FOR LINE 2A PROJECT TRANSFER at the third JCC.

This activity is finished and the output is as follows.

#### Appendix 8-4-2-A Master Plan for Line 2A Project Transfer (DRAFT)

- 1) Line 2A construction project progress is delayed by difficulties in land acquisition, by delay bidding related to a rolling stock manufacturing and other railway equipment/ facilities. Therefore, VNRA and the contractor of Line 2A project reviewed the construction program. As of October 2015, completion date of construction became on the end of 2016.
- 2) Master plan for Line 2A project transfer is consist of overall plan and component transfer plan regarding detail transfer requirements for human resources, civil works, railway equipment/ facilities and etc. It is necessary to update this transfer plan timely in accordance with consideration with VNRA

regarding component transfer plan.

- 3) This plan is developed based on overall Line 2A transfer proposal which has been developed in Activity 4-1. Regarding the commissioning implementation plan of Hanoi city, it is difficult to clarify the commissioning period based on the rationale now. Therefore, it is not stated in this plan, and while checking the commissioning plan of Line 2A, HMC will consider carefully from now on.

MRB and VNRA (Project management unit of Line 2A (PMUR) was managed by VNRA so far, but by instruction of MOT in August 2014, PMUR has been managed by MOT directly. So, later, referred to VNRA as PMUR) shall continue to prepare detail contents of transferring in accordance with conclusion of the third JCC. They also have to modify Master plan, and clarify relevant documents which are necessary for Hanoi city to receive the project.

Relevant documents are very important so that Hanoi city shall study a detail specification of Line 2A and develop the rule or manual for proper operation and maintenance of Line 2A. Therefore, Hanoi city must receive these documents before official transfer, so we supported the preparation of the list on document title and receiving period based on TA schedule and construction progress of Line 2A. Actual progress and outcome are as follows.

In April 2014:	Preparation instruction on detail component transfer plan based on Master plan for Line 2A project transfer (draft)
In and after May 2014:	Explanation of component transfer plan to PMUR, and mutual coordination regarding the contents of the plan
In and after July 2014:	Both authorities agreed that they shall prepare only one document as Hand-over and Take over plan for Line 2A which includes contents of master plan and component plan. They continue to coordinate mutually.
In September 2014:	Proposing Hand-over and Take over plan for Line 2A (draft) at the forth JCC.

This activity is finished and the output of this activity is shown in the following material:

**Appendix 8-4-2-B** Hand-Over and Take-Over Plan For Urban Railway Line 2A Cat Linh - Ha Dong

(3) Others

We assume that construction completion inspection is performed on the on-going construction projects of Lines 2 and 3. As an example, C/P's deepening the understanding of the new line business start inspection of Tokyo Metro helps C/P make lists of confirmation items for its future completion inspections by itself.

In the process of consideration on specific transferring contents of each item, MRB provides the new line business start inspection process of Tokyo Metro to PMUR. We think that PMUR, as the employer of Line 2A project, shall also carefully studies this material, and develops commissioning implementation plan of Line 2A project, in order to mitigate the difference of commissioning process between PMUR and MRB.

### 4-3 Preparation and Execution of Transfer Agreement for Line 2A

#### (1) Objective

Based on the mutual agreement of MRB and PMUR on transfer, we help their higher ranked bodies HPC and MOT, respectively, make an official agreement with each other, and support actual transfer implementation.

#### (2) Progress and outputs

Regarding this activity, it is planned to be signed "Transfer agreement" between MOT and HPC in Hand-over and Take-over plan for Line 2A (draft). After both parties (MOT and HPC) sign "Transfer agreement", assets right, right of use, responsibility for operation and maintenance are officially transferred from MOT to HPC.

The Hand-over and Take-over plan for Line 2A (draft) is basically developed with both parties (MRB and PMUR) coordination. So, after the forth JCC, HAPI became main authority by HPC instruction in order to obtain consensus from MRB, DOHA, PMUR. After receiving agreement letter from these authorities, HAPI submitted the letter to get approval to HPC, then HPC issued the agreement letter on December 15, 2014. After that, HAPI reported this matter to PMUR and PMUR submitted the letter to Minister of MOT to get agreement of the plan. MOT issued the agreement letter on January 8, 2015.

Through above activity, both authorities (HPC and MOT) have consented to Hand-over and Take-over plan for Line 2A. MOT is main body as transfer side, and HPC is main body as reception side. Both authorities nominate the relevant authorities of each side, and implement transfer in accordance with the plan.

This activity is finished and the outputs of this activity are shown as following material.

**Appendix 8-4-3-A** HPC agreement to hand-over and take-over plan for Line 2A (9796/UBND-XDGT)

**Appendix 8-4-3-B** MOT agreement to hand-over and take-over plan for Line 2A (199/BGTVT-CQLXD)

Moreover, receiving relevant documents before official transfer in order to confirm a detail specification of Line 2A, has been coordinated between MRB and PMUR based on “Hand-over and take-over plan for Line 2A”. But MRB has been able to receive only a part of “I. Documents of investment preparation” and “Technical design report” in “Appendix 2” of the plan document, because of a delay of construction progress of Line 2A.

## **Chapter 5 Registration of the O&M Company**

### **5-1 Proposal of Establishment of O&M Company by MRB**

#### **5-1-1 Approval of Incorporation**

##### **(1) Objective**

The objective of this activity is to materialize the output (5) of this project “the O&M Company Has Been Registered.”

##### **(2) Progress and outputs**

As described in SAPI Final Report, procedures for the incorporation of a state owned enterprise are summarized in two stages. The former is the approval procedures of relevant bodies, and the latter is the registration of the incorporation.

#### **- Approval procedures on the incorporation of a State owned Enterprise**

The rules for the former approval procedures are stipulated in the decree issued in October 2013 (172/2013/ND-CP). As for the registration of incorporation, the procedures are clearly described in the Enterprise Law (60/2005/QH11) as in the case of private company.

The procedures described in Decree 172 has been almost completed by the HPC’s Decision 6266/QU-UBND which had been issued based on the Prime Minister’s Approval (2268/TTg-DMDN) dated 13<sup>th</sup> November 2014.

It should be noted that the topics in the establishment proposal which developed in September 2014 during the activities mentioned above in this project are being updated after the approval of HPC, from time to time, towards the line 2A opening.

#### **- Progress of the registration procedure of a State owned Enterprise**

Following the approvals procedures above, the preparation of registration procedures has been completed by obtaining HPC’s approval (2694/QĐ-UBND) on 15th June, 2015.

After that, in the 5th JCC dated 16th July 2015, the establishment of O&M Company dated on 19th

June 2015 has been confirmed by the relevante parties, as one of outputs of this TA project.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-1-4.

## **Chapter 6-1 Planning, General Affairs and Safety**

### **6-1-1 Prescription of the rules on individual departments' roles and responsibilities**

### **6-1-2 Prescription of the organization rules regarding planning, general affairs and safety operations**

#### (1) Objective

Activity 6-1-2 supports the O&M Company in prescribing the work responsibilities of its divisions responsible for planning, general affairs, and safety work.

Activity 6-1-1 supports each division of the O&M Company in prescribing its work responsibilities within the division at the time of company's incorporation, which is one of the objectives of this project. The work responsibility schedule is prepared for the whole company based on the work responsibilities of each division developed in Activity 6-1-2.

#### (2) Progress and outputs

#### **- Organization Rules of Planning, General affairs, and Safety operations**

In developing Work Responsibilities, we referred to Tokyo Metro's case and standard cases in Vietnam. This activity covers the work of the three divisions of planning, general affairs, and safety work, and hence we conducted it in coordination with persons in charge of each work.

In May 2013: Coordination to match the work responsibilities with those of each division of business entities in Vietnam, based on the work responsibility schedule of Tokyo Metro.

This activity is finished and the outputs of this activity are included in the activity 6-1-1.

#### **- Rules on individual departments' roles and responsibilities**

In this activity, we collected and summarized the work responsibilities of each division to produce the product, which was reviewed and approved in the second JCC.

In and after June 2013: Collection, summarization, and coordination of the work responsibilities of each division.

In August 2013: Proposing at 2nd JCC.

This activity is finished and the output of this activity is shown in the following material:

**Appendix 8-6-1-1** Regulation on Functions, Responsibilities of Units under Hanoi Metro Company

### **6-1-3 Devising Management and Business Plan**

### **6-1-4 Prescription of the Corporate philosophy and Articles of Incorporation**

#### (1) Objective

Activity 6-1-4 aims to support two types of activities: the development of the articles of incorporation needed for incorporation, one of the objectives of the project, and the corporate philosophy as the ultimate goals of the company after starting business.

Activity 6-1-3 devises plans to show the O&M Company's posture and policies to the inside and outside of the company for autonomous management. Based on the corporate philosophy prescribed in Activity 6-1-4, we devise a "long-term vision" as a goal set for a certain period to achieve the philosophy, a "management strategy" showing policy directions to achieve the long-term vision, a "mid-term

management plan” setting mid-term policies based on the management strategy, “annual plans” for each fiscal year, “Facility investment plans” needed for implementing these plans, and “income and expenditure plans” for showing the results of plans.

## (2) Progress and outputs

### - Articles of incorporation

Steady preparations are being carried out as a document which will be necessary when the company is established. Actual progress and outcome are shown below.

- In and after May 2013: Studying Vietnamese Enterprise Law, and the articles of incorporation of Transerco and other Vietnamese state owned enterprises. -> Understanding necessary items for the articles of incorporation and the general structures of the articles of incorporation.
- In and after June 2013: Extraction of necessary items for the O&M Company, based on the above study.
- In and after July 2013: Prescription of the draft of the articles of incorporation.
- In August 2013: Proposing at 2nd JCC.
- In March 2014: Completion of the draft with an agreement with DOHA

This activity is finished and the output of this activity is shown in the following material:

**Appendix 8-6-1-4** Articles of Incorporation and Operation of Hanoi Metro One Member Liability Limited Company

The articles of incorporation of the O&M Company is a traditional document prescribed conforming to Vietnamese Enterprise Law and referring to the articles of incorporation of similar companies such as Transerco.

### - Corporate philosophy

In starting Activity 6-1-3, first, the corporate philosophy, which was an output of Activity 6-1-4, was studied. This was done because the corporate philosophy forms the basis not only for Activity 6-1-3, but also for all the activities carried out by the company.

- In and after May 2013: Studying the cases of Tokyo Metro and other Japanese railway companies. - => Understanding the details and structures to be included in the corporate philosophy.
- In and after June 2013: Preparation of the corporate philosophy draft of Hanoi Metro.
- In August 2013: Proposing the outline at 2nd JCC
- In and after Aug. 2013: Coordination of an outline of corporate philosophy to be included in
- In January 2014: Completion of the draft.

This activity is finished and the outputs of this activity are included in the activity 6-1-3.

As a result of studying the case examples of Japanese railway companies such as East Japan Railway Company, Tokyu Corporation, etc., we know that there are various types of corporate philosophies. Based on the intention of the O&M Company to cover announcements to stake holders, we follow the type of Tokyo Metro<sup>4</sup> that meets the intention.

Tokyo Metro sets four divisions of “customers,” “stockholders,” “society,” and “employees” as major stakeholders. Based on this concept, we set four divisions of “customers,” “society,” “employees,” and

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<sup>4</sup> Tokyo Metro's corporate philosophy (Management Vision) consists of "Group philosophy (slogan)", "explanation of Group philosophy", "management policy (declaration to stakeholders)" and "action principles for employee".

“business connections” as the major stakeholders of the O&M Company. Comparing with the corporate philosophy of Tokyo Metro, it is similar in setting “customers,” “society,” and “employees,” but different in setting “business connections” instead of “stockholder.” Unlike Tokyo Metro established on the precondition of privatization, the O&M Company is a state-owned without the prerequisite of privatization. Considering that “stockholders (investors)” is included in “society,” we replaced “stockholders” with “business connections,” respecting the Vietnamese ideal of coexistence and co-prosperity.

### **- Long-term vision**

Not all Japanese railway companies have long-term visions. Railway companies, however, need to carry out policies on a long-term perspective, and hence the development of a long-term vision is helpful for business. We therefore concluded that the O&M Company should have a long-term vision.

At present, we are prescribing the long-term vision referring to the corporate philosophy draft of the O&M Company and those of Japanese railway companies such as Tokyu Corporation. It includes “a title as a brief expression of the goal in the given period,” “an expected profile of the O&M Company throughout the given period,” “policy directions to achieve the goal,” and “numerical goals.”

The corporate philosophy of O&M Company and the long-term visions of other Japanese railway companies are referred to in prescribing.

- In and after June 2013: Studying long-term visions of Japanese railway companies => Understanding the types of long-term visions, typical periods to achieve the goal, and the details of the vision.  
Studying the period and directions of the long-term vision based on the corporate philosophy draft.
- In and after July 2013: Determination of the proposed period<sup>5</sup> of the long-term vision.  
Studying the items of the vision.
- In August 2013: Proposing the outline at 2nd JCC.
- In January 2014: Completing the draft long-term vision.

This activity is finished and the output of this activity is included in the activity 6-1-3.

### **- Strategies**

Since the directions of the long-term vision were nearly fixed, we started to develop the Strategies. We need to devise a company strategy, business strategies, and functional strategies.

In the company strategy, we defined domains, core competencies, and the directions of resource allocation. In the business strategies, we defined the policy directions of the railway business and related businesses, using methods such as the 3C analysis to analyze business environment. In the functional strategies, we focused on the human resource strategy based on the corporate philosophy. Actual progress and outcome are shown below.

- In and after Aug. 2013: Starting to devise the directions of the management strategy.
- In and after Oct. 2013: Environment analysis on the management strategy and the preparation of the draft for policy directions.
- In and after Nov. 2013: Studying the details of the management strategy.
- In November 2015: Completion of the draft management strategy

This activity is finished and the output of this activity is included in the activity 6-1-3.

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<sup>5</sup> We set the period to 10 years: Four years for accepting three lines (2016 - 2019), and 6 years for building the foundation for the development of the company.

## - Management Plans

We make plans for the measures implemented in accordance with the Strategies, and others regarded as important for each department. However, it became impossible to devise the capital expenditure plan and income and expenditure plan due to the delay of the construction of Line 2A. The progress and outputs are shown below.

In August 2013: Proposing the outline at 2nd JCC.

In and after March 2014: Preparation of the contents of the plan.

In November 2015: Completion of the draft management plan (the mid-term management plan and annual management plan)

This activity is finished and the outputs of this activity are shown in the following material,

**Appendix 8-6-1-3-A** Mid-term Management Plan (5 year Business Plan)

**Appendix 8-6-1-3-B** Annual Management Plan (Annual Business Plan)

### (3) Others

Although the legal bases are often required in Vietnam, there are no legal basis of the fruits of the activity 6-1-3 and 6-1-4 except the articles of incorporation. So we have started with the explanation of basic knowledge and let C/P understand the need of them. We first show the samples and clues provided by TA team to C/P, and let him do the work from scratch so that they can practically carry out the above development and revision work by themselves.

## 6-1-5 Prescription of the rules on safety promotion

### (1) Objective

Railways are the public transportation systems carrying passengers every day. Transporting passengers safely to their destinations is a social mission of the railway business operators. Railway systems are designed with maximum consideration to safety, but accidents and troubles may occur due to equipment failures and human errors.

It is therefore essential to comply with rules for ensuring safety including train operations as well as the proper maintenance of equipment and reduce the possibilities of the occurrence of accidents and troubles. It is important that railway business operators are determined to work complying with rules.

Activity 6-1-5 supports the development of the Safety Management Rules stipulating that railway business operators are always determined to place maximum priority on safety, and all executives and employees together construct the company's safety system to ensure transportation safety.

### (2) Progress and outputs

Business operators are obliged to prescribe safety management rules and submit them to regulatory bodies. Since the collapse of compliance with rules as the basis of safe operations has been observed, regulatory bodies instructs business operators to operate businesses always putting maximum priority on safety. Business operators need to regularly check safety management operations, and continuously conduct a review and correction as necessary.

It is important for C/P to properly understand the significance and the positioning of the Safety Management Rules. We therefore explained the circumstances prior to preparing them. We also explained that the safety promotion activity Tokyo Metro worked on (for example, top executives visit site offices to give instructions to employees and directly listen to them about their concerns in work sites) and the prescription of proper rules are important, and that each employee's understanding the importance of safety and conducting daily work placing maximum priority on safety are essential for safe train operations.

Moreover, we also explained necessity to prescribe the organization and contact system in advance for countermeasure against serious accident. We studied Vietnamese existing rule with C/P regarding countermeasure against railway accident and incident. Through the studying, we supported to prepare the rule of countermeasure against urban railway accident and incident, in order to ensure passenger safety, to resume normal operation quickly in case of emergency.



Actual progress and outcome are shown below.

- In October 2013: Explanation of the backgrounds and developments of safety management rules in Japan, and items to be set. => Instruction to make a draft of the safety guidelines as the basis of the company's approach to ensure safety. Discussion on the draft to check the C/P's levels of awareness of the importance of ensuring safety.
- In and after Nov. 2013: Studying the article structures of the Safety Management Rules => Presentation of the list of the rules of each division of Tokyo Metro for understanding the rules for ensuring transportation safety specified by each division.
- In and after May 2014: Studying the article contents of the Safety Management Rule, explanation of items to be set on the rule of countermeasure against accident and incident of urban railway. => Based on studying so far, we decided the article structure of the Safety Management Rule. Then, C/P prepare the specific article contents through the consideration of organization of company. On the other hand, regarding the rule of countermeasure against accident and incident, instruction to study countermeasure of Vietnam National Railway. Simultaneously, we explained that the prompt resumption is the most important issue in urban railway operation. We also explained the example of Tokyo Metro (A countermeasures headquarters, an on-site headquarters, etc.)
- In and after July 2014: Studying the article structure and contents of the rule of countermeasure against accident and incident of urban railway. → Based on studying so far, C/P considered the article structure. Simultaneously, we promoted the discussion of OMU members, and they considered the implementing organization for whole company. Then, we supported that C/P prepared the article contents based on the result of consideration.
- In September 2014: Completion of the Safety Management Rule (Draft), the Rule of Countermeasure against Urban railway Accident and Incident (draft).
- In September 2014: Submitting these materials as outputs of this activity at the forth JCC

This activity is finished and the outputs of this activity are shown in the following material:

**Appendix 8-6-1-5-A** The Safety Management Rule for Urban Railway Transportation (DRAFT)

**Appendix 8-6-1-5-B** The Rule of Responding Urban Railway Incident and Accident (DRAFT)

### (3) Others

C/P finished a two-week short-term training course to experience the actual worksites of Tokyo Metro in September 2013. Through the training, they individually experienced the performance of duties with a high level of awareness of safety, and understood the importance of safety to some extent.

Through studying with C/P, we explained specific activities regarding annual program to ensure the transportation safety in Tokyo Metro. Therefore, C/P has understood that it is very important for company to forge an atmosphere that all employees are always determined to ensure maximum priority on safety.

## 6-1-6 Preparation of Basic Rules of train operation

### (1) Objective

Railway operation companies need "Train Operation Rules" as a pillar of safe and stable operations. The work focused on "the prescription of the basic rules to be set by the O&M Company (applicable to lines with different equipment)" and "the acquisition of the ability of C/P to independently improve rules for safer operations."

### (2) Progress and outputs

Learning lessons from serious accidents occurred in the past, railway operation rules have been improved. From this fact, we gave C/P training to “learn the basic knowledge of railway operation rules prior to prescription of the rules.” Actual progress and outcome are shown below.

- In May 2013: Instructing C/P to survey and study rules on “railway operations,” “safety management,” and “accident prevention and treatment” stipulated by the Vietnamese Railways Act and VNR.
- In July 2013: Using the derailment and rollover accident of Spanish high-speed railway “Alvia” occurred on July 25, 2013 as a case example, we instructed C/P to survey and study “accident occurrence factors,” “practical approaches to prevent accidents (rules, equipment, etc.),” “verification of the risk of the occurrence of similar accidents in Hanoi Metro,” and “train staff management methods (training and ability control).” In September 2013: Instruction to summarize the concept of train operation rules through the actual observation of train operations and develop the “outline” of operations rules used in the O&M Company, using the “Train Operation Rule Development Sheets” prepared by TA at the time of C/P training in Tokyo.
- In December 2013: Completion of the outline of the Train Operation Rules of the O&M Company (proposal).
- In April 2014: Adopting the suggestion by C/P, the draft of the Train Operation Rule was developed. Moreover, we explained the points to be considered when the regulation of the administration is determined or the specifications of the line2A are shown.
- In October 2015: Reflecting regulations in Vietnam, C/P revised of the “Train Operation Rule (Draft)” and developed the “Train Operation Management Manual (Draft).”

Train Operation Rules have been tentatively completed. At this stage, they are positioned as “draft” because we need to make revisions to them when the detailed specifications of the line become clear.

The completed train operation rules (draft) correspond to the outputs on “Learning Basic Knowledge of Train Operations.”

Besides, the “Train Operation Plan Evaluation Manual” is applicable to “VI. Making of the Train Operation Plan” of “Train Operation Management Manual (Draft).”

This activity is finished and the outputs of this activity are shown in the following material:

**Appendix8-6-1-6-A** Hanoi Metro Train Operation Rule (Draft)

**Appendix8-6-1-6-B** Train Operation Control Manual(Draft)

### (3) Others

Here we instructed C/P not from the viewpoint of directly “develop train operation rules, but from the view point of “learning knowledge” ---> “fully understanding the necessity of rules.” As a result, without referring to the articles of Japanese or Tokyo Metro’s train operation laws and rules/regulations, C/P completed rules with structures close to them, and understood the significance and necessity of individual articles, which must be specially noted. We can hence conclude that Activity 6-1-6 was completed at the time of “Completion of Train Operation Rules (Draft).”

## 6-1-7 Preparation on Introduction of Office IT System

### (1) Objective

The office IT systems is used for issues on human resource management and finance, and constructed as the system connecting each work site with company headquarters. Based on the concept document prepared in the stage of SAPI, we support devising the functional specifications used for the system, adding practical workflows to a list of functions covered by the system.

### (2) Progress and outputs

The ordering of office IT system was determined in the Line 2A project. As there was no information on its progress, we checked the ordering status and the outline of the system. Actual progress and outcome are shown below.

- In and after May 2013: Checking the system structure and the outline of the functions used for issues on human resource management and finance, based on the references at the stage of SAPI on the outline of the office IT system.
- In and after Sep. 2013: C/P's visiting the Tokyo Metro's office IT system and learning the outline of the system including finance and human resource management, as well as server management.

MRB made an inquiry to VNRA for the information on the ordering status of the office IT system (in September 2013 and again in October 2013). It was confirmed that the Line 2A project does not order the system (VNRA official document No. 2202/CDSVN-KHCN&MT).

This activity is finished. There is no output in the scheme of this activity.

After the establishment of O&M Company in June 2015, a simple software, namely the Cybersoft, has been implemented by their own budget for its accounting area, whereas MS-Excel spread sheet is used for HR area, instead of applications. Since this project phase is the timing before Line 2A opening, the software covers only limited area in the head-quarter. After the Line 2A opening, however, there will be needed to manage huge data-set, thus it is desired to complete the preparation of the IT system implementation by that time. From the situation above, in order to support the future implementation, "As-Is" analysis has been conducted for the business processes of salary payment and accounting which needs huge data-set migration at the timing of IT system implementation.

### (3) Others (Recommendation towards the starting Line 2A)

To improve efficiency and accuracy of work in the areas of finance and human resources, the recommendation: "it is desirable that the office IT system is usable as soon as possible after establishment the O&M Company and in the stage before opening of Line 2A", has been provided since starting TA project. After the company establishment, HMC implemented the simple accounting system, namely "Cybersoft", by their own budget.

From the situation above, it can be said that the basis for assuring a certain level of data accuracy in accounting area is being developed.

## **6-1-8 Work Trial of Head Quarter after the Establishment of O&M Company**

### (1) Objective

After the establishment of O&M Company, at the phase where the main officers in the planning, the general affairs and the safety department has been assigned, it should be confirmed if the company rules developed above meet the actual work, and if any reflect the results to the rules for finalization.

### (2) Progress and outputs

After the company is established, in October 2015, the C/P were employed and their operation started. In response to this situation, the rules developed above were finalized.

This activity is finished. There is no output in the scheme of this activity.

## **6-1-9 Work Trial of Head Quarter towards the Opening of Line 2A**

### (1) Objective

It should be confirmed if the company rules developed above meet the actual work, and if any reflect the results to the rules for finalization in the planning, the general affairs and the safety department towards the opening of line 2A.

### (2) Progress and outputs

This activity has been deleted because of a temporal restriction.

## **Chapter 6-2 Human Resources**

### **6-2-1 Prescription of organization rules regarding HR management**

#### (1) Objective

Activity 6-2-1 supports the O&M Company in prescribing the work responsibilities of human resource management divisions.

#### (2) Progress and outputs

In developing Work Responsibilities of Human Resource Management Division, we referred to Tokyo Metro's case and standard cases in Vietnam. Actual progress and outcome are shown below.

In May 2013: Coordination to match the work responsibilities with those of each division of business entities in Vietnam, based on the work responsibility of Tokyo Metro.

This activity is finished and the output of this activity is included in the activity 6-1-1.

### **6-2-2 Prescription of employment rules**

#### (1) Objective

The objective of this activity is to support the activity of developing the “Employment Rules” as the working conditions of employees in the O&M Company.

#### (2) Progress and outputs

The “Employment Rules,” must be complied with Vietnamese labor laws and regulations, and we referred to Tokyo Metro’s “Employment Rules” and others in developing them.

In and after June 2013: Studying Vietnamese labor laws and the internal rules of MRB.

In July 2013: Preparation of the draft based on the study.

In and after Aug. 2013: Continuation of the draft revision work until the third JCC.

In March 2014: Completion of the Employment Rules (Draft)

In March 2014: Proposing at 3rd JCC.

This activity is finished and the output of this activity is shown in the following material:

**Appendix8-6-2-2 Labor Regulations**

### **6-2-3 Prescription of internal rules regarding recruiting, salary, and sanction**

#### (1) Objective

Activity 6-2-3 supports the O&M Company in prescribing rules for recruitment, salary, and sanction systems.

#### (2) Progress and outputs

In developing these rules, they must be complied with Vietnamese labor laws and regulations, and we referred to Tokyo Metro’s rules and others. Actual progress and outcome are shown below.

In and after July 2013: Studying Vietnamese labor laws and the internal rules of MRB.

In August 2013: Preparation of the draft based on the study.

In and after Sep. 2013: Continuation of the draft revision work.

In May 2014: Completion of the rules for recruitment, salary, and sanction systems (Draft)

In September 2014: Proposing at 4th JCC.

This activity is finished and the output of this activity is shown in the following material:

**Appendix8-6-2-3-A** Rules on Recruitment

**Appendix8-6-2-3-B** Rules on Wages

**Appendix8-6-2-3-C** Regulations on Reward

#### **6-2-4 Prescription of the rules on division of duties, office organization and official authorities**

##### (1) Objective

Activity 6-2-4 supports the O&M Company in prescribing rules for segregation of duties, office hierarchy, and authority of management of each division.

##### (2) Progress and outputs

In developing these rules, we referred to standard cases in Vietnam and Tokyo Metro's rules. Actual progress and outcome are shown below.

In and after July 2013: Studying standard cases in Vietnam.

In August 2013: Preparation of the draft of human resource management divisions based on the study.

In and after Sep. 2013: Studying the office hierarchy and authority of each division based on the crude draft for human resource management divisions.

In September 2014: Proposing at 3rd JCC.

This activity is finished and the output is shown in the following material:

**Appendix8-6-2-4** Working Rules

#### **6-2-5 Devising HR-related plans including staffing plan**

##### (1) Objective

Activity 6-2-5 supports the O&M Company in devising plans for setting the number of staff of each division. Since the EPC contractor of Line 2A has prepared the plans for OU staff, we basically aim at the staff of HQ divisions.

##### (2) Progress and outputs

We devised the staff plans based on the work contents developed in Activity 6-1-1, as well as the concept of staff allocation in Vietnam, referring to the examples of Tokyo Metro. Actual progress and outcome are shown below.

In August 2013: Proposing the outline at 3rd JCC.

In and after Sep. 2013: Studying the number of staff of each division of HQ based on the work responsibility proposal developed in Activity 6-1-1.

This activity is finished and the output of this activity is shown in the following material:

**Appendix 8-6-2-5** HQ Personnel Plan

#### **6-2-6 Formulation of employee welfare-related rules**

##### (1) Objective

Activity 6-2-6 supports the O&M Company in prescribing rules for employee benefits and welfare.

##### (2) Progress and outputs

In prescribing the rules, they must be complied with Vietnamese labor laws and regulations and we referred to the rules of Tokyo Metro and others. Actual progress and outcome are shown below.

In and after Aug. 2013: Studying Vietnamese labor laws and the internal rules of MRB.

- In October 2013: Preparation of the draft based on the study.
- In and after Nov. 2013: Continuation of the draft revision work.
- In November 2015: The finalization and implementation of the draft that was created is included in work rules of Activity 6-2-2 based on.

This activity is finished and the outputs of this activity are included in the activity 6-2-2.

### **6-2-7 Devising employee education plan**

#### (1) Objective

Activity 6-2-7 supports the O&M Company in prescribing rules for staff education.

#### (2) Progress and outputs

These rules are being formulated referring to standard cases of Vietnam and the rules of Tokyo Metro. Actual progress and outcome are as shown below.

- In and after Sep. 2013: Studying Vietnamese labor laws and the internal rules of MRB.
- In and after Nov. 2013: Preparation of the draft based on the study.
- In and after Jan. 2014: Continuation of the draft revision work.
- In November 2015: The finalization and implementation of the draft that was created is included in personnel planning of Activities 6-2-5 based on.

This activity is finished and the outputs of this activity is included in the activity 6-2-5.

### **6-2-8 Development of Work Procedures without Office IT System**

#### (1) Objective

The office IT system is an essential system from the establishment of the O&M Company, but the system may not be constructed in time. We therefore establish the workflow and prepare to use PCs managing data to be processed in the system.

#### (2) Progress and outputs

The procurement status of office IT system was checked twice with VNRA through MRB letters dated September and October 2013. In the reply from VNRA letter (No. 2202/CDSVN-KHCN&MT dated 2<sup>nd</sup> December 2013), it was found that the system is not included in the scope of line 2A project.

After the establishment of the O&M Company in June 2015, the simple IT system, namely the Cybersoft, has been implemented for the accounting area. On the other hand, the works in the human resource were still performed by a spreadsheet without any specific application software, since there were a few employees during the TA project. The human resource works such as salary payment will have to handle huge data through the employee hiring toward Line 2A opening. By this time, it is desirable that a preparatory work for IT system implementation will have been completed.

Under the circumstance above, in order to contribute to the data migration in the future IT implementation, data to be handled in IT system has been identified through as-is analysis for the salary payment process.

This activity is finished and the output of this activity is shown in the following material:

**Appendix 8-6-2-8** Salary Payment Workflow

### **6-2-9 Work Trial of Head Quarter after the Establishment of O&M Company**

#### (1) Objective

After the establishment of O&M Company, at the phase where the main officers in the HR department has been assigned, it should be confirmed if the company rules developed above meet the actual work, and if any reflect the results to the rules for finalization.

(2) Progress and outputs

After the company is established, in October 2015, the C/P were employed and their operation started. In response to this situation, the rules developed above were finalized.

This activity is finished. There is no output in the scheme of this activity.

### **6-2-10 Work Trial of Head Quarter towards the Opening of Line 2A**

(1) Objective

It should be confirmed if the company rules developed above meet the actual work, and if any reflect the results to the rules for finalization in the planning, the general affairs and the safety department towards the opening of line 2A.

(2) Progress and outputs

This activity has been deleted because of a temporal restriction.

## **Chapter 6-3 Finance**

### **6-3-1 Prescription of Organizational Rules Regarding Finance**

(1) Objective

After clarifying the functions and roles of finance and accounting divisions, we support the prescription of organizational rules for financial work.

(2) Progress and outputs

Referring to the case examples of organizations of Japanese urban railway companies and similar Vietnamese companies, we prescribed rules for finance and accounting divisions. Actual progress and outcome are shown below.

In and after May 2013: Studying the finance and accounting organizations and their functions of Tokyo Metro, and extracting the work (finance, accounting, budget, material management) needed for finance and accounting divisions.

In and after June 2013: Comparison with the case examples of common Vietnamese organizations, coordination of responsibilities with other divisions, and then prescribe of rules for finance and accounting divisions.

- As for funding work, the planning and project division takes charge of funding plans and funding, and the financial accounting division takes charge of fund management.

- As for contract-related work, the planning and project division takes charge of the management of contract systems and checking of bidding/contract-related work, and the financial accounting division takes charge of checking contract payment.

In and after Oct. 2013: As the matters related to organizations, we study the roles, positions and number of staff, recruiting plans, and training plans of financial and accounting divisions, based on their functions and work contents.

This activity is finished and the output of this activity is included in the activity 6-1-1.

### **6-3-2 Establishment of Financing and Accounting System**

(1) Objective

Accounting systems are specified by the Vietnamese Accounting Standards in detail. We develop the accounting system of the O&M Company in compliance with it. Since the company needs account

processing specific to urban railways, we support to define accounting policies such as income and expenditure criteria, depreciation, etc., and then support devising a mechanism to keep track of income and expenditure.

Many accounting systems are processed by office IT systems. We therefore support the preparation of accounting workflows for accurate accounting, considering the study of system specifications.

## (2) Progress and outputs

Studying the Japanese Accounting System, urban railways' accounting systems, and Vietnamese laws and regulations, we prepared various draft rules. Actual progress and outcome are shown below.

- In and after May 2013: Studying the rules for fixed asset accounting treatment, income recording, etc. of the Japanese Accounting System, urban railways' accounting systems, the Vietnamese Accounting Standards, as references to develop draft rules.
- In and after July 2013: Studying cash handling system and procedures at the train station of Tokyo Metro, as references to prepare draft rules for cash handling.
- In and after Sep. 2013: Studying Tokyo Metro's rules for accounting, fixed asset management, cash handling, and various workflows, as references to develop draft rules. Studying Tokyo Metro's authority of management systems on expenditure approval, and reflecting results to devising its mechanism.
- In and after Oct. 2013: Clarification of the points of systems, and preparation of various draft rules, after organizing issues on accounting, fixed assets, and cash handling.
- In March 2014: Proposing Accounting Rules at 3rd JCC
- In and after Mar. 2014: Clarification of processes, relevant departments, approver and forms required for each activity, reviewing the typical journal entries, and developing detailed workflow of accounting, fixed asset management, and cash handling.
- In and after Oct. 2014: Preparing accounting titles in reference to Vietnamese Accounting Standards.
- In July 2015: In December 2014, the local accounting system including the chart of accounts has been modified by the MOF circular 200/2014/TT-BTC. Accordingly, it has been reflected into the draft rules.
- In November 2015: Reviewing the company rules which C/P has developed based on the material provided by TA team

This activity is finished and the outputs of this activity are shown in the following material:

**Appendix8-6-3-2-A** Accounting Rules

**Appendix8-6-3-2-B** Rules for Fixed Assets

**Appendix8-6-3-2-C** Rules for Cash Handling

## (3) Others (recommendation toward starting commercial operation)

Since we prepared draft accounting rules not on the premise of the transfer of Line 2A, it is needed to develop further account title codes, asset classification tables, etc. as soon as the details of the transfer are revealed. Because the details of non-fare businesses are uncertain, it is recommended to continuously study income recording methods, provisions, etc., depending on the progress of the consideration.

Since rules for cash handling are related to the fare revenue processing of train stations, it is needed to study them based on the results of the decision on ticket processing including IC cards.

## 6-3-3 Prescription of Rules for Budget and Settlement

### (1) Objective

The objective of this activity is to support the preparation of workflows on budgeting. We also support



the construction of mechanisms to prepare closing and reporting materials.

## (2) Progress and outputs

We studied the practices of budgeting and settlement in Japanese urban railways and in Vietnam to prepare draft rules. We also checked Vietnamese tax systems and listed period of tax payment and report. Actual progress and outcome are shown below.

- In and after June 2013: Studying rules on closing documents, reporting documents, etc. specified in the Vietnamese Accounting Standards as references to develop draft rules.
- In and after Sep. 2013: Studying the rules and workflows for budgeting and settlement of Tokyo Metro, as references to develop draft rules.
- In and after Oct. 2013: Organization of issues related to budgeting and settlement to clarify the points of systems, and preparation of draft rules for budgeting and settlement.
- In March 2014: Proposing at 3rd JCC.
- In and after Mar. 2014: Clarification of the process, relevant departments, approver and forms required for each activity, reviewing the typical journal entries, and developing detailed workflow of budget and settlement.
- In and after Oct. 2014: Studying closing adjustment and quarterly reports for the start of business operation after company establishment.
- In July 2015: In December 2014, the local accounting system including the chart of accounts has been modified by the MOF circular 200/2014/TT-BTC. Accordingly, it has been reflected into the draft rules.
- In November 2015: Reviewing the company rules which C/P has developed based on the material provided by TA team

This activity is finished and the outputs of this activity are shown below.

**Appendix8-6-3-3-A** Rules for Budgeting

**Appendix8-6-3-3-B** Rules for Settlement

## 6-3-4 Prescription of purchasing rules

### (1) Objective

The objective of this activity is to support the establishment of contract procedures and the development of workflows on material procurement centered on inventory management, focusing on the procurement of railway maintenance materials.

### (2) Progress and outputs

We studied material management and procurement systems in Japanese urban railways and in Vietnam to develop workflows and draft rules. Actual progress and outcome are shown below.

- In and after June 2013: Studying rules for inventory management specified in the Vietnamese Accounting Standards, as references to develop draft rules.
- In and after July 2013: Studying Tokyo Metro's workflows on material management, as references to prepare draft rules.
- In and after Sep. 2013: C/P's visiting Tokyo Metro's material center, its rolling stock division's warehouses, etc., and learning the outlines of its material management methods, material management IT system, etc. at the time of their training in Tokyo.
- In and after Nov. 2013: Studying Tokyo Metro's material management and procurement system, as references to prepare draft rules.

- In and after Jan. 2014: Studying obtained information on bidding methods in Vietnam, clarifying contract methods, and preparing draft rules for procurement including method-wise procedures. Clarification of the points of rules based on the organization of issues on material management in railway business, and preparation of draft rules for material management.
- In September 2014: Proposed the draft rules at 4th JCC.
- In and after Oct. 2014: After clarification of the process, relevant departments, approver and forms required for each activity, the following activities have been performed: reviewing the typical journal entries, and developing detailed workflow of tender and contracts, and material management.
- In November 2015: Reviewing the company rules which C/P has developed based on the material provided by TA team

This activity is finished and the outputs of this activity are shown in the following material:

- Appendix8-6-3-4-A** Contract Management Rules
- Appendix8-6-3-4-B** Tender and Contract Process Rules
- Appendix8-6-3-4-C** Procurement rules of services and goods outside the scope of bid
- Appendix8-6-3-4-D** Material Management Rules

### 6-3-5 Study of Measures to Maintain Financial Soundness

#### (1) Objective

The objective of this activity is to devise the means for predicting the year to date profit and loss at an early stage.

#### (2) Progress and outputs

A company's profit and loss structure changes significantly depending on its contract with Hanoi city, it is needed to determine the said contractual form before discussing financial soundness. As mentioned in Chapter 5, the company concerned is at the stage where its establishment has just been completed, and therefore, the details of the contract with Hanoi city has not been determined yet.

In Vietnam, urban railway is categorized in "public transport in urban area". As briefly described in the section 2 of the chapter 2, the subsidy schemes for urban public transport is stipulated in the MOF's circular 25/2014/TT-BTC. This circular says that the schemes applicable for urban public transport secure one of profit distribution items, welfare fund<sup>6</sup>. Thus, HMC can expect a certain level of profit. The above decree treats costs as necessary expenses for providing public services and insists the importance of cost measurement. In other words, recognizing unnecessary costs must be avoided.

From the situation above, in this project, the discussion points in the revenue and expenditure management have been extracted through studying the following issues.

- Financial Support Scheme of Other Asian MRTs
- Financial Support Scheme of Hanoi (in referring to above cases)
- Financial KPIs to be considered by HMC

This activity is finished and the output of this activity is shown in the following material:

- Appendix8-6-3-5** Study of Measures to Maintain Financial Soundness

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<sup>6</sup> The profit distribution method for State owned enterprises is stipulated in the Decree 09/2009/ND-CP. Welfare fund is defined as one of the said method.

### **6-3-6 Development of Work Procedures without Office IT System**

#### (1) Objective

The office IT system is an essential system from the establishment of the O&M Company, but the system may not be constructed in time. We therefore develop the workflow and prepare to use PCs managing data to be processed in the system.

#### (2) Progress and outputs

MRB made an inquiry to VNRA for the information on the ordering status of the office IT system (in September 2013 and again in October 2013). It was confirmed that the Line 2A project does not order the system (VNRA official document No. 2202/CDSVN-KHCN&MT dated on December 2, 2013).

After the establishment of O&M Company in June 2015, a simple software, namely the Cybersoft, has been implemented by their own budget for its accounting area. Since this project phase is the timing before Line 2A opening, the software covers only limited area in the head-quarter. After the Line 2A opening, however, there will be needed to manage huge data-set, thus it is desired to complete the preparation of the IT system implementation by that time.

The range of IT system application at the next step has not been determined, but on the following items for which the completeness and the confidentiality of a large quantity of data are highly required, thus we prepared workflows assuming the use of the system. - Management of accounting documents (e.g. posting to the general ledger)

- Transfer of unrealized profit and expenditure
- Management of fixed assets (from acquisition to retirement)
- Depreciation calculation of assets
- Preparation of trial balance sheet

In addition to above, after workflows in the financial domain are prepared, we studied a system needed for data management, taking account of the progress of the implementation of the office IT system.

This activity is finished and the output of this activity is shown in the following material:

**Appendix 8-6-3-6** Accounting Workflow

### **6-3-7 Work Trial of Head Quarter after the Establishment of O&M Company**

#### (1) Objective

After the establishment of O&M Company, at the phase where the main officers in the financial department has been assigned, it should be confirmed if the company rules developed above meet the actual work, and if any reflect the results to the rules for finalization.

#### (2) Progress and outputs

After the company is established, in October 2015, the C/P were employed and their operation started. In response to this situation, the rules developed above were finalized.

This activity is finished. There is no output in the scheme of this activity.

### **6-3-8 Work Trial of Head Quarter towards the Opening of Line 2A**

#### (1) Objective

It should be confirmed if the company rules developed above meet the actual work, and if any reflect the results to the rules for finalization in the finance department towards the opening of line 2A.

#### (2) Progress and outputs

This activity has been deleted because of a temporal restriction.

## Chapter 6-4 Sales

### 6-4-1 Prescription of Organization Rules regarding Sales and Non-fare Businesses

#### (1) Objective

The objective of this activity is to support the prescription of the organization rules for business and related work, through their visualization.

#### (2) Progress and outputs

One way of constructing organization is to divide it into railway business and non-railway business. At the start, however, expected amount of work is small. We therefore conducted the study on the assumption of one organization. Actual progress and outcome are shown below.

- |                |  |
|----------------|--|
| In April 2013: | Explanation of the organization structures of the business divisions of Tokyo Metro (organizations and their roles).   |
| In May 2013:   | Detailed explanation of the work contents of business divisions.<br>- Clarification of the roles of business divisions of the O&M Company and the listing of their work contents.<br>- Construction of organization structures and clarification of the role of each division. |

This activity is finished and the outputs of this activity are included in the outputs of activity 6-1-1.

Also, the calculation methods of the staffing requirements for HQ and OU of Sales division were learned as below.

- |                    |  |
|--------------------|--|
| In September 2013: | Checking the contents of “Plan of Organization Structure and Personnel Arrangement for Hanoi Urban Railway Company (ver. 8.0)” presented by Vietnam Railway Administration (VNRA) as the recruitment and education plans for Line 2A and submission of comments to VNRA. |
| In September 2013: | Estimating the amount of work at HQ based on its work structure, and clarifying duty positions and the staffing requirements.  |

This activity is finished and the outputs of this activity are included in the outputs of activity 6-2-5.

#### (3) Others

We tried to give detailed explanation focusing on workflows for transferring the knowledges and experiences in railway business to C/P. Based on the idea of C/P, it was decided to add a public relations division (from the viewpoint of customer services) to the business division.

Besides railway business work, related business and public relations work are added. The resultant organization seems to be a little too large. In the future, a mechanism to facilitate the cooperation between divisions will be needed with the progress of work.

### 6-4-2 Prescription of General Transport Contract

#### (1) Objective

The objective of this activity is to support the prescription of the general transport contract between the O&M Company and passengers.

#### (2) Progress and outputs

We prescribed the general transport contract, referring to the rules of Tokyo Metro, the general transport contract of Urban Railways in HCMC, etc. and checking the consistency with existing laws and regulations such as the Vietnamese Railways Law. Actual progress and outcome are shown below.

- |                        |  |
|------------------------|--|
| In and after May 2013: | Introduction and explanation of the contents of Tokyo Metro’s similar rules. |
|------------------------|--|

Checking and explanation of the general transport contract of Urban Railways in HCMC.

Reference to the urban railway-related articles of the Vietnamese Railways Law

In and after Aug. 2013: Organization of description and preparation of the table of contents.  
Preparation of the contents

In January 2014: Final confirmation of description

In February 2014: Proposing at 3rd JCC.

In November 2015: Reflecting the contents of parts related the fare policy and finalizing the draft at the moment.

This activity is finished and the outputs are shown in the following material:

#### **Appendix 8-6-4-2** Passenger Transport Contract

##### (3) Others

We reflected the contents of parts related the fare policy separately in the general transport contract even though the fare policy has not determined by HPC yet. We consider that we have to continue to study these issues, as there may be cases where it is necessary to modify the contents of the general transport contract accompanying future increases in the number of lines.

#### **6-4-3 Preparation of Draft Cash Handling Manual for Station Staff**

##### (1) Objective

The objective of this activity is to support the preparation of work manuals such as a cash handling manual. After preparing a draft using Japanese manuals for reference, we study the equipment of Line 2A and prepare a cash handling manual.

##### (2) Progress and outputs

In preparing a cash handling manual, we made an explanation with a focus on the Tokyo Metro's mechanism and its flow of cash handling. We also arranged visits to the sites of cash handling work for better understanding. Actual progress and outcome are shown below.

In and after May 2013: Explanation a mechanism of cash handling and its flow at Tokyo Metro.

In Aug. and Sep. 2013: Implementation of training in Japan (visits to actual work in stations)

##### (3) Others

The trainees gained a general understanding of the mechanism of cash handling and its flow. However, since tickets types haven't been determined yet, and also actually used equipment in Line 2A hasn't been determined yet, we haven't prepared a practical work manual yet.

This activity is finished. There is no output in the scheme of this activity.

#### **6-4-4 Development of Fare Setting System and Calculation of Fares**

##### (1) Objective

The objective of this activity is to support actual fare calculation work, based on the fare levels, fare systems, fare revision systems studied in "2-1 Development of a Fare Revision Method."

##### (2) Progress and outputs

We explained the fare systems used in Japan and other countries. We also gave a detailed explanation of the distance fare recommended in the SAPI survey, and explained the preparation method of a "distance fare table" as the final product.

This activity is finished and the outputs are included in the outputs of activity 2-1.

## 6-4-6 Devising non-fare business plans

### (1) Objective

Railway companies basically offer a transportation service, but they also offer other services. The offer services, such as commercial, real estate, advertisement businesses (non-fare businesses), to customers in and around stations. The objective of this Activity 6-4-6 is to make plans and strategies of non-fare businesses, and prepare to offer customers services for daily life beyond transportation services

### (2) Progress and outputs

Since the railway company initially offers services in and around the stations of Line 2A, we tried to survey a possible physical scale of non-fare businesses. At this stage, however, we have not obtained the reference materials of Line 2A such as design drawings, and we have not been able to conduct detailed surveys on the physical possibilities. We therefore surveyed the commercial areas and tracked the movement of people along Line 2A. Based on an expected number of passengers, we selected train stations with a high priority of development and conducted detailed survey. We later obtained the ground plans of Line 2A stations and surveyed the possibilities of installation of stores. However upon the registration of HMC, Station store operation was not stipulated in the business contents of the article of incorporation.

Since it is difficult to consider advertising business only by the ground plans, the consideration of the location where advertising facilities will be installed, however, we selected the stations with a high priority and planned to conduct trial operation in these stations after the commencement of Line 2A operation and acquiring the know-how, we proceed to the operation of the advertisement in the other station. As for station store operation, we made a plan including the procedures for business approval by HPC.

In August 2013:	Visiting and researching each station of Line 2A.
In September 2013:	Analyzing commercial areas around the train stations, and studying appropriate commercial facilities and advertisements, based on the results of the visits.
In and after Nov. 2013:	Obtaining the ground plans of Line 2A, and starting the study and survey of the physical possibilities. Studying non-fare business strategies (in 6-1-3 Development of Management Strategy) Studying rules for non-fare businesses
In January 2014:	Studying the form for non-fare business operation such as direct operation, outsourcing and operation by subsidiaries.
In February 2014:	Based on the study, starting to make plans for non-fare business.
In November 2015	Completion of the draft of Non-fare Business Plan

This activity is finished and the outputs of this activity are shown in the following material,

#### **Appendix 8-6-4-6** Non-fare Business Plan

### (3) Others

Since the field of urban railways is not only a new field but also a complicated one, it's so hard to imagine non-fare business. But, because we have started with the explanation of basic knowledge and inspected the non-fare business of Tokyo Metro in August 2013, it has gotten easier to imagine. We first show the samples and clues provided by TA to C/P staff, and let them do the work from scratch so that they can practically carry out the above devising and revising by themselves.

## 6-4-7 HQ's Work Trial After establishment of O&M Company

### (1) Objective

The objective of this activity is to support the development a system for proper management and supervision of sales-related work, and particularly station management after establishment of O&M Company.

(2) Progress and Outputs

We consider some adjustments for execution actual management of HQ’s sales-related work based on the activity 6-4-1, 6-4-2 and 6-4-3.

This activity is finished. There is no output in the scheme of this activity.

**6-4-8 Work Trial of Head Quarter towards the Opening of Line 2A**

(1) Objective

It should be confirmed if the company rules developed above meet the actual work, and if any reflect the results to the rules for finalization in the business department towards the opening of line 2A.

(2) Progress and outputs

This activity has been deleted because of a temporal restriction.

**Chapter 6-5 Train Operation**

**6-5-1 Preparation of Organization Rule Regarding Train Operation**

(1) Objective

Implementing train operation plans based on rules for train operations need organizations to follow what are specified here. Aiming at preparing organizations to achieve these goals, we prescribe “organization rules for train operation work.”

(2) Progress and outputs

Since some of these rules include those closely related to the company’s personnel management, we conducted the study in cooperation with personnel management-related divisions. We studied the following issues:

- Types of train operation work divisions and allocation of officers.
- Rules for setting each office hierarchy and authority of management.
- Criteria to develop the staff duties specified here.

As necessary number of staff changes depending on organization structures, we studied organization rules focusing on “HQ’s train operation divisions” and “OCC organizations” in parallel with an incorporation proposal. Actual progress and outcome are shown below.

In May 2013:	Detailed survey of work contents of each division, based on the results of instruction for C/P to prepare a proposal on the organizations of Hanoi Metro’s train operation divisions.
In June 2013:	Explanation to C/P about the connection between the work of each division in train operation using reference materials.
In September 2013:	Explanation in C/P training in Japan on Tokyo Metro HQ’s train operation divisions and OCC, organization structures and work contents in operation sections, and cooperation between each division.
In September 2013:	Requested confirmation of the contents of the suggestions for the recruitment and education plans for Line 2A presented by VNRA.
In June 2015	Based on Ministerial ordinance “Rules of relating to the staff of the duties involved directly in the operation of the urban railway” C/P developed the HMC Office Organization of Train Operations Staff (Draft) and made the position of Train Operations Staff clear.  Besides, C/P developed HMC Train Operarion Management Manual (Draft),

provide the structure of organization.

This activity is finished and the outputs of this activity are shown in the following material

**Appendix8-6-5-1-A** HMC Office organization of train operations staff (Draft)

**Appendix8-6-5-1-B** Function and responsibility of train operation department (Head Quarter)  
(Draft)

## **6-5-2 Learning about the process of preliminary study regarding staffing requirements**

### (1) Objective

It is essential for implementing train operation plans complying with labor laws and regulations to allocate a proper number of staff. We aim to understand the basis of calculating the number of staff for each work.

### (2) Progress and outputs

Using Tokyo Metro's duty rules as an example, we prepared a reference on calculation concepts as TA and distributed to C/P. Based on them, C/P understood the basis of calculating the number of staff for each work. The basic calculation concepts described in the reference are as follows:

#### a) Calculation of the number of train staff

First of all, the concept of "base duty time" showing the amount of work per duty is important. Since it is affected by working hours "per day," "per week," or "per year" defined by the country's Labor Standards Law, we explained Japanese case examples to deepen understanding.

#### b) Calculation method of the numbers of operation sector supervisors and OCC directors

This is greatly affected by the country's labor practices, such as "whether a 24 hours duty is allowable" in addition to the working hours specified by the Labor Standards Law described in the above item a). We therefore studied the concepts of calculation methods, taking consideration of the various types of work (three eight-hour shifts work, two twelve hour shifts work, etc.). Actual progress and outcome are shown below.

In July 2013:	Preparing a reference on the calculation methods of the number of train operation staff as TA, and distributing it to C/P, gaining knowledge from questions from C/P and pending issues in TA.
In September 2013:	Explanation in C/P training in Japan on the concept of the numbers of staff in OCC and duty sections
In October 2013:	C/P's calculation of the number of staff as one of recruiting conditions for Line 2A.
In October 2015:	C/P developed HMC Train Operation Management Manual (Draft), in V.Conditions for Operation staff, mentioned about regulations related this clause.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-1-6.

### (3) Others

We mention about the Rules for Staff Education and Training Plans in next 6-5-3.

## **6-5-3 Learning about the skills and the knowledge for Train Drivers' Management and Operation**

### (1) Progress and outputs

The progress of this stage is shown below.

- The prescription of rules for "office hierarchy" and "duties" is conducted together with the above Activity 6-5-1.

At the same time, C/P has learnt the knowledge of the the training and the management of the drivers.



Actual progress and outcome are shown below.

- |                   |  |
|-------------------|--|
| In November 2014: | Showing the documents related to the training and the management of the drivers.<br><br>Understanding the laws basis for the training plan and some points to be considered, in accordance with the documents.   |
| In June 2015:     | Refferring to Circular “Regulation on contents and procedures of examination for issuance of urban railway driving license (Draft)”, C/P researched on the training and management of urban railways of Vietnam. |
| In August 2015:   | C/P developed HMC Driver’s training rules(Draft) and HMC Driver’s management rules(Draft).   |

This activity is finished and the outputs of this activity are shown in the following material:

**Appendix8-6-5-3-A** Hanoi Metro driver training rules (Draft)

**Appendix8-6-5-3-B** Rules on train driver management (Draft)

## (2) Others

At this stage, a regulations of the administration about the training and management of drivers has not been established, the rules of outputs are refered the case of Tokyo Metro. These rules must be modified when the actual regulations become effective.

Moreover, in the HMC Driver’s training rules(Draft), the time HMC starts training by their own training center has not been clear, however we consider that HMC starts them in future.

## 6-5-4 Learning about a Methodology to make Train Schedules

### (1) Objective

The objective of this activity is to learn the proper methods of train operation plans and deepen the understanding of key points in evaluating Line 2A train diagrams, by understanding the drawing methods of train diagrams.

### (2) Progress and outputs

The processes for learning the basic preparation methods of train operation plans are conducted in the following way focusing on the four points and C/P has learnt the basic knowledge.

- Understanding travel time between stations (preparation methods of run curves) (Note: in parallel with Activity6-5-5)
- Understanding stop time at stations (calculation methods of stop time at stations) (Note: in parallel with Activity6-5-5)
- Understanding demand forecasts (calculation methods of proper transportation capacities)
- Understanding the number of cars and staff for transportation capacities (calculation methods of the number of cars and staff)

C/P had acquired the basic knowledge, and actual progress and outcome are shown below:

- |                    |  |
|--------------------|--|
| In July 2013:      | Completing learning the calculation methods of the number of staff from planned train diagrams in Activity 6-5-2.  |
| In September 2013: | Explaining the key points in preparing train diagrams in C/P training in Japan.  |
| In November 2013:  | Start of preparing references submitted to C/P, based on the “references for train diagram preparation” of Transportation Section, Train Operation Department and the training material “Transportation Plans” of Training |

Center.

- In December 2013: Learning knowledge through questions from C/P and pending issues in TA, distributing the references mentioned in the above four items as soon as they are completed.
- In January 2015 Understanding the preparation methods of the run curves and train diagrams in accordance with the four points described above.
- In October 2015: C/P developed HMC Train Operation Management Manual (Draft), in “IV. Conditions for Facilities of Train Operation”, “VI. Making of Train Operation Plan” and “VIII. Evaluation of Train Operation Plan”, mentioned about regulations related this clause.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-1-6.

### (3) Others

Train Operation Management Manual (Draft) must be applied to the evaluation basis of the train operation plan, developed by each OU.

## **6-5-5 Learning about a methodology to draw Run Curves**

### (1) Objective

As described in Activity 6-5-4, one of the important conditions in preparing train diagrams is the concept of “train operation time segments.” To obtain the values, we need to correctly calculate “travel time between stations” and “stop time at stations.” We aim to acquire the preparation (calculation) methods of “run curves” and “stop time at stations.”

### (2) Progress and outputs

Since this activity is one of the elements constituting the above 6-5-4, we conducted it together with the item 6-5-4.

As for the “run curves” included in the calculation methods of train operation time segments, it is not especially important to aim at learning manual preparation methods because preparation work has been mechanized. It is rather important to understand “what conditions must be considered when preparing run curves.” Since C/P in charge of train operations has learned the knowledge on railway vehicles at university, the C/P understands “vehicle performance” and “rolling resistances,” which are basic factors constituting run curves, to some extent. This activity therefore focused on learning knowledge on run curves centered on the “train operation theory” included in training curriculums on train driver licensing systems.

This activity is finished and the outputs are included in the outputs of activity 6-1-6.

## **6-5-6 A collection of 2A Line train operation relationship rules**

### (1) Objectives

Collecting the regulations of 2A line which starts services in the first place, through those materials, they learn about by investigating each activities. At the same time, we estimate the valuations of train operation plan of 2A Line.

### (2) Progress and outputs

This time we could not procure the materials of 2A line which are essential for achievement this clause. Introducing some cases of Tokyo metro, other urban railways in Japan and other countries in the world, in Activity 6-1-6 and from 6-5-1 to 6-5-5, we guided a viewpoint after obtaining the materials of 2A line and C/P learned knowledge.

This activity is finished and the outputs are included in the outputs of activity 6-1-6 and 6-5-3.

## Chapter 6-6 Rolling Stock Maintenance

### 6-6-1 Prescription of organization rules regarding rolling stock maintenance

#### (1) Objective

The objective of this activity is to prescribe organization rules, after clarifying the functions and roles of headquarters divisions (HQ) and operational units divisions (OU) in rolling stock maintenance work. We also prepare the workflows and forms needed for the prescription of rules for rolling stock maintenance and the maintenance rules required for rolling stock maintenance work.

#### (2) Progress and outputs

##### - Organization Rules

In prescribing organization rules, we clarified the segregation of duties needed in rolling stock divisions of the O&M Company as a whole, and defined the functions and their details of HQ and OU. We then studied the organizational forms of each division. Actual progress and outcome are shown below.

In and after April 2013: Listing the segregation of duties excluding unnecessary items for the O&M Company based on the case examples of Japanese urban railway company with abundant experience of urban railway operations, referring to the role responsibilities between HQ and OU as well as their organizational forms in SAPI report.

In and after May 2013: Preparation of functions and authority of HQ and OU, adding items missing in the segregation of duties, and classifying them into those of HQ and OU, referring to the reference materials on the functions and roles of HQ and OU described in the report<sup>7</sup> of the task force established in HPC prior to TA, and on the authority of OU's duty positions in Line 2A.

In and after May 2013: Function-wise grouping of HQ's duty positions and preparation of HQ's work organizations.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-1-1.

The above material describes that OU directly develops and implements maintenance plans and HQ approves implementation plans and results.

##### - Rolling Stock Maintenance Rules

Although Vietnam has an experience of diesel railways operation, it has neither urban railways nor their operational experiences. We therefore decided to prescribe rules for the O&M Company, following the specifications of the rolling stock introduced by the company, after understanding the case examples of the rolling stock maintenance of Japanese urban railway company.

Actual progress and outcome are shown below.

In and after May 2013: Explanation of Japanese urban railway company's rolling stock maintenance rules (Electric Train Maintenance Practices) for understanding the matters required for rolling stock maintenance.

(Japanese urban railway company's Electric Train Maintenance Practices specify requirements for staff, inspection, and inspection reports, including the types and periods of inspection, as well as equipments to be inspected and inspection items for each type of inspection.)

In and after May 2013: Explanation of the rule management structure between railway regulator and railway business operators in Japan.

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<sup>7</sup> The report refers to the report of SAPI implemented prior to TA, where OU is defined as an operational unit established for each line, and the main responsibility of HQ is defined as the approval of work conducted by OU.

=> We explained that in Japan the management form is complicated due to the past history, but in the countries starting to build new urban railways it should be simpler than the Japanese one.

In and after May 2013: Instruction of checking and deciding the equipments to be inspected, based on the outline technical specifications (Line 2A rolling stock outline specifications) to be used in Line 2A.

In and after May 2013: Surveying rules for rolling stock maintenance in Vietnam.

From June to July 2013: Prescribing rolling stock maintenance rules in accordance with the rules for rolling stock maintenance in Vietnam and the technical specifications of Line 2A, based on Japanese urban railway company's maintenance rules.

In and after Sep. 2013: Visiting in training in Tokyo all types of work related to Japanese urban railway company's practical rolling stock maintenance.

=> Improved C/P's understanding of the description in Rolling Stock Maintenance Rules and its use and management, from sensitive observation of actual work.

From Oct. to Nov. 2014: Revising Rolling Stock Maintenance Rules which were prepared so far based on outline document of rolling stock maintenance (Technical Design Book7, Vol2).

From Oct. to Nov. 2015: Completing draft of Rolling Stock Maintenance Rules after HMC established.

This activity is finished and the outputs of this activity are shown in the following material:

#### **Appendix8-6-6-1-A** Draft of Rolling Stock Maintenance Rules

Referring to Japanese urban railway company's maintenance rules, we prescribed draft of maintenance rules complying with Vietnamese laws and regulations. As rules for inspection practices, they include the types and details of inspection, requirements for inspection, rules for repair and replacement, and the roles of implementation organizations.

Regarding Line 2A rolling stock maintenance, there are no documents which includes detailed specifications of equipment and maintenance method. Therefore, draft of maintenance rules was prescribed based on the outline documents which were acquired during this activity and general knowledge of urban railways.

It is necessary to review and revise maintenance rules accordingly based on detailed maintenance plan of line 2A and other lines which will be available in the future in order to arrange differences between each line's maintenance types. In doing so, C/P understood that the revise should be on more safety side through TA's explanation, for example a maintenance period should be set shorter and etc.

#### **- Workflows and forms**

As for implementing rolling stock maintenance, we developed not only rolling stock maintenance rules but also the workflows showing how to conduct rolling stock maintenance, as well as the forms needed in the process of work implementation. Actual progress and outcome are shown below.

In and after July 2013: After understanding the details and procedures of rolling stock maintenance in OU, explaining the need to define the details of work implementation and procedures at HQ responsible for the management of the maintenance.

From July to Sep. 2013: Referring to Japanese urban railway company's work implementation flows, and preparing workflows in accordance with HQ's segregation of duties.

In and after Sep. 2013: Visiting in training in Tokyo all types of work related to Tokyo Metro's practical rolling stock maintenance.

=> Improved C/P's understanding of work implementation flows.

From Sep. to Oct. 2013: Referring to rolling stock maintenance work observed in training in Japan, preparing the forms needed for implementing workflows.

From Oct. 2013 to June 2014:

Preparing specific form (tentative) referring to actual form already used in Japanese urban railway company.

From Oct. to Nov. 2015: Describing these contents as a part of draft of Rolling Stock Maintenance Manuals after HMC established.

This activity is finished and the outputs of this activity are shown in the following material:

**Appendix 8-6-6-1-B** Draft of Rolling Stock Maintenance Manuals (relevant part of procedures for rolling stock maintenance (workflows))

Regarding workflows, based on the functions and authority of headquarters and operational units, we described workflows as a part of draft of Rolling Stock Maintenance Manuals for reporting the plans and results of implementation following the procedures of maintenance practices conducted by OU, as well as workflows for approving the plans and results of implementation conducted by HQ.

Regarding forms, in accordance with workflows, we listed the forms needed for conducting maintenance such as the preparation of inspection plans, staff allocation, and budgets, as well as those needed for reporting and approval such as the reporting of inspection results and failure conditions.

We prepared the forms in Vietnamese referring to the forms in Japanese urban railway company as examples. The forms are based on the list of form, and they are in accordance with maintenance rule which were already prepared so far. Prepared form as a part of draft of Rolling Stock Maintenance Manuals are as follows; train inspection schedule, record of maintenance, preparing budget and dealing with accident and failure.

We considered that the forms can be used in all operation lines which has different specifications respectively. When the Line2A's method of maintenance and management are identified in the future, it is necessary to check and revise for more effective use in actual maintenance practices.

## **6-6-2 Learning about the process of preliminary study regarding staffing requirements and maintenance budget**

### (1) Objective

The objective of this activity is to learn the calculation methods of the budgets and staffing requirements of rolling stock maintenance work by conducting actual calculation for the case examples of Line 2A, which is the first line to start business.

### (2) Progress and outputs

#### **- Learning the budget calculation methods of rolling stock maintenance work**

Budgets for rolling stock maintenance are calculated by specifying the replacement parts and consumables needed to conduct inspection and dealing with failures in accordance with actual rolling stock specifications based on maintenance rules, and finding their unit prices and set replacement periods. In learning the budget calculation methods, we added the calculation of budgets needed for the future renewal of rolling stock and improvement works such as a large-scale improvement. Actual progress and outcome are shown below.

In and after Sep. 2013: Preparing a list of detailed rolling stock maintenance work based on rolling stock equipment specifications, clarifying actual practices for each maintenance work, and confirming that all pieces of work can be directly performed by O&M Company.

In and after Nov. 2013: Explaining and understanding the elements constituting rolling stock maintenance budgets based on the case examples of Japanese urban railway company.

From Nov. 2013 to Jan. 2014:

Preparing draft of budget manual for rolling stock maintenance for HMC

In and after Oct. 2014:

Although once all pieces of work can be directly performed by O&M Company during the consideration of work contents of rolling stock maintenance, we re-considered about this issue and then listed the items which can not be implement directly and the items which have possibility of outsourcing in the future.

From Oct. to Nov. 2015: Describing these contents as a part of draft of Rolling Stock Maintenance Manuals after HMC established.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-6-1.

Regarding budget calculation method, the required maintenance cost for each maintenance work were described as a part of draft of Rolling Stock Maintenance Manuals.

Due to the lack of specific information of Line 2A, learning the calculation methods of the budgets for rolling stock maintenance work by conducting actual calculation for the case examples of Line 2A were not performed.

#### **- Learning the calculation methods of the staffing requirements for rolling stock maintenance work**

We conducted the training for C/P to learn the calculation methods of the staffing requirements for rolling stock maintenance work by calculating the number of staff needed to conduct maintenance based on the details and periods of inspection specified by maintenance rules and on organization structures. Actual progress and outcome are shown below.

In September 2013:

Checking the contents of the suggestion presented by Vietnam Railway Administration (VNRA) as the recruitment and education plans for Line 2A.

In and after Sep. 2013:

Estimating the amount of work at HQ based on its work structure, and clarifying duty positions and the staffing requirements. As for OU, the details of rolling stock specifications and maintenance work on Line 2A are unknown. Assuming that inspection on the items similar to those of Japanese urban railway company is conducted at the proposed periods, we checked the validity of the staffing requirements and clarified the items needing detailed checking, and submitted a comment to VNRA.

In and after April 2014:

Checking the contents of revised recruitment and education plans for Line 2A (Ver. 16).

This activity is finished and the outputs of this activity are included in the activity 6-2-5.

Regarding HQ, based on organization rule prepared with activity 6-6-1, prescribing tasks, staffing requirements and recruitment criteria in accordance with HQ's segregation of duties.

Regarding OU, confirming the number of staffing of Line 2A based on preconditions that its maintenance is similar to Japanese urban railway company, because the detailed maintenance contents were not available.

### **6-6-3 Learning about the process for implementation plan of rolling stock renewal**

#### **(1) Objective**

The objective of this activity is to learn the concept of rolling stock renewal through the case examples of Japanese urban railway companies, and acquire the ability to devise such plans. Another objective is to learn the preparing methods of the maintenance manuals needed for continuous rolling stock maintenance and the staff education and training plans.

#### **(2) Progress and outputs**

##### **-Maintenance manuals**

The specific maintenance manuals to implement rolling stock maintenance will be provided by contractor. Hence, we aim to make C/P have enough knowledge to judge whether it is appropriate. We aim to C/P learn method of preparing maintenance schedule and train allocation schedule, and learn how to manage organization to implement inspection, and learn how to manage multi operation lines which has different technical specification respectively. Actual progress and outcome are shown below.

In and after Aug. 2013: Introducing maintenance manuals for major equipment in Japanese urban railway company.

In and after Aug. 2013: With respect to how to make a maintenance schedule, conducting training of making an inspection schedule and train allocation schedule through the example of actual sample

From Nov. 2013 to May 2014:

Preparing manual that is mentioned the necessary matters for making an inspection schedule

From Nov. 2013 to May 2014:

Preparing manual for organization of implementing daily inspection

From May to June 2014: Preparing manual for managing multi operation lines which has different technical specification respectively

From Oct. to Nov. 2015: Describing these contents as a part of draft of Rolling Stock Maintenance Manuals after HMC established.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-6-1.

Regarding procedure of train allocation plan, describing about how to prepare inspection schedule and train allocation schedule for rolling stock maintenance as a part of draft of Rolling Stock Maintenance Manuals.

Regarding managing method for organization of implementing daily maintenance, after listing work contents implementing in the daily maintenance organization, describing about how to manage the organization as a part of draft of Rolling Stock Maintenance Manuals.

Regarding adjustment method between multi operation lines, the lines to be started service in HMC have different technical specifications respectively. Describing about notices for the managing such multi lines as a part of draft of Rolling Stock Maintenance Manuals.

#### **- Staff education and training plans**

In order to implement rolling stock maintenance, it is necessary for person who is involved in rolling stock maintenance to have enough knowledge and skill surely. We aim to make C/P learn the matter through example in Japanese urban railway company. Actual progress and outcome are shown below.

In and after Nov. 2013: Introducing the contents of education and training that are conducted in Japanese urban railway company. And undertake preparing manual that is necessary for Hanoi Metro to conduct education and training

From Nov. 2013 to May 2014:

Preparing manual for staff education and training required in HMC.

From Oct. to Nov. 2015: Describing these contents as a part of draft of Rolling Stock Maintenance Manuals after HMC established.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-6-1.

Regarding staff education and training, after listing contents of education and training and implementation method which are required for rolling stock maintenance, describing about staff education and training as a part of draft of Rolling Stock Maintenance Manuals.

#### **- Rolling stock renewal plans**

The life span of rolling stock change greatly depending on whether proper maintenance is provided. Selecting whether to prolong the life through a large-scale improvement or to renew them is an important point. Study of specifications for renewing rolling stock should be performed making the maximum use of findings obtained thorough failure information and maintenance. We aim to make C/P understand the necessity of the above and learn to decide specific rolling stock renewal plans. Actual progress and outcome are shown below.

From Feb. to Mar. 2014: Preparing manual for rolling stock renewal plans

From Oct. to Nov. 2015: Describing these contents as a part of draft of Rolling Stock Maintenance Manuals after HMC established.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-6-1.

Regarding rolling stock renewal plans, prescribing effect and necessity of large-scale improvement and renewal, and the notice for implementing large-scale improvement and renewal as a part of draft of Rolling Stock Maintenance Manuals.

#### **6-6-4 Learning about countermeasures against rolling stock failures**

##### **(1) Objective**

The objective of this activity is to make C/P understand the importance of preventing rolling stock failures before they occur, and to construct schemes to prevent the occurrence of future similar rolling stock failures based on experiences to deal with failures.

##### **(2) Progress and outputs**

###### **- Measures to prevent rolling stock failures**

Referring to the case examples of Japanese urban railway company with experiences in urban railway operations, we prescribe methods to deal with rolling stock failures and accidents, and prescribe policies to handle information internally on occurred rolling stock failures and accidents. Actual progress and outcome are shown below.

In and after Oct. 2013: Although surveying the case examples of dealing with failures in VNR, we could not acquire any useful information. So, understanding Japanese urban railway company's methods to deal with rolling stock failures and accidents.

From Nov. 2013 to June 2014:

Preparing necessary manuals in the O&M Company based on Toyo Metro's methods to deal with rolling stock failures and accidents.

From Jan. to Mar. 2014: Preparing method of utilizing failure records. Preparing manual for updating manuals

From Oct. to Nov. 2015: Describing these contents as a part of draft of Rolling Stock Maintenance Manuals after HMC established.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-6-1.

Regarding method of dealing with failure and accident, describing information flow, workflow, tools and preparation for the failures and accidents. It is also complying with the company's safety rule as a part of draft of Rolling Stock Maintenance Manuals.

Regarding method of utilizing failure records, describing methods which can prevent repetitive failures and can consider mid-term or long-term measures for failures as a part of draft of Rolling Stock Maintenance Manuals. The methods are realized by collecting failure information and reporting to HQ, and sharing failure information in the rolling stock department.

Regarding method of updating rules and manuals, rules and manuals are required to review and revise occasionally. It is necessary to revise them for preventing repetitive failure, for fitting with the change in rolling stock equipment and test equipment, and for fitting with the change in organization or



implementation style. When they are revised, it is necessary to conduct followings; confirmation of conformity to the existing rules, explanation of validity of revisions, announcement of revisions to all concerned people. The matter mentioned above are described as a part of draft of Rolling Stock Maintenance Manuals.

#### **6-6-5 Collecting maintenance rules for the Line-2A rolling stocks**

##### **(1) Objective**

Using the case examples of specifications and maintenance plans related to the rolling stock maintenance of Line 2A, the first line to start business, and studying each activity in detail, we make C/P learn necessary knowledge, and at the same time, we evaluate the validity of the rolling stock maintenance plans of Line 2A.

##### **(2) Progress and outputs**

###### **- Collecting relevant rules**

It is planned that EPC contractor contracted with VNRA constructs Line 2A and transfer it to HPC. As a result, we obtain information on the rolling stock maintenance of Line 2A via VNRA. Information obtained via VNRA is only on rolling stock outline specifications, maintenance outline plans and training materials for maintenance personnel. We have not been able to obtain sufficient documents which are available for preconditions of preparing maintenance rules and manuals. Since we have not been able to obtain manuals, drawings, maintenance plans completely to be used for each activity, we have changed our policy to prepare minimum basic materials referring to Japanese urban railway company's case examples, as well as evaluating the validity of the rolling stock maintenance plans of Line 2A. Then rules and manuals are prepared complying with Vietnamese laws and regulations. It is necessary to revise the materials when related Line 2A documents become available. Actual progress and outcome are shown below.

In and after May 2013: Confirmation of rough rolling stock specifications using obtained specifications at the time of ordering (technical design).

=> Developing rules for rolling stock maintenance, manuals, etc. based on the rough specifications and Japanese urban railway company's case examples.

From Apr. to June 2014: Listing test items required for Line 2A transfer and document to be received. Confirming obtained outline document of rolling stock maintenance (Technical Design Book7, Vol2).

From September 2015: Confirming obtained training materials for maintenance personnel.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-6-1.

## **Chapter 6-7 Facilities Maintenance (Civil, Track, and Construction)**

### **6-7-1 Prescription of organization rules regarding facilities Maintenance**

#### **(1) Objective**

The objective of Activity 6-7-1 is to support the prescription of the rules needed for the O&M Company to construct a sufficient and implementable maintenance system immediately after the new line starts business. Specifically, it studies the segregation of duties on assigned areas and prescribes maintenance rules for every one engaged in maintenance to comply with. The activity supports the O&M Company to set necessary and sufficient implementation items when MOT transfers Line 2A, the first line to start business, to the company.

#### **(2) Progress and outputs**

##### **- Organization rules**

This is the first activity included in 6-7 we implemented. Actual progress and outcome are shown below.

In May 2013: Introduction of the case examples of Japanese railway business operators (segregation of duties of the headquarters divisions and operational units of Infrastructure Maintenance Department<sup>8</sup> of Tokyo Metro as a consultant).  
After understanding the details of each work introduced by TA, C/P classified the case examples in Japan, taking consideration of the work assigned to the HQ and OU of the O&M Company described in the report\*\* of the task force established in HPC prior to TA.  
After C/P prepared draft rules, we conducted revisions such as leveling by area through the discussion in C/P, and agreed with TA staff finally at the end of May (as a basic reference for Activity 6-2-1).

This activity is finished and the outputs of this activity are included in the outputs of activity 6-1-1.

The summaries are as follows:

- Segmentation of work between HQ and OU and their segregation of duties were clarified.
- The main work of HQ was defined as the “approval of work conducted by OU.” The definition makes HQ possible to support two or more lines in the future.
- Technical study to be handled commonly to all lines is defined as the work of HQ. As a result, HQ’s work includes the development and revision of the maintenance rules that greatly affect safe operations. HQ will be able to support two or more lines in the future.
- Both HQ and OU constructed their structures responsible for “inspection,” “planning,” and repair” taking account of actual maintenance work cycles.

#### - Maintenance Rules

Following the segregation of duties, we conducted work related to the development of draft maintenance rules. As described in Activity 6-7-5 in detail, this TA activity initially planned to obtain the specifications and construction drawings related to the equipment of Line 2A from MOT, as well as proposals for the maintenance rules that the construction side hopes to establish, and check them with C/P, and then help C/P understand the above materials and fill in the missing parts. It was, however, revealed that these materials are not available until MOT completes construction. In August 2013, TA changed the plan to support C/P in developing maintenance rules and other materials, assuming a set of equipment needed for urban railway operations, based on the urban railway maintenance experienced by Tokyo Metro. Actual progress and outcome are shown below.

In August 2013: Assuming a set of assumed equipment following TA, and introducing the practices of Japanese railway business operators to inspect these pieces of equipment [besides design standards and maintenance and management standards for railway structures, part of Tokyo Metro’s inspection rules are introduced (concepts of setting inspection items, reasons for setting inspection items, inspection intervals, and how to handle judgment values)]

In September 2013: Training in Japan (conducted by JICA)  
- C/P actually conducted part of inspection.  
- Visits to repair and improvement work sites.  
=> These visits were very effective for deepening understanding on the urban railway equipment that C/P used to imagine from references.  
After returning to Vietnam, collecting the case examples of rules related to similar businesses and similar work in other businesses, and carrying out an

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<sup>8</sup> The company’s Infrastructure Maintenance Department is widely responsible for the equipment maintenance in the areas of civil engineering structures, tracks, and architectural structures. The introduced segregation of duties includes the work covering inspection, planning, and repair. It is sufficient to conduct work in all areas of maintenance.

analysis based on learned knowledge.

In October 2013: Development by C/P of draft maintenance rules used in the O&M Company.

This activity is finished and the outputs of this activity are a part of below.

**Appendix 8-6-7-1-A (CTC)** Regulation on Civil Structure Maintenance (Draft)

**Appendix 8-6-7-1-B (CTC)** Track Maintenance Regulations (Draft)

The summaries are as follows:

- We clarified the items to be compiled with for each step of maintenance work cycle: “Inspection,” “Planning,” and “Repair.”
- By clearly specifying inspection intervals, we made inspection enforceable.

And, as mentioned above, this output is still “Proposal”. Because this output is prepared by assuming a set of equipment needed for urban railway operations by TA. In other words, before HMC use this output, C/P will be needed a finalization when we obtain the specifications and construction drawings related to the equipment of Line 2A from MOT, as well as proposals for the maintenance rules that the construction side hopes to establish. However, we gave up this finalization, because we can’t obtain these documents within the term of contract. In future, when C/P will be this finalization, C/P will need more cooperation by the railway business operators.

#### **- Transfer of Line 2A**

After developing proposed rules for maintenance, the O&M Company is conducting work to set sufficient items for the complete transfer of Line 2A from MOT. Actual progress and outcome are shown below.

In November 2013: Introduction of the inspection items to be inspected at the time of business start used by Japanese railway business operators (the details of inspection conducted by the MLIT and other relevant bodies before the business start of Tokyo Metro’s new lines)

In April - May 2014: Preparation of the inspection items and the document’s list for transfer of Line-2A.

#### **(3) Others**

Since C/P has no experience of devising management plans and being involved in similar work, we have shared with the explanation of basic knowledge. Although there is a possibility of taking more time than expected, we first show the samples and clues provided by TA to C/P, and let them do the work from scratch so that they can practically carry out the above development and revision work by themselves.

### **6-7-2 Learning about the process of preliminary study regarding staffing requirements and maintenance budget**

#### **(1) Objective**

The objective of Activity 6-7-2 is to support staff allocations plans and budget calculation at the initial stage for enabling operation companies to conduct sufficient maintenance immediately after the business start of new lines. We also makes an instruction on the key points for renewal and the practical calculation methods so that the O&M Company to be able to renew them.

#### **(2) Progress and outputs**

##### **- Proposed staff allocation**

We started this activity in October 2013 after clarifying the segregation of duties included in Activity 6-7-1, in parallel with developing draft rules for maintenance. At the time of starting TA, this activity was supposed to study staff allocation after preparing proposals for maintenance rules and maintenance manuals. In the case of Line 2A, the first line to start operation, however, Vietnam MOT, the main

construction client, planned to employ staff based on the contract with the contractor. As part of the plan, MOT presented C/P proposed recruiting plans this summer, and asked for opinions from C/P. As a result, we decided to move this activity forward.

Since the segregation of duties had been clarified, this activity was able to start studying the inspection and repair work included in the prescription of maintenance rules on which C/P had deepened their understanding. The O&M Company carries out the study assuming that its staff conducts every maintenance work. After finishing training in Japan, and understanding that the relative importance of these work in segregation of duties is very high, C/P was able to start the study. Actual progress and outcome are shown below.

- In September 2013: Requested confirmation of the contents of the recruitment and education plans for Line 2A presented by VNRA.
- In October 2013: Discussion with C/P on proposals for work shift systems for OU staff.
- After experiencing training in Japan, C/P has already understood the necessity of using business intermission to sufficiently conduct urban railways' facilities maintenance.
  - In light of Vietnamese laws and regulations, we agreed to conduct the study on the premise of four teams and three shifts.
  - Discussion by C/P on the number of staff of each team in charge of "Inspection" and "Repair," respectively, based on proposed staff allocation assuming the sharing of roles in a team.
  - Instruction on the key points for C/P to renew the system in the future.
- Discussion on other responsibilities including HQ.
- => Agreed on staff allocation proposals for HQ and OU at the end of October this year (as a basic reference for Activity 6-2-5).

This activity is finished and the outputs of this activity are included in the outputs of activity 6-2-5.

The summaries are as follows:

- We allocated HQ two managers and one person each in charge of "Inspection," "Planning," and "Repair." Following the segregation of duties, we also allocated HQ one person in charge of "Technology." (After agreement with C/P, we additionally allocated HQ one person in charge of general affairs as a result of coordination with the O&M Company as a whole.)
- With the work system of four teams and three shifts in mind, we allocated OU staff in charge of "inspection" and "repair." We also allocate the "group in charge of planning" one person each for the special fields of civil engineering structures, tracks, and architectural structures. Comments reflecting this content were made to VNRA.
- In both HQ and OU, persons in charge of "planning" concurrently work for budget management.

#### **- Budget calculation**

We started this activity after the completion of the preparation of proposals for maintenance rules included in Activity 6-7-1 and proposals for maintenance manuals included in Activity 6-7-3 described later in detail. The actual progress and outcome are shown below.

- In December 2013: Introduction of the preparation of budgets in Japan performed by Japanese railway business operators (budget contents planned by Tokyo Metro in compiling budgets)
- Presentation of price survey items based on maintenance manuals.

This activity is finished and the outputs of this activity are included in the outputs of activity 6-7-3.

We waited to obtain the specifications and construction drawings related to the equipment of Line 2A from MOT beyond. But we can't obtain these documents, so we gave up to calculate of budget. C/P has obtained the summary of how to preparation of budget. But, when C/P will obtain these documents, C/P will need more cooperation by the railway business operators.

### **6-7-3 Learning about the process for implementation plan of facilities renewal**

#### **(1) Objective**

The objective of Activity 6-7-3 is to make an instruction of making plans for carrying out facilities renewal, which is inevitable eventually after starting business, at a proper time and using a proper method. We also support the development of actual work manuals for conducting maintenance with equipment renewal in mind, and the development of staff education and training plans to be implemented after the start of business.

#### **(2) Progress and outputs**

##### **- Facilities renewal**

We carried out this activity using the training in Japan conducted by JICA. Actual progress and outcome are shown below.

- |                    |   |
|--------------------|---|
| In August 2013:    | Introduction of the case examples of Japanese railway business operators (introduction of a large-scale equipment renewal such as the renewal of turnouts and concrete railbeds using photographs)  |
| In September 2013: | Visits to Tokyo Metro's facilities renewal work sites during training in Japan.<br><br>- Introduction of a small-scale equipment renewal such as renewing broken concrete ties one by one.<br><br>=> Understanding that any piece of facilities needs to be renewed at a proper time.<br><br>=> Understanding that the timing of facilities renewal must be decided based on the records of the results of daily inspection and repair. |

This activity is finished and the outputs of this activity are included in the outputs of activity 6-7-3.

##### **- Draft of Maintenance Manual**

This work was begun after formulation of the draft of the maintenance rules included in Activity 6-7-1. The actual progress of this work is as shown below. Furthermore, this work was performed while making considerable use of training in Japan carried out by JICA. Actual progress is as follows.

- |                   |  |
|-------------------|--|
| In September 2013 | Actual experience of maintenance work at domestic railway company in Japan (actual experience, including inspection of structures, track maintenance work, etc.)                     |
| In February 2014  | Based on the draft of the maintenance rules, a draft of the maintenance manual was prepared while looking back on the content of work actually experienced during training in Japan. |

This activity is finished and the outline of the outputs of this activity is as follows.

**Appendix 8-6-7-3-A (CTC)** Civil Structure Maintenance Manual (Draft)

**Appendix 8-6-7-3-B (CTC)** Track Maintenance Manual (Draft)

And, as mentioned of Activity 6-7-1, this output is still "Proposal". Because this output is prepared by assuming a set of equipment needed for urban railway operations by TA. In other words, before HMC use this output, C/P will be needed a finalization when we obtain the specifications and construction drawings

related to the equipment of Line 2A from MOT, as well as proposals for the maintenance rules that the construction side hopes to establish. However, we gave up this finalization, because we can't obtain these documents within the term of contract. In future, when C/P will be this finalization, C/P will need more cooperation by the railway business operators.

#### **6-7-4 Learning about countermeasures against facilities failures**

##### **(1) Objective**

The objective of Activity 6-7-4 is to support the construction of structures for enabling safe operations even when equipment failures.

##### **(2) Progress and outputs**

This TA activity initially planned to obtain the specifications and construction drawings related to the equipment of Line 2A from MOT, as well as proposals for the maintenance manuals that the construction side hopes to establish, and check them with C/P, and then help C/P understand the above materials and fill in the missing parts. It was, however, revealed that these materials are not available until MOT completes construction. In April 2014, TA changed the plan to support C/P in developing maintenance rules and other materials, assuming a set of equipment needed for urban railway operations, based on the urban railway maintenance experienced by Tokyo Metro, same as Activity 6-7-1. Actual progress and outcome are shown below.

In April 2014	Introduction of the know-how to make use of the information of failures and accidents, based on a domestic railway company in Japan. (This information is not only a temporary measure to rescue, but a preparation for same facilities and a how-to reflect to design when facilities replace.)
---------------	--

We waited to obtain the specifications and construction drawings related to the equipment of Line 2A from MOT beyond. But we can't obtain these documents, so we gave up to prepare the countermeasures against facilities failures. C/P has obtained the summary of know-how to make use of the information of failures and accidents. But, when C/P will obtain these documents, C/P will need more cooperation by the railway business operators.

This activity is finished and this outputs are included in the activity 6-7-3.

#### **6-7-5 Collecting maintenance rules for the Line-2A facilities**

##### **(1) Objective**

The objective of Activity 6-7-5 is to collect the maintenance rules prescribed for each piece of facilities introduced to Line 2A, the first line to start business. MOT promotes the construction of Line 2A as the construction client. To construct a sufficient maintenance system immediately after the business start of the new line, the O&M Company should understand the maintenance rules prepared by the construction side, and if there are insufficient points, feed back the information to the construction side to improve the quality. This activity supports the sufficient implementation of such works.

##### **(2) Progress and outputs**

At its start time, TA planned to obtain the specifications and construction drawings related to the facilities of Line 2A from MOT, as well as proposals for the maintenance rules that the construction side had prepared, and check them with C/P, and then help C/P understand the above materials and fill in the missing parts.

Information on the status of construction progress was immediately provided, but the references provided as equipment specifications were the reports at the basic design phase. From the basic design reports, we can obtain information on the extensions of the line and the types of structures such as overhead bridges, but the information needed for implementing TA work was too poor.

It is essential for implementing this TA work to obtain not only the construction drawings of all pieces of facilities used for installing, but also specifications such as required capacities specified at the time of manufacturing and durable years, and information on important points for maintenance. One of the objectives of this TA is to support C/P fully understand the above information provided from MOT, because

the project is to operate the first urban railway in Vietnam. TA repeatedly explained MOT the importance of such information and asked it to provide such information.

MOT, however, replied they cannot provide the information because the contract with the contractor is a so called EPC contract that the contractor transfers the facilities to the construction client after carrying out all of equipment design, installation, and trial runs. MOT also replied that it would not receive the materials until the construction completes.

TA thought that, even if it is an EPC contract, MOT might have approved equipment specifications to advance the construction, and negotiated with MOT more than once. But the reply from MOT was the same.

As a result, TA decided to assume a set of facilities needed for urban railway operations based on the Tokyo Metro's experiences of urban railway maintenance, and support C/P to develop maintenance rules and other references for the assumed pieces of facilities. Using the information obtained from MOT by this time, we prepared as much information as possible for the assumed set of facilities.

MOT has appointed four persons to C/P. We tried to share information, such as the outline of construction and equipment specifications needed for implementing work, with them.

The actual progress and outcome of this activity are shown below.

- |                 |  |
|-----------------|--|
| In May 2013:    | The first coordination with C/P from MOT, and making a request to provide information on construction status and equipment specifications.   |
| In August 2013: | Changing a part of TA work implementation policies.<br>Confirmation of the new policy with C/P in the following items.<br>- Changing the assumed set of facilities when obtaining information on equipment specifications before the transfer.<br>- At the time of the transfer of Line 2A, the O&M Company may hold a set of maintenance rules prepared with TA and a set of maintenance rules prepared by the construction side at the time of the transfer of Line 2A, and C/P selects which set should be used.<br>TA agrees to the selection by C/P, because the policy change may strengthen C/P's ability to prepare maintenance rules, |

This activity is finished and the outputs are included in the activity 6-7-1 and 6-7-3.

## **Chapter 6-7 Facilities Maintenance (Electricity)**

### **6-7-1 Prescription of organization rules regarding facilities Maintenance**

#### **(1) Objective**

The objective of this activity is to specify organizations rules for maintaining electric facility. To clarify the transfer conditions of Line 2A mentioned in Chapter 4, we coordinates with the Line 2A side on necessary electric facility, and prepare workflows and forms.

#### **(2) Progress and outputs**

##### **- HQ's facility maintenance organization system and OU's facility maintenance organization system**

As the first work for constructing maintenance organization system for electric facility, we clarified the segregation of duties of HQ and OU. We studied the organization structures after clarifying the roles of HQ and OU. Actual progress and outcome are shown below.

- |              |   |
|--------------|---|
| In May 2013: | Based on the operational division of HQ and OU listed in the Task Force Report, start considering the organization and office organization. |
|--------------|---|

5 representatives in HQ (planning, electric power equipment, station equipment, signal communication equipment and AFC equipment).

3 test and repair center to OU (electric power equipment, station equipment, signal communication equipment).

In September 2015: The organization of the technical department in the technical maintenance unit at HMC

Determined to be installed 5 Division, which is responsible for electrical equipment (communication equipment Division, signal equipment Division, electric power equipment Division, station equipment Division and AFC equipment Division).

This activity is finished and the outputs of this activity are included in the outputs of activity 6-1-1.

#### **- Draft of maintenance rules**

Maintenance rules was created in the center of the basic content by reference to the case of Japan. It was envisioned that the contractor is going to correct it in consideration of the detailed specifications of the electrical equipment of Line 2A maintenance rules that are assumed. However, sufficient information provided has not been done during the activity period. Thus, the case of the Tokyo Metro, the description will be C/P, C/P has created a maintenance proposed rule with an understanding. Actual progress and outcome are as follows.

In July 2013: Start describes the case of the Tokyo Metro.

While creating the maintenance draft rules for description, sequential description.

C/P has never went outside the country, for the electrical equipment on the urban railway, the presentation describes the article also serves as the preparation of the C/P training to be carried out in September.

In September 2013: Training in Japan.

Various electrical equipment and to visit some of the maintenance work.

Failure of the pump equipment is discovered, actually visit the correspondence.

In October 2013: Started consider and discuss maintenance draft rules of C/P created.

In October 2015: To apply the Vietnamese domestic laws and terminology after HMC established. Revised as equipment maintenance rule draft.

This activity is finished and the outputs of this activity is as follows.

**Appendix 8-6-7-1 (E)** Draft of Equipment maintenance rule

#### **- Coordination with Line 2A and preparation of workflows and forms**

For continuing safe and stable operations, the O&M Company needs to check that each pieces of facility of Line 2A properly functions and to receive the facility and materials and documents needed for operation and maintenance. Actual progress and outcome is shown below.

In May 2013: Request from the person in charge of the transfer of Line 2A on the preparation of the documents and inspection items needed for transfer, and inquiry of the transfer period.

=> Preparation and submission of references on electric facility.

In November 2013: On the inspection items conducted at the business start of new lines, introduction of the inspection by relevant bodies at the time of the business start of Tokyo Metro's Fukutoshin Line

In May 2014: Request from the person in charge of the transfer of Line 2A on the study of



the documents provided list that has been presented from VNRA.

=> Preparation and submission of references on electric facility.

### (3) Others

It has been promoted while checking the laws and terminology in Vietnam. That was able to confirm and opinions of domestic experts in the president briefing, etc. was a good opportunity.

In addition, it has become possible to image by actually will be made with experience seen in the eyes of the urban railway in the C/P training in Tokyo Metro in September 2013.

## **6-7-2 Learning about the process of preliminary study regarding staffing requirements and maintenance budget**

### (1) Objective

For stable operation of electric facility, proper maintenance is essential. This activity is to learn the calculation methods of budgets and number of staff for securing the expenses and staff needed for the maintenance.

### (2) Progress and outputs

#### **- Numbers of staff for HQ and OU**

This was progress in relation to the activities 6-7-1 (organization, office organization). Because initially there was no information about the equipment and maintenance of Line 2A, as a minimum of personnel, and proposed a total of 6 persons each one person in charge of director and deputy director and 4. In contrast from C/P, Deputy Director is 2 people need as basic concept of Vietnam, also there was a proposal to provide the planners 1 person. It was decided to be a total of 8 accept this proposal.

Then, from VNRA, there was opinion queries against the recruitment and education plan of Line 2A. Estimating a number of facilities from the plan to calculate the required number assuming direct management maintenance.

HQ of personnel 3 people and increase the number to 11 people, including the AFC in charge of 2 people (Director 1 people, Deputy Director 2 people, planners 1 person, signal communication equipment 2 people, Electric power equipment 2 people, station equipment 1 person, AFC equipment 2 people ) it was required personnel to.

OU is personnel number in the entire Line 2A, which is calculated by it and the required personnel per number of facilities have been provided. To the fitting work shifts of applying the Vietnamese labor laws, to evaluate the adequacy of personnel number. The results became evaluation personnel number is small, it was decided to be adjusted according to actual conditions after opening. Actual progress and outcome are as follows.

- |                    |  |
|--------------------|--|
| In May 2013:       | Calculation of the number of staff in accordance with the preparation of proposal for HQ organizations described in Activity 6-7-1.  |
| In September 2013: | Request for confirmation of the contents of suggestion the recruitment and education plans for Line 2A from Vietnam Railway Administration (VNRA).   |
| In October 2013:   | Replying to the inquiry about the recruiting/education plan for Line 2A.   |
| In October 2014:   | For necessary personnel number from the opening of five-year HQ received a query from the C/P, to explain the number of personnel and ideas corresponding to Line 3 and Line 2 opened.<br><br>- Regarding persons in charge of station equipment, Line 2A is an elevated railway and in no need of ventilation/air-conditioning facility in stations and tunnel compared with subways, and hence we set the number as one. We explained, however, that the number of staff for Line 3 should be increased at the time of its business start because the line has underground sections and needs more facility. |

- Based on the references calculated on this occasion, we explained calculation methods referring to the references on elevator facility maintenance because C/P can understand elevators.

In August 2015: Fitting a work shift of applying the Vietnam labor law on the number of OU personnel provided by the VNRA, to evaluate the validity of the OU personnel number.

In October 2015: Revised as part of the equipment maintenance manual after HMC established.

#### **- Direct management of maintenance and outsourcing of maintenance**

From the point of view of law, safety, expertise and efficiency, direct management of maintenance and outsourcing maintenance are explained. Laws are applicable to the inspection methods or inspection qualification of equipment that has been prescribed by law. Safety is a way of conservation to the highest priority on safety. Expertise is a way of equipment maintenance requiring high difficulty of expertise technology to deal with direct management. Efficiency is the outsourcing of cost-sensitive in no problem range to safety.

It decided to continue to adjust, while based on the Vietnam of the environment, and create a policy as outputs. The outputs, and describes a matrix for specific cases, and classification and judgment. Actual progress and outcome is as follows.

In April 2015: To explain Direct and outsourcing overview of maintenance.

In June 2015: From the point of view of laws, safety, expertise and efficiency, and explain the direct and outsourcing of the concept of maintenance.

While issuing the elevator, lighting and other specific case description.

In August 2015: To consider and discuss C/P creation of policy proposals.

In October 2015: Revised as part of the equipment maintenance manual after HMC established.

#### **- The standard prevailing unit price information for the maintenance item**

About the cost, description other than cost and cost, the basics such as accounting. From that description there is a need for accounting method, and the railway business accounting regulations of Japan, have been described its application content as a specific case. Create a matrix for the calculation methods and classification so that it can understand the prevailing unit price information as a output according to the Vietnamese environment.

In April 2015: The outlines of the cost calculation method.

In July 2015: Pricing structure and the accounting basis and the others will be described. In addition, it describes the specific case of the application based on the Japanese railway business accounting regulations.

In August 2015: To consider and discuss C/P creation of policy proposals.

In October 2015: Revised as part of the equipment maintenance manual after HMC established.

#### **- Acquisition of equipment maintenance budget method of calculating the in which the Line 2A to target**

To explain the electrical sector specific case in railway operators in Japan. C/P is based on understanding and thinking, created as a business plan and budget for the creation guideline outputs to be applied to the HMC. The budget describes the characteristics of the sales and profit of the railway company. It is described as a point to long-term planning and leveling.

Acquisition of equipment maintenance budget calculation method of which the Line 2A to a subject, the detailed information can not be obtained, it has not been studied and discussions that was the target.

Actual progress and outcome are as follows.

In April 2015:	Description of the business plan concept and Japanese Case. Including management philosophy, company-wide strategy, the medium-term management plan other, explain the business plan.
In May 2015:	In association with the business plan, and explain the budget calculation method and leveling.
In August 2015:	To consider and discuss C/P creation of policy proposals.
In October 2015:	Revised as part of the equipment maintenance manual after HMC established.

This activity is finished and the outputs of this activity are included in the activity 6-7-3.

### **6-7-3 Learning about the process for implementation plan of facilities renewal**

#### **(1) Objective**

Manual for carrying out equipment maintenance, equipment replacement plan that corresponds to the life of such equipment, to carry out the creation of a plan of education of maintenance personnel. Education planning and development process of the facility update plan, it includes.

#### **(2) Progress and outputs**

In the discussion of maintenance rules, we explained long-term work plans. We were asked a question about the inspection date of renewed facility. In replying to the question, we explained that Tokyo Metro basically considers the facility life as the timing of facility renewal, but the timing needs to be changed depending on budgets, maintainability, as well as the performance and functions required in the time concerned. Actual progress is shown below.

#### **- Draft of Maintenance manual**

According to equipment maintenance rule, and create a maintenance manual draft for each field of communication, signal, electric power, and station equipment. The described methods and procedures and requirements to comply with laws and regulations. HMC is a possibility that equipment specifications are significantly different for each route. Is created for each route that case. Within the project period, because the detailed information of the Line 2A is not obtained, the draft at present showing the configuration of the maintenance manual.

Manual draft specializing in inspection procedure initially. Described proposal of such repair method from C/P. Based on further HMC of policy, integration outputs other than equipment maintenance rule in the maintenance manual draft. Actual progress and outcome are as follows.

In April 2015:	To consider and discuss the structure of the maintenance manual in compliance with maintenance rules.
In July 2015:	In view of the workings of the company, to change the configuration of the education plan.
In August 2015:	To consider and discuss C/P create a manual draft.
In October 2015:	To apply the Vietnamese laws and terminology and revised as equipment maintenance manual draft after HMC established.

Each activity outputs other than maintenance rules will be completed, and revised the equipment maintenance manual draft

This activity is finished and the outputs of this activity is as follows.

<b>Appendix 8-6-7-3 (E)</b>	Draft of Equipment maintenance manual (communication equipment, signal equipment, electric power equipment and station equipment)
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### **- Equipment useful life rule and facilities management ledger**

Equipment useful life rule, described the engagement of facilities management ledger, asset value and the actual age. And explain the various specific examples of Japanese railway company to C/P.

In the future, detailed information of Line 2A is obtained, laws are enacted. Thus, it created as a draft of the constitution only. Actual progress and outcome are as follows.

- |                    |  |
|--------------------|--|
| In April 2015:     | To explaining the concept of equipment useful life rules and facilities management ledger. |
| In August 2015:    | To consider and discuss the proposal to the equipment useful life rule, C/P created.       |
| In September 2015: | To consider and discuss the proposal to the facilities management ledger, C/P created.     |
| In October 2015:   | Revised as part of the equipment maintenance manual after HMC established.                 |

This activity is finished and the outputs of this activity are included in the activity 6-7-3.

### **- Equipment number of installed reference Regulations**

Based on the detailed information of laws and Line 2A in Vietnam, it was formulated plans the criteria, including equipment standards, design standards and construction standards. However, within the project period was limited both the laws and regulations enacted and Line 2A information.

It describes the Japan cases, safety, stability, maintainability and cost point of view, to consider and discuss the way from. A result, created as an equipment number of installed reference consists of multiple chapters. In the future, laws and regulations have been developed, taking into account so that it can be completed at a time obtained detailed information about the Line 2A. Actual progress and outcome are as follows.

- |                  |   |
|------------------|---|
| In April 2015:   | To an overview of equipment standards, design standards and construction standards in Japan, to discuss the outputs of creating policy. |
| In August 2015:  | To consider and discuss the proposed standard of C/P created. To adjust chapters.   |
| In October 2015: | Revised as part of the equipment maintenance manual after HMC established.  |

This activity is finished and the outputs of this activity are included in the activity 6-7-3.

### **- Renewal Planning**

Based on the related artifacts such as maintenance rule, business plan and budget, to create guidelines and form. The purpose of the equipment renewal is to maintain stable operation of the equipment. Function is also to improve. Within the project period, detailed information of Line 2A could not be obtained. To draft showing the configuration in the present circumstances. Actual progress and outcome are as follows.

- |                    |   |
|--------------------|---|
| In July 2015:      | In association with the maintenance rule and business plan and budget, and explaining the concept of renewal plan of equipment. |
| In September 2015: | To consider and discuss the form of the draft C/P created.  |
| In October 2015:   | Revised as part of the equipment maintenance manual after HMC established.  |

This activity is finished and the outputs of this activity are included in the activity 6-7-3

### **- Education plan of maintenance personnel**

To explain the education concept for the maintenance personnel, to create a training education plan as outputs. Railway electrical maintenance is highly systematized, but it holds by staff of the manpower. If appropriate education is carried out in staff, in number and quality, it is not possible to ensure sufficient staff. C/P is thinking the persistence and the company of the structured for the future, creating outputs. Actual progress and outcome are as follows.

In April 2015:	To explain the education concept for maintenance personnel.
In June 2015:	To consider and discuss the structure of the education plan.
In August 2015:	In consideration of the structured of the company, to change the configuration of the education plan.
In September 2015:	To consider and discuss the form of the draft C/P created.
In October 2015:	Revised as part of the equipment maintenance manual after HMC established.

This activity is finished and the outputs of this activity are included in the activity 6-7-3.

#### **6-7-4 Learning about countermeasures against facilities failures**

##### **(1) Objective**

The objective of this activity is to reduce facility failures, that is, to use information on facility failures occurred in the past for decreasing the effects of failures and accidents to the minimum, and establish systems for carrying out safe and stable transportation.

In addition, established correspondence, the rule defining the measures and the like in the event of a failure.

##### **(2) Progress and outputs**

Based on the company's overall rules, to create electrical part bylaws. In addition, to create information sharing rules with the aim to prevent a recurrence and prevention of failure and accident. And information sharing policies and equipment failure information database of policy to improve structure, including.

##### **- Equipment failure during the corresponding manual**

Based on the company-wide rules, to the provisions electrical department of the corresponding policies, how to respond to accidents and transport failures that electricity sector has caused. Systematically treated with clear standards. The described classification, responsibility division and preparation requirements. In particular report, clarify the form and date. Actual progress and outcome are as follows.

In April 2015:	Was discussed in check the contents of the company-wide rules.
In June 2015:	To explain the policies and structure of an electric part bylaws.
In July 2015:	To consider and discuss C/P creation of policy proposals.
In October 2015:	Revised as part of the equipment maintenance manual after HMC established.

This activity is finished and the outputs of this activity are included in the activity 6-7-1.

##### **- Information sharing rules**

Equipment failure and accident and transportation failure to reduce efforts, information sharing, equipment failure information database and improved structure essential. Electrical department at HMC opened, in thinking integrally rules is the best, create an information sharing rules. Actual progress and outcome are as follows.

In April 2015:	to explain the information sharing and equipment failure information database and improved structure.
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In June 2015:	Discussion each item.
In August 2015:	Determining the rules created that is integrated items.
In September 2015:	To consider and discuss C/P creation of policy proposals.
In October 2015:	Revised as part of the equipment maintenance manual after HMC established.

This activity is finished and the outputs of this activity are included in the activity 6-7-3.

### **6-7-5 Collecting maintenance rules for the Line-2A facilities**

#### **(1) Objective**

The objective of this activity is to conduct stable maintenance from the business start of Line 2A by surveying how to carry out the maintenance for Line 2A, in performing the activities from Item 6-7-1 to Item 6-7-4.

In all, such as maintenance rule, maintenance manual, business plan, education plan and the personnel number, required equipment maintenance relationship rules. Each activity is based on the case of Japan, creating rule and manual of draft, proposed configuration, the form draft, and the like. Later, upon receipt of the equipment maintenance relationship rules of Line 2A, finalize the the outputs HMC.

Japan, in the long history of urban railway, the legal system, laws and regulations are in place. Facility construction and equipment manufacturing, because there are strict standards and criteria, it is not possible to directly take advantage of Japan's case. Important content is not in the Vietnamese laws and regulations shall be defined in the rules of the company. Content where there is a regulation only to Vietnam of laws and regulations must also be defined in the rules.

Equipment maintenance relationship rules, be improved by the accumulation of maintenance experience. Initially it collects the rules and information of all the events to be considered. Also collects the rules and information of all the events that occur daily after opening, to must go repeatedly enabled.

#### **(2) Progress and outputs**

Provision of information such as equipment specifications have been significantly delayed, there is a situation that is provided from time to time. Future, completion drawing, detailed specifications, etc. is provided. Actual progress and outcome are as follows.

In October 2013: VNRA inquired our opinion about the recruiting/education plan for Line 2A (PLAN OF ORGANIZATION STRUCTURE AND PERSONNEL ARRANGEMENT HANOI URBAN RAILWAY COMPANY Ver 8.0). The inquiry was on the organizations of HQ and OU offices described in Item 6-7-1, and on the numbers of staff needed for HQ and OU offices described in Item 6-7-2.

This activity is finished and the outputs of this activity are included in the activity 6-7-1 and 6-7-3.

## **Chapter 6-7 Facilities Maintenance (AFC)**

### **6-7-1 Prescription of organization rules regarding facilities Maintenance**

#### **(1) Objective**

The objective of this activity is to develop organizations and rules for maintaining the equipment related to automatic fare collection systems (hereafter abbreviated as AFC equipment).

#### **(2) Progress and outputs**

The development of organizations and rules for maintaining AFC equipment should start with clarifying the details of maintenance work for AFC equipment. Since Vietnam has no experience of introducing AFC equipment, the study must be conducted after understanding its technical background. We therefore explained the basic knowledge of maintenance such as reliability engineering at first and proceeded to study organizations and rules. The study results are shown below. C/P prepared documents for rules of

HMC while referring to these knowledge.

Finalizing process with using technical information of Line 2A has been included in the activities of Plan of Operation. Since information of Line 2A is not available as of October, both parties of Vietnam and Japan have agreed, in October, to remove activities fully depending on information of Line 2A from Plan of Operation. Actual progress and outcome are as follows.

In April 2013: For carrying out this project having a common understanding with C/P, we explained the overall structures of AFC systems, and clarified the coverage of maintenance for AFC systems.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-1-A (A)** Structures of an AFC System (Equipment)

In April - May 2013: Going back to international standards and reliability engineering, we organized basic knowledge such as concept and classification of maintenance to share technical understanding with C/P.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-1-B (A)** Basics of the Maintenance of AFC Equipment

In May - July 2013: Maintenance work is not merely inspection and repair, but also an approach to continuously improve safety, reliability, and the efficiency of equipment. We clarified the work system to achieve this goal, explained organizations and functions for carrying out maintenance work, and provided a basis for preparing rules.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-1-C (A)** Maintenance Operation and Management

In May - August 2013: Based on the system for maintenance work, we clarified necessary organizations and functions. Comparing with organization systems studied for the business start of Line 2A, we showed that the plans are almost valid.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-1-D (A)** Organizational Functions to Implement Maintenance

In July – Sep. 2013: On the premise of organization systems for maintenance, and the organization systems of HMC's headquarters and OU, we prescribed rules for maintenance. In prescribing the rules, we prepared rules for mechanical and electric equipment as fundamental rules. Based on the rule, rules for the maintenance of mechanical and electric equipment and rules for the operation of mechanical and electric equipment are established. And on that hierarchy, we prescribed rules for the maintenance of AFC equipment. Using this structure has a benefit of preparing maintenance rules for mechanical and electric equipment in various fields on a consistent policy.

This activity is finished and the outputs of this activity are included in activity 6-1-1.

(Detail is described in **Appendix8- 6-7-1-E (A)**: Organization Rules.)

In May 2014: Regarding to “Training Plan Line 2A (ver. 16)”, which was provided by PMUR, we supported OMU the review of articles including work descriptions about AFC maintenance work.

In October 2014: We supported the study of C/P to compare maintenance by direct operation with maintenance utilizing outsource. Since the maintenance of AFC equipment needs deep knowledge and skills about advanced machine controlled by microelectronics, outsourcing is necessary for maintenance. Furthermore, outsourcing is well known as management measures to improve management efficiency. On the other hand, direct operation is necessary to store technical knowledge, knowhow, skills and training of human resources. Therefore, we reached result that combination of direct operation and outsourcing was necessary.

This activity archives the initial objective. After PMUR provides HMC with documents of Line 2A regarding operational rules, HMC needs to check the documents and revise the rules of HMC if necessary.

In June – October 2015:

- (1) Criteria for staffs, who are dedicated for the management and maintenance, are clarified for respective sections and departments of HQ and OU in HMC to support the design of organization and policy of personnel assignment.
- (2) Rules, criteria, work manuals and other knowledge for management commonly applicable to AFC and other Electricity are studied and developed by C/Ps of Electricity and AFC under the co-operative support by TA expert of Electricity.

AFC equipment is categorized into electric machinery. Hence the management and maintenance for AFC equipment are basically as same as those for other electric machinery, except for the matters closely related to the features and functions of AFC equipment. While management system of HMC has been modified recently, which seems to be still under study for optimum system, the management and maintenance of equipment and facilities for signal, telecommunication and AFC had belonged to same section managed by one deputy director. Tokyo Metro also has same management system. Electric department manages electric machinery. Hence, development of common rules for management and maintenance of electric machinery should be necessary rather than developing rules dedicated for each kind of equipment. From the view point, common rules, which are applicable to electric machinery including AFC, has been studied and developed under co-operational work with C/P and TA expert for Electricity. The efforts were not limited for the activity of 6-7-1 but also for all other activities, 6-7-2, 6-7-3 and 6-7-4. Since activity 6-7-5 is for collecting Line 2A information, 6-7-5 is not covered according to the decision of TA project. The outputs of this activity are shown in Appendixes for the chapter of Electricity:

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-1-F (A)** Requirements for Staff of AFC Related Divisions

## **6-7-2 Learning about the process of preliminary study regarding staffing requirements and maintenance budget**

### **(1) Objective**

The objective of this activity is to learn methods for calculating the number of staff and work budgets needed for performing the maintenance work of AFC systems.

### **(2) Progress and outputs**

To achieve the above objective, we studied the roles of each organization division and the numbers of staff needed for performing the work, based on the premise of the organizations and functions studied in the preceding section. And we supported O&MU to review “Training Plan Line 2A (ver. 16)”, which was provided by PMUR, for the organization structure and the allocation of staff. Actual progress and outcome are as follows.

In July-September 2013: It clarifies the items to be studied for calculating the number of staff, such as functions, organization systems, and Vietnamese laws and regulations, and



showed specific study methods for C/P to deepen understanding, using information available at this stage and being studied for the business start of Line 2A.

From September 2013 The Vietnam Railway Authority (VNRA) requested confirmation of the contents shown in the recruitment and training plan for Line-2A.

This activity is finished and the outputs of this activity are included in activity 6-2-5.

(Described in detail in **Appendix8- 6-7-2-A (A)**: A Number of Staff Required for AFC Equipment Maintenance Work)

In Oct.-Nov. 2013: Line 2A planned to start business in 2015 (as originally scheduled) is the first line in Vietnam to introduce AFC. The technical knowledge, technical staff, various pieces of equipment, and corporations needed for the maintenance of AFC equipment are not available at this stage. The number of maintenance items available in Vietnam is, therefore, extremely limited, but maintenance work includes other items besides technical ones. Organizing maintenance work systems from the viewpoint of PDCA's work cycles, and classifying the construction work for maintenance using the segmentation prepared in the previous section, we clarified maintenance items available from the business start of Line 2A.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-2-B (A)** Maintainable and Practical Maintenance Items in Vietnam

In October 2013: The objective of clarifying price information is to calculate maintenance costs for business plans. In Vietnam, where no introduction example exists, market prices for AFC equipment have not been formed, and detailed information on the models of AFC equipment for Line 2A is not available. The price is not merely a price for HMC to purchase products and services from outside the company, but it also includes the costs (prices) for instructing (ordering) maintenance work to divisions responsible for maintenance in the company. Based on available information at this stage, we clarified the cost (price) structure and calculation system. Obtaining detailed information in accordance with this method in the future, we will be able to accumulate detailed data on maintenance prices.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-2-C (A)** Information on Standard Market Prices for Maintenance Items

The objectives to support learning items of this section 6-7-2, have been generally completed.

In June – October 2015

(1) Rules, criteria, work manuals and other knowledge for management commonly applicable to AFC and other Electricity are studied and developed by C/Ps of Electricity and AFC under the co-operative support by TA expert of Electricity.

(2) Basic approaches to estimate staffing number for maintenance of AFC equipment and facilities were provided previously. The estimation should need conditions such as number of equipment, maintenance intervals, inspection items, work shift system, labor law and others. The process of estimation becomes complicated and hard to be understood only with the knowledge of basic approaches. Hence, we provide an actual process with examples of major AFC equipment such as automatic gate (AG), automatic ticket vending machine (ATVM) and ticket office machine (TOM). The process shows a method to estimate maintenance time of equipment by breaking down

maintenance work into work unit with standard working time, and to estimate the number of staffing

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-2-D (A)** Calculation method of the number of AFC equipment maintenance personnel

### **6-7-3 Learning about the process for implementation plan of facilities renewal**

#### **(1) Objective**

The objective of this activity is to learn the methods to devise the plans for renewing AFC equipment, standards for the number of installed equipment, as well as to prepare maintenance manuals, equipment ledgers, workflows, education and training plans for maintenance staff.

#### **(2) Progress and outputs**

AFC equipment is advanced and sophisticated electronic equipment, and its electronic technology has a significant effect on its performance and reliability. Since passengers directly use AFC equipment, the number of passengers affects its life. Taking such factors into the consideration of the life of equipment and the number of installed equipment, we obtained the study results shown below. Actual progress and outcome are as follows.

In October 2013: AFC equipment consists of a very large number of components and units. Its life closely depends on its maintenance. Even if AFC equipment fulfills its functions and maintains usable conditions, requirement for its functions becomes higher and higher, and it becomes obsolete and might be considered as reaching the end of life. The depreciation of assets specified by the Accounting Standards is also a large factor. Checking the concept of the life of equipment, and starting with the analysis of factors having an effect on life, we showed the concept to specify the life. We also analyzed the concept of equipment renewal from the viewpoint of business management.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-3-A (A)** Acquisition of Planning Methods for Equipment Renewal

In May-July 2013: Showing that the very basic concept of deciding the number of installed AFC equipment is the conditions that customers can use AFC services safely and comfortably, we clarified the method of deciding the number of installed equipment by type. In the case of urban railways used for commuting, a large number of passengers use lines for a short time in the morning and evening. We clarified the calculation rules for safely treating passengers in such "peak time". Since calculating a specific number needs information on the number of passenger flow of Line 2A, train operation diagrams, train compositions, and the treatment capacities of AFC equipment, we can verify the validity of the calculation for Line 2A, for example, when such information becomes available.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-3-B (A)** Rules for Criteria on the Number of Installed Equipment

The objectives to support learning items of this section, 6-7-3, have been generally completed.

In June – October 2015

(1) Rules, criteria, work manuals and other knowledge for management commonly applicable to

AFC and other Electricity are studied and developed by C/Ps of Electricity and AFC under the co-operative support by TA expert of Electricity.

(2) AFC equipment has its following unique features in view of maintenance;

- 1) Relatively shorter life (tolerant ) time such as 10 years than other equipment
- 2) Degradation by wear of mechanical parts in AFC equipment heavily depends on the use frequency of equipment by customer. Hence AFC equipment at crowded station degrades in shorter period than those at calm station.
- 3) Performance/cost ratio of AFC equipment is generally improved rapidly owing fast progress of electronics technology.

Hence, renewal of AFC equipment and facilities should be planned by taking consideration of the above features. In detail, the plan should be developed based on detail analysis of maintenance data collected with each equipment and facility, timely improvement of equipment and facilities for higher reliability and lower maintenance cost, careful trial run of improved equipment and timely incorporation of progressing technology. With using example, the approaches to develop mid-term plan including renewal is shown to C/P.

(3) Number of AFC equipment, especially station level equipment is directly related to the convenience and safety of customer. Long queue to purchase ticket due to too little number of TOM or ATVM should be avoided. For AG (automatic gate), enough number of AG should be installed to have customers go through from paid concourse as soon as possible. Otherwise, overflowed customers from paid concourse, who wait on platform, face to risk of accidental contact with train. On the contrary, installation of excessive number causes excessive burden of management. Hence, methodology to estimate right number of equipment should be understood by C/P. In addition to the explanation in 2013, more detail information is provided for C/P to estimate number of equipment.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-3-C (A)** Approach for formulating an equipment replacement plan

**Appendix 8-6-7-3-D (A)** Concept of developing the standard for the number of AFC equipment installations

#### **6-7-4 Learning about countermeasures against facility failures**

(1) Objective

The objective of this activity is to learn the measures for preventing equipment failures.

(2) Progress and outputs

Studying accident response manuals, manuals for the safe operation of equipment, and systems for recording information on equipment failures and using data for accident prevention had been studied. As activities regarding to 6-7 had been freezed until the end of October 2014, we restarted from November 2014.

##### **- Equipment failure response manuals**

This type of manuals is roughly divided into manuals for responding to failures and repair depending on devices and models, and work manuals at the time of failures. Work manuals are made based on organizational functions and systems, and study manuals for responding to failures and repair are made based on device information introduced to Line 2A including the methods of preparation.

##### **- Information sharing policy**

Clarifying the objective of information sharing on maintenance, and analyzing the concept of information sharing in accordance with its objective, we support the development of information sharing policy.

##### **- Policy for constructing a database of equipment failure information**

To construct a database, we must determine the types of data, the methods of storing data, and the use of data. Based on the maintenance systems and model classification, we support the development of the database construction policy.

#### **- Systems for using and improving equipment failure information**

Using and improving failure information is a very important approach to improve maintenance work and work efficiency. Effective use of information is closely related to database structures. This activity clarifies approaches to use and improve databases focusing on the use of databases mentioned previously. Actual progress and outcome are as follows.

- In November 2014: RAMS is one of the key approaches to establish reliable equipment by reducing failure. Hence we studied how RAMS was applied to the system of railway field. The application of RAMS is a major stream in construction of railway system in overseas and it is found that the application RAMS is also required in Vietnam.
- In December 2014: Reducing failure of equipment is considered as improving efficiency of asset management. In view of improved asset management, method to develop maintenance service plan is studied.
- In January – April 2015: Correct understandings about safety of equipment are the basics for countermeasures against facility failure. Regarding safety of equipment, many international standards are issued. Learning related standards will form basic knowledge and understandings about safety. Standards for RAMS (reliability, availability, maintainability and security) are included in the standards. As general acknowledgement, risk of AFC equipment to cause serious injuries of customers or staff is considered as low. Hence, the scheme for RAMS certification does not request high safety integrity level (SIL). But proper operation and management of AFC equipment and facility with correct understandings about safety are still unconditionally necessary. Safety means relation between person and equipment. Thus, safety of staffs of HMC should be also carefully considered, and rules for safety working and safety working conditions should be developed based on correct understandings about human safety.

As one of the activities to support C/P to learn countermeasures against facility failure, fundamental knowledge about safety is provided.

In spite of many efforts, the risk of accident caused by malfunction of equipment is not avoided. Thus, management system, including rules, should be developed for immediate actions to recover AFC equipment as soon as possible. Furthermore, the management system should be well understood by related organizations since recovery needs cooperation of related organizations.

Almost all AFC equipment is linked to AFC system network. Hence, in case of trouble due to serious malfunction of AFC equipment, the influence of trouble spreads widely and immediately via network. And if AFC equipment stops ticketing services for any trouble, customers cannot purchase ticket, for instance. In the case, the trouble affects transport services. Thus, immediate recovery action is especially crucial for the maintenance of AFC equipment and facilities. Knowledge about safety and approach to build management system are provided for countermeasures against facility failure.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-4(A)** A Learning of Measures to Prevent Equipment Failures (AFC)

In June – October 2015: Rules, criteria, work manuals and other knowledge for management commonly applicable to AFC and other Electricity are studied and developed by C/Ps of Electricity and AFC under the co-operative support by TA expert of Electricity.

#### **6-7-5 Collecting maintenance rules for the Line-2A facilities**

##### **(1) Objective**

The objective of this activity is to collect rules related to the equipment maintenance of Line 2A, and check obtained rules for the maintenance of AFC equipment and AFC maintenance plan, based on the study results of TA project.

##### **(2) Progress and outputs**

Technical information on the AFC equipment of Line 2A obtained until today is only TECHNICAL DESIGN. At the initial stage of the project (April 2013), TA project listed necessary information, and officially requested VNRA to provide the information to TA via MRB. Most of the information has not been provided. It is possible that the contractor (China) of Line 2A has not provided the information to VNRA. Hence, after the information is provided to HMC, related rules and documents of HMC need to be revised by referring to the information, and shall be modified if necessary.

Obtained TECHNICAL DESIGN is a design document of AFC systems. It includes plans such as system structures, equipment, layout, and the number of units, but hardly mentions maintenance. We obtained the following information (outputs) from the description on maintenance. Actual progress and outcome are as follows.

In October 2013: We obtained the latest version of technical design document on the AFC systems of Line 2A. The document describes detailed information on the composition of AFC systems and performance requirements for equipment. It is an important technical reference of the line. We summarized the contents of the document.

TECHNICAL DESIGN is written in the form of a specification document, and has no description of devices and equipment. The reference reveals that Line 2A intends to construct systems using Chinese national standards (BG, BG/T) heavily. We will continue effort to obtain relevant standards documents and compare them with the documents that TA is studying and preparing.

This activity is finished and the outputs of this activity are shown in the following materials:

**Appendix 8-6-7-5 (A)** Collection of Rules for the Maintenance of the Equipment Used for Line 2A

In August 2014: We supported to listing documents needed for transfer of line 2A and the list was provided to PMUR.

In October 2015: Since information of Line 2A is not available as of October, both parties of Vietnam and Japan have agreed, in October, to remove activities fully depending on information of Line 2A.

## **Part 3 Issues, Measures, and Lessons in Implementing the Project**

### **Chapter 1 Issues**

#### **1-1 Pending Issues due to External Factors**

The following describe the effects of the fact that the control organization of the regulatory body was changed from the MRB to the DOT causing the changes to the MOU, and the effects of a delay in Line 2A Construction Project on the TA Project. The resultant problems are also discussed.

##### **1-1-1 Effects of the fact that the control organization of the regulatory body was changed from the MRB to the DOT and the resultant problems**

The technology transfer to the MRB through activities associated with the urban railway regulatory body strengthened the capacity of the regulatory body for the City of Hanoi.

The City of Hanoi, however, decided to change the control organization of the urban railway regulatory body from the MRB to the DOT as of September 2015. To achieve the project objectives and ensure the continuity of the project effects, it is important that the technology transferred from the TA Project to the MRB is properly succeeded by the DOT. Appropriate technology succession firstly requires the establishment of a department with a role of an urban railway regulatory body or the assignment of staff responsible for technology succession.

Since the HPC has just made a decision on the transfer, organizing the urban railway regulatory body in the DOT is at the stage of studying the roles and responsibilities of the urban railway regulatory body. After the study, the DOT will make a survey on the number of personnel and qualifications needed for the department in charge. The timing of establishing the new department and assigning staff is undecided.

On 8th JCC meeting, one of the JCC members said that "Although a specialized department in DOT as a regulator for urban railways is necessary to be established, the appropriate timing of establishment is in the future after multiple lines operation starts". Japanese side responded to this opinion, "The specialized department in DOT shall be established as soon as possible in advance of Line 2A commencement based on the agreement of the joint evaluation terminal on December in 2015". As a result, HPC side concluded that "Regarding this issue, existing department in charge should continue to consider". Therefore, it is necessary to keep an eye on this issue.

##### **1-1-2 Effects of the delay in Line 2A Construction Project and the resultant problems**

A major premise of the design formation of the TA Project is the development of the concurrent urban railway project (preceding Line 2A Construction Project).

At the start of the TA Project, Line 2A was scheduled to start operation in April 2015. At the end of the Project, however, it is scheduled to start operation in the end of June 2016. At the start of the Project, it was planned to develop rules by transferring necessary technology based on the functions and duties of the O&M Company assumed in Line 2A Construction Project. Affected by the delay in Line 2A Construction Project, however, we were forced to develop rules based on the functions and duties of general urban railway operation companies.

The delay caused the cancellation of some of trial work. As a result, the Project was unable to cover the preparation of practically starting operation of the railway regulatory body/O&M Company initially planned in the "strengthening the regulatory body and preparing to establish the O&M Company."

Trial work associated with the regulatory body was affected by the fact described in the preceding paragraph 1-1-1, i.e. it is at the stage of system development in the DOT, and hence it should be implemented together with the transfer of the railway regulatory body to the DOT.

Trial work associated with the O&M Company will be studied by HMC comparing the information provided by Line 2A Construction Project with the rules developed by the Project. The Project enables HMC to make adjustments between two or more pieces of equipment constituting urban railway systems. HMC will be able to understand and evaluate the described details and results of the tests conducted during trial work. When HMC notices practical inadequacies or points to be improved, railway business operators need to assist HMC in studying ideal forms, discussing the process for realizing them, and making

suggestions for Line 2A Construction Project.

## **1-2 Pending Issues due to Internal Factors**

The following is described from the viewpoint of the TA Project including the counterparts.

### **1-2-1 Differences in Individual Specialists' Ways of Doing Work**

Specialists have been instructing the counterparts allocated in each special field on a one-on-one basis. Vietnam has no urban railway, and hence we have no choice but to explain the technology and operational know-how of railway business to them using materials such as figures and documents except in the case of the training in Japan described below.

Under these conditions, the Vietnamese side cannot grasp the true difficulty of the railway business, which is actually a composite business involving various specialized fields. Some counterparts went so far as to suggest that we simply translate the documents used by Japanese railway companies into Vietnamese and submit the translated documents as-is, and insisted that this, in itself, would be enough to complete a transfer of railway technology.

If we adopt this proposal, we can never achieve the higher objective of this project, i.e., Urban Railway Operation and Maintenance Company of Hanoi City provides safe and reliable urban railway operations. We do not provide urban railway operations, but newly established Urban Railway Operation and Maintenance Company of Hanoi City does.

We left the method of transferring the know-how to individual specialists, and as a result the levels of understanding urban railway business differed by counterpart. In the initial stage, one of the reasons may be the difference in individual capacity to understand it.

To solve the above two problems, we set up a common instruction policy for the TA team: Individual specialists determine instruction contents, aiming to enable individual counterparts to think and act by themselves. Checking individual counterparts' levels of understanding, specialists provide necessary materials and advice to them when needed.

The determination of the above policy and the training in Japan shown in 2-1 were useful for the counterparts to improve their speed of understanding.

### **1-2-2 The attitude of C/P**

Since Vietnam receives funds from many countries and therefore they themselves are orderers, they usually behave as orderers when they have meetings with consultants: they instruct consultants oppressively.

On the other hand, TA project is a technical assistant project which is not to be implemented in that way. In these circumstances, C/P in the project tend to regard TA team as consultants as usual and they often instruct us to prepare documents when they have to make reports of JCC and so on. They think TA team should prepare documents needed and then they only receive and confirm them. However, in accordance with the objectives of the project, C/P should operate and maintain the company and urban railways on their own, therefore TA team wishes strongly that they implement their tasks of the project by themselves, and assist their implementation.

And so, whenever conflicts happens, the objectives of the project have been reconfirmed and C/P have been told that they should be responsible for their own project.

Thanks to our effort, C/P gradually changed their behavior against TA team: they have been becoming able to have their own opinions and consult TA team about their opinions. This was possible because the C/P acted independently, which is an essential factor for providing safe and reliable urban railway operation without our assistance.

## Chapter 2 Measures

Transferring Japanese railway technology to the counterparts and having them understand the technology are extremely important for the operation of this project. To accomplish this, we made the efforts described below.

### 2-1 Training in Japan

Under JICA's scheme of training in Japan, we invited the counterparts to Japan and implemented the following training (Invitation Letter to Japan sent from JICA to HPC No. 1126.2013/JICA-RQ dated August 8, 2013): Visiting work sites and other facilities and experiencing night shift work in Tokyo Metro Co., Ltd. and its affiliates. 17 counterparts were divided into 2 groups and received training for about two weeks (August 27 - September 6, 2013 for the first group, and from September 9 - September 20, 2013 for the second group).

Training on the general issues of urban railway business was given in the first week and on individual special fields for the second week [Appendix5-1 Training curriculums for the 1<sup>st</sup> Group, Appendix5-2 Training Curriculums for the 2<sup>nd</sup> Group].

Report on Training in Japan prepared by the counterparts (Report from OMU No. 59/BC-OM dated October 2, 2013) shows that they learned the importance of safe train operations, how to attend to customers, and know-how for doing business. The report also mentions that in Japan the training given by companies is well accepted by employees. These points are very important in operating railway business in the future.

Directly observing real equipment and experiencing actual operations changed the counterparts' attitude toward work. Their quality of questions for specialists before and after the training changed. Before the training, for example, they waited for advice from specialists. After the training, they examined subjects, thought for themselves, and asked questions. This is extremely important for achieving the higher objective. Some counterparts behave differently from the above, but specialists feel that they can make their explanation easier than before because all counterparts directly observed equipment and experienced actual operations.

### 2-2 Training by VJCC

The counterparts are in a position to conduct business for railway operation organizations. At that time, they were public servants and had little knowledge on the operation of private companies, and hence needed training on company management systems. On the other hand, the TA Project supports urban railway operation organizations in designing organizations and systems, and it is essential for these organizations to use Japanese management know-how for their management. Hence counterpart training work was entrusted (No. 003 issued by Hanoi TA) to VJCC (Vietnam-Japan Human Resources Cooperation Center), which is a project for dissemination of Japanese management know-how.

VJCC is an organization in Vietnam engaged in the education of Vietnamese municipal laws and Japanese companies' business management.

According to the report from the counterparts (Appendix 5-4 Collection of Questionnaires on MRB Training Course), they believe that the gained knowledge is useful for their current jobs. This is the subjective view by the counterparts participated in the training, but apparently they feel that it was very effective. TA team also think they have understood the Japanese management know how.

### 2-3 Seminars

The TA Project made contracts as an adviser with Messrs. Shigeru Morichi (Senior Professor, National Graduate Institute for Policy Studies), Tetsuro Hyodo (Professor, Tokyo University of Marine Science and Technology), and Atsushi Kawai (Director, Railway Technical Research Institute), asking them to hold seminars on urban railway business as appropriate. The expected participants in the seminars include not only counterparts but also relevant higher ranked bureaus such as HPC.



The first one (August 2013):

Key Issues for the Urban Railway in Hanoi (Mr. Shigeru Morichi) (Appendix 8-7-1)

The second one (November 2013):

Ensuring the Safety of Railway Transportation - Japanese Systems and Practices (Mr. Atsushi Kawai) (Appendix 8-7-2)

The third one (December 2013):

Key Issues for Hanoi Urban Railway to Be Successful in Business (Mr. Shigeru Morichi)  
Tokyo Metro's Experiences - Success and Failure (Mr. Masafumi Yasutomi, Executive Vice President, and Mr. Toshiaki Kurihara, former Director, Tokyo Metro Co., Ltd.) (Appendix 8-7-3)

The fourth one (June 2014):

Incentive Policies Supporting Sustainable Fare Structure for Hanoi Metro (Mr. Tetsuro Hyodo) (Appendix 8-7-4)

These seminars improved the relevant bureaus' understanding of urban railways and were greatly useful for the success of the TA Project.

## Chapter 3 Lessons

The TA Project was implemented with the aim of supporting the introduction of track-based public transportation systems into the City of Hanoi as measures for increasing traffic congestion and a means for solving urban environmental problems. The implementation of the Project enabled us to accomplish the transfer of a variety of urban railway technologies and experiences that are playing a central role in increasing the share of public transportation systems in Japanese urban areas.

Strengthening the regulatory body is important at the introduction stage of urban railways to form the basis for the institutions supporting safe and reliable railway operation.

The establishment of the O&M Company is one of significant achievements. It is very important that the C/P responsible for performing urban railway operation has started acting independently. Enabling interested parties to understand the necessity of the rules derived from the Project, reasons for preparing them, and their preparation process is also important. These things constitute the basis for the development of human resources supporting safe and reliable railway operation.

Similarly in many developing countries, traffic problems associated with urbanization have become urgent issues and the introduction of urban railways has been studied. The institutional and human resources support implemented in this Project should be utilized as a significant lesson in supporting the future introduction of urban railways in other countries and areas.

## **Part 4 Degree of Achievement of the Project Objective**

### **Chapter 1 Index1 : The regulatory body starts initial work.**

As of September 2015, just before the end of the TA Project, the control organization of the urban railway regulatory body was changed from the MRB to the DOT, which is preparing to establish a department with the same function. “Starting the initial work of the regulatory body” requires system development in the DOT and the succession of the transferred technology from the Project by the new regulatory body, also requires development of the fare policy and subsidy system before development of business plan of Line 2A.

### **Chapter 2 Index2 : O&M Company starts trial management control work.**

As previously described, work trial activities aiming to start the operation of Line 2A were cancelled and the designations of some of activities were changed to “planning.” As a result, differently from the original plan, the TA Project performed technology transfer of general urban railways. After making changes to the MOU (October 14, 2015), we worked to finalize the Project within the possible range receiving information on Line 2A little by little. Implementing “trial management control work” becomes possible as the specifications and the operational details of Line 2A become clear in the future.

### **Chapter 3 Project objective: The urban railway regulatory body (controlling the O&M Company) and the O&M Company start to function together.**

We have achieved, for the most part, the project objective “strengthening the urban railway regulatory body and preparing to establish the O&M Company.” As for the part of “both organizations start to function together,” however, we must admit that the achievement statuses of indices have been limited to some extent due to the effects of the transfer of the regulatory body, which was unexpected at the planning stage, and the delay in the railway line construction project, which was supposed to be the precondition/external condition for the Project.

The purpose, to archive on the project objective in future, had defined on “The joint terminal evaluation” of 7th JCC. (If need details, refer to Appendix7-7-B “MM\_7th JCC Hanoi Railway Lines”.)

In this evaluation, it is proposed to DOT as follows; to set up the new organization as the regulator, to assign the indispensable personnel for this organization under the supervision of HPC, and to succeed to the technical skill transferred to MRB in this project. Moreover, it is proposed to implement work trial which be deleted from this project, to cope with the various difficulty, as more appropriate timing.

The O&M Company needs to perform trial work aiming to independently start operation based on the specifications and operational details of Line 2A under construction. Comparing information provided by Line 2A Construction Project with the rules developed by the TA Project, HMC needs to make suggestions for Line 2A Construction Project after studying ideal forms and discussing the process for realizing them when noticing practical inadequacies or points to be improved. Support from railway operators are hence needed at this stage.

## Part 5 Proposal for Achieving the Higher Objective

Higher objective: Urban Railway Operation and Management Company of Hanoi City provides safe and reliable urban railway operations.

- Index 1 Being capable of independently performing operation with a high on-time departure and arrival rate and a low number of suspended trains.
- Index 2 A safe operation system has been established in accordance with transportation safe management requirements.

The above two indices were set as the higher objectives. The fact that the project objective has been achieved to a limited extent compared to the level of the original plan, as well as the status of external conditions, have made it difficult to judge whether these indices can be achieved. To achieve the indices, both C/P organizations need to make efforts to achieve the project objective and the external condition “operation start of urban railway Line 2A” needs to be realized.

We believe that, in the aspect of strengthening the urban railway regulatory body, the Project widely contributed to the development of the legal system aiming to operate urban railways for the first time in the country. The Railway Act will be revised in 2017, where provisions for urban railways will be included in the Act. The outputs of the Projects are being referred to in preparing the draft. In developing the Ministerial Ordinance of the Ministry of Transport, the Project actively cooperated with the Ministry by reviewing the draft and making a comment on it. It is desirable that the outputs and the lessons obtained from the Project are effectively used as a valuable precedent in the future introduction of urban railways into other cities.

The Project requires the cross-sectional efforts of administrative agencies in the City of Hanoi including national agencies. These agencies directly/indirectly took part in the Project for the common goal of introducing urban railways into the City of Hanoi. Through such participation, cooperation among agencies and their capacities have been improved, which will be useful after the start of operation.

The establishment of HMC as an operational organization was a significant achievement. As described above, we must admit that the achievement statuses of the indices have been limited to some extent due to a large delay in Line 2A Construction Project.

In the future, HMC will independently make a comparison between information provided by 2A Construction Project and the rules developed by the Project.

The Project enables HMC to make adjustments between two or more pieces of equipment constituting urban railway systems. HMC will be able to understand and evaluate the described details and results of the tests conducted during trial work. When HMC notices practical inadequacies or points to be improved, railway business operators need to assist HMC in studying ideal forms, discussing the process for realizing them, and making suggestions for Line 2A Construction Project.

## Appendixes

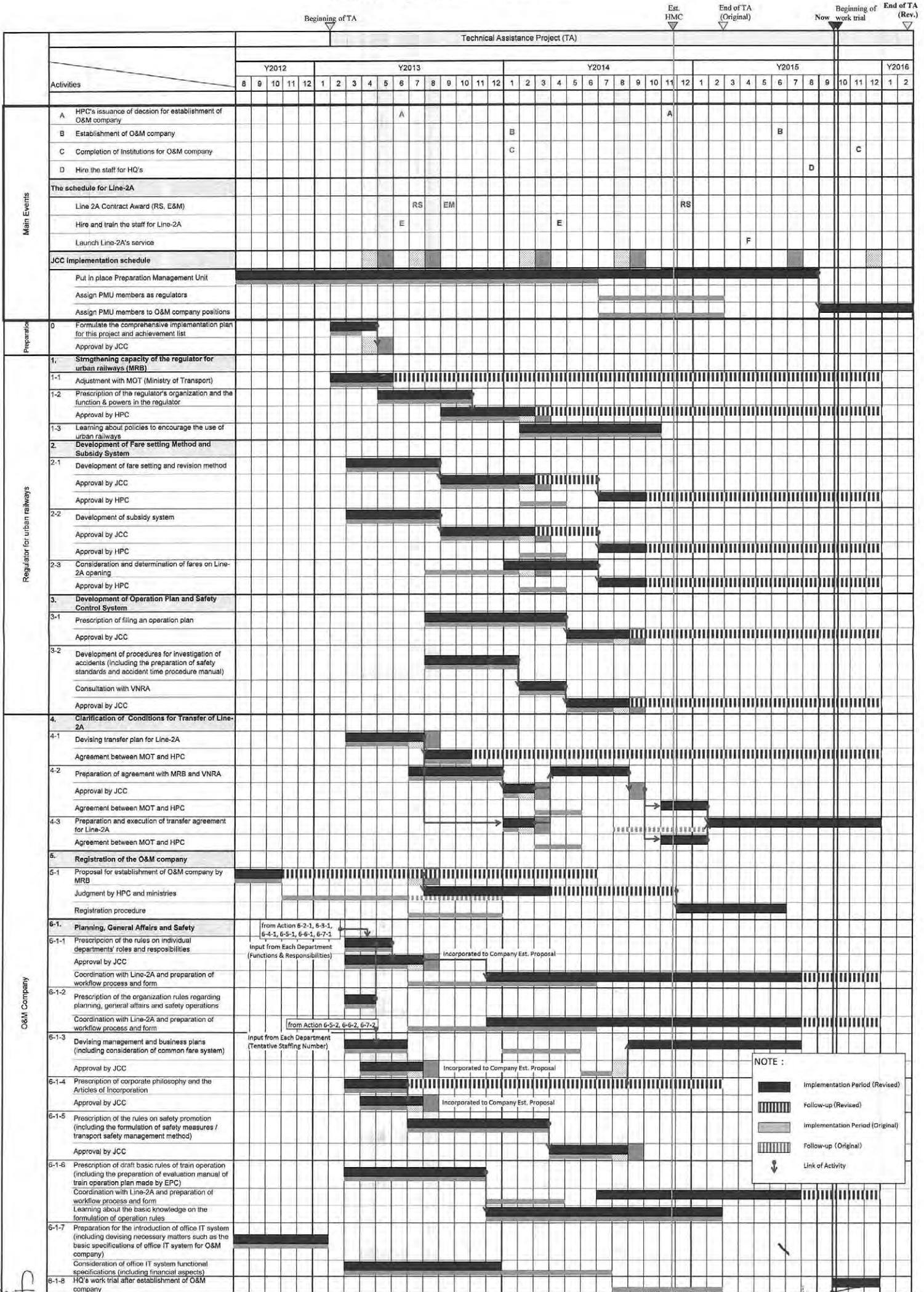
No.	Name of documents
1 PDM, PO	
1-1	Annex_PO, PDM
1-2	Minutes for revised MOU_Oct 14 2015_JICA-HPC
2 Work flows	
2	Workflow of each activity
3 Detailed Activity Plan	
	N/A
4 Assignment	
4	Assignment of TA Project and Consumption of Contract MM
5 Training	
5-1	C/P Japan Training SCHEDULE
5-2	Report
5-3	Inquiry about VJCC Training for MRB
6 Equipment	
	N/A
7 JCC	
7-1	NOTICE (1 <sup>st</sup> JCC)
7-2	NOTICE (2 <sup>nd</sup> JCC)
7-3	NOTICE (3 <sup>rd</sup> JCC)
7-4	NOTICE (4 <sup>th</sup> JCC)
7-5	NOTICE (5 <sup>th</sup> JCC)
7-6	NOTICE (6 <sup>th</sup> JCC)
7-7-A	NOTICE (7 <sup>th</sup> JCC)
7-7-B	MM_7th JCC_Hanoi Railway Lines
7-8	NOTICE (8 <sup>th</sup> JCC)
8 Outputs of Activities	

8-1-1	Report on Clarifying Responsibilities for Governmental Management of Urban Railway in Hanoi
8-1-3	Urban Railway Use Incentive Policy Study Report
8-2-1	Final Fare Policy Report
8-3-1	Form of Public Service Framework Contract for Passenger Transport by Urban Railway in Hanoi City
8-3-2	General regulations on handling with urban railway incidents, accidents
8-4-1	Comprehensive Alternative of Line 2A Transfer
8-4-2-A	Master Plan for Line 2A Project Transfer (DRAFT)
8-4-2-B	Hand-Over and Take-Over Plan for Urban Railway Line 2A Cat Linh - Ha Dong
8-4-3-A	15th December 2014 No.9796/UBND-XDGT
8-4-3-B	8th January 2015 No.199/BGTVT-CQLXD
8-6-1-1	Regulation on Functions, Responsibilities OF Units Under Hanoi Metro One Member Liability Limited Company
8-6-1-3-A	Mid-term Management Plan (5 year Business Plan)
8-6-1-3-B	Annual Management Plan (Annual Business Plan)
8-6-1-4	Articles of Incorporation and Operation OF Hanoi Metro One Member Liability Limited Company
8-6-1-5-A	The Safety Management Rule for Urban Railway Transportation (DRAFT)
8-6-1-5-B	The Rule of Responding Urban Railway Incidents and Accidents (DRAFT)
8-6-1-6-A	Train Operation Rule (DRAFT)
8-6-1-6-B	Train Operation Management Manual (Draft)
8-6-2-2	Labor Regulations
8-6-2-3-A	Rules on Recruitment
8-6-2-3-B	Rules on Wages
8-6-2-3-C	Regulations on Reward
8-6-2-4	Working Rules
8-6-2-5	HQ personnel plan
8-6-2-8	Salary Payment Workflow
8-6-3-2-A	Accounting Rules

8-6-3-2-B	Rules for Fixed Assets
8-6-3-2-C	Cash Handling Rules
8-6-3-3-A	Budgeting Rules
8-6-3-3-B	Rules for the Closing of Accounting Books
8-6-3-4-A	Contract Management Rules
8-6-3-4-B	Tender and Contract Process Rules
8-6-3-4-C	Procurement rules of services and goods outside the scope of bid
8-6-3-4-D	Material Management Rules
8-6-3-5	Study of Measures to Maintain Financial Soundness
8-6-3-6	Accounting Workflow
8-6-4-2	Passenger Transport Contract
8-6-4-6	Non-fare Business Plan (Draft)
8-6-5-1-A	HMC Office organization of train operations staff (Draft)
8-6-5-1-B	Function and responsibility of train operation department (Head Quarter) (Draft)
8-6-5-3-A	Hanoi Metro driver training rules (Draft)
8-6-5-3-B	Rules on train driver management (Draft)
8-6-6-1-A	Draft of Rolling Stock Maintenance Rules
8-6-6-1-B	Draft of Rolling Stock Maintenance Manuals (relevant part of procedures for rolling stock maintenance (workflows))
8-6-7-1-A(CTC)	Regulation on Civil Structure Maintenance (Draft)
8-6-7-1-B(CTC)	Track Maintenance Regulations (Draft)
8-6-7-3-A(CTC)	Civil Structure Maintenance Manual (Draft)
8-6-7-3-B(CTC)	Track Maintenance Manual (Draft)
8-6-7-1(E)	Draft of Equipment maintenance rule
8-6-7-3(E)	Draft of Equipment maintenance manual (communication equipment, signal equipment, electric power equipment and station equipment)
8-6-7-1-A(A)	Structure of an AFC System (Equipment)
8-6-7-1-B(A)	Basics of the Maintenance of AFC Equipment
8-6-7-1-C(A)	Maintenance Operation and Management

8-6-7-1-D(A)	Organizational Functions to Implement Maintenance
8-6-7-1-E(A)	Organization Rules
8-6-7-1-F(A)	Requirements for Staff of AFC Related Divisions
8-6-7-2-A(A)	A Number of Staff Required for AFC Equipment Maintenance Work
8-6-7-2-B(A)	Maintainable and Practical Maintenance Items in Vietnam
8-6-7-2-C(A)	Information on Standard Market Prices for Maintenance Items
8-6-7-2-D(A)	Calculation method of the number of AFC equipment maintenance personnel
8-6-7-3-A(A)	Acquisition of Planning Methods for Equipment Renewal
8-6-7-3-B(A)	Rules for Criteria on the Number of Installed Equipment
8-6-7-3-C(A)	Approach for formulating an equipment replacement plan
8-6-7-3-D(A)	Concept of developing the standard for the number of AFC equipment installations
8-6-7-4(A)	A Learning of Measures to Prevent Equipment Failures (AFC)
8-6-7-5(A)	Collection of Rules for the Maintenance of the Equipment Used for Line 2A
8-7-1	Key Issues for the Urban Railway in Hanoi
8-7-2	Securing the Safety of Railway Transportation
8-7-3	Tokyo Metro's Experience
8-7-4	Incentive Policies Supporting Sustainable Fare Structure for Hanoi Metro

Plan of Operation (Date: Oct 14, 2015)







		Technical Assistance Project (TA)																														
		Y2012					Y2013					Y2014					Y2015					Y2018										
Activities		8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2
<b>6-5. Train Operation</b>																																
6-5-1 Prescription of draft organization rules regarding train operation Coordination with Line-2A and preparation of workflow process and form																																
6-5-2 Learning about the process of preliminary study regarding draft staffing requirements (including prescription of the plan to manage operational staff and to train them)																																
6-5-3 Learning about the basic skill / knowledge for train drivers' management and operation (including prescription of training plans for crews)																																
6-5-4 Learning about a methodology to make train schedules Learning about a methodology to make train schedules based on Line-2A's schedule																																
6-5-5 Learning about a methodology to draw run curves																																
6-5-8 Collecting train operation rules for the Line-2A Learning about the general knowledge for urban railway regarding train operation																																
<b>6-6. Rolling Stock Maintenance</b>																																
6-6-1 Prescription of draft organization rules regarding rolling stock maintenance Coordination with Line-2A and preparation of workflow process and form																																
6-6-2 Learning about the process of preliminary study regarding draft staffing requirements and maintenance budget Learning about the process of study regarding staffing requirements and maintenance budget for Line-2A																																
6-6-3 Learning about the process for implementation plan of rolling stock renewal (including the preparation of maintenance manuals and education plans)																																
6-6-4 Learning about countermeasures against rolling stock failures (including the preparation of rolling stock operation safety manual for dealing with circumstances such as accident)																																
6-6-5 Collecting maintenance rules for the Line-2A rolling stocks Learning about the general knowledge for urban railway regarding rolling stock maintenance																																
<b>6-7. Facilities Maintenance</b>																																
6-7-1 Prescription of draft organization rules regarding facilities maintenance Coordination with Line-2A and preparation of workflow process and form																																
6-7-2 Learning about the process of preliminary study regarding draft staffing requirements and maintenance budget Learning about the process of study regarding staffing requirements and maintenance budget for Line-2A																																
6-7-3 Learning about the process for draft implementation plan of facilities renewal (including the preparation of maintenance manuals and education plans)																																
6-7-4 Learning about countermeasures against facilities failures (including the preparation of facilities operation safety manual for dealing with circumstances such as accident)																																
6-7-5 Collecting maintenance rules for the Line-2A facilities Learning about the general knowledge for urban railway regarding facilities maintenance																																

O&M Company

Integrated Train Operation Department

**NOTE :**

- Implementation Period (Revised)
- Follow-up (Revised)
- Implementation Period (Original)
- Follow-up (Original)
- Link of Activity

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Project Design Matrix (PDM) Revised: Oct 14, 2015

**Technical Assistance Project to Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of Metropolitan Railway Lines in Hanoi City**

Project Site: Hanoi City Project Implementation Period: From Feb 2013 to Feb 2016 (36 months in total)

Target Group: Hanoi People's Committee (HPC), Hanoi Metropolitan Railway Management Board (MRB), Department of Transportation (DOT) and Hanoi Metro One Member Limited Liability Company (HMC)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
<p><b>Top objective</b> The Operation and Maintenance (O&amp;M) company for urban railways in Hanoi City provides safe and reliable urban railway operation,</p>	<p>1. The company becomes acquainted with train operation and management of urban railway systems, ensuring high punctuality and infrequent service stoppages. 2. A comprehensive safety operation system in line with "Transport Safety Management Method" is developed.</p>	<p>1. Annual report of O&amp;M company (After commencement)</p>	
<p><b>Project objective</b> The urban railway regulator (O&amp;M management) and the O&amp;M company begin to function jointly.</p>	<p>1. Initial work of the regulator is commenced. 2. The trial of management control work of O&amp;M company is commenced.</p>	<p>1. Approved document to railway operator - Fare - Level of service 2. Company rules, working instructions, work implementation flow and other necessary documents are finalized for actual operation.</p>	<p>1. Line-2A starts its operation as scheduled fully complied with transfer conditions prescribed in EPC contract.</p>
<b>Output</b>			
<p>1. The regulator's capacities are strengthened.</p>	<p>The regulator's organization and its function &amp; powers in the organization are prescribed and approved by HPC.</p>	<p>Approval of HPC concerning the organization chart, function and power of the regulator.</p>	<p>1. The formalities of organization establishment and hire, training and assignment of the personnel are smooth at the competent authorities' level.</p>
<p>2. Fare setting method and subsidy system are established.</p>	<p>2-1 Subsidy system for O&amp;M company is developed and shared in the Guideline. 2-2 Fares for the opening of Line-2A is set.</p>	<p>2-1 Guideline for subsidy 2-2 Fares for the opening</p>	<p>2. Coordinating about Urban Railway policy among competent authorities is implemented smoothly and requisite decisions are made at the suitable timing.</p>
<p>3. Operation plan and safety control system are established.</p>	<p>3-1 Guideline for filing the train operation plan is prepared. 3-2 Guideline for accident reporting procedure is prepared. 3-3 Guideline for accident investigation procedure is prepared.</p>	<p>3-1 Guideline for filing an operation plan 3-2 Guideline for accident reporting procedure 3-3 Guideline for accident investigation procedure</p>	<p>3. Requisite documents about operation and maintenance of Line-2A are provided at the suitable timing.</p>
<p>4. Conditions for transfer of Line-2A are clarified.</p>	<p>Transfer plan is devised and agreed between MRB and Vietnam Railway Administration (VNRA).</p>	<p>Agreement documents</p>	<p>4. Office IT system is procured as scheduled.</p>
<p>5. O&amp;M company is registered.</p>	<p>Business registration license is issued.</p>	<p>Business registration license</p>	
<p>6. Rules of function and duty for each department of O&amp;M company are prescribed.</p>	<p>6-1 Each department has rules of function and duty. 6-2 Annual plan is made.</p>	<p>6-1 Rules of functions and duty of each department 6-2 Annual plan</p>	

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Appendix 2



Activities	Inputs (Japanese side)	Inputs (Vietnamese side)	Preconditions
<b>1. Strengthening capacity of the regulator for urban railways(MRB)</b>	<b>1. Dispatch of Japanese Experts</b> Fields of Experts	<b>1. Assignment of Counterpart Personnel for O&amp;MU at the beginning of the project.</b>	All related projects, such as UMRT Line 2A, 2 and 3 proceeds as scheduled.
1-1 Adjustment with MOT (Ministry of Transport)	(1) Project Manager 1 person		
1-2 Prescription of the regulator's organization and the function & powers in the regulator			
1-3 Learning about policies to encourage the use of urban railways	<u>Regulator</u>	<u>Regulator</u>	There is no big change in urban railway policy of Vietnam central government and HPC.
	(2) Deputy Project Manager, Strengthening capacity of the regulator 1 person	(1) Team leader 1 person	
<b>2. Development of Fare Setting Method and Subsidy System</b>		(2) Organization: 1 person	
2-1 Development of fare revision method		(3) Fare policy 1 person	
2-2 Development of subsidy system		(4) Train operation and safety 1 person	
2-3 Consideration and determination of fares on Line-2A opening	(3) Fare Policy, Planning Coordination 1 person		If approved specification, design conditions and so on of Line-2A aren't provided at the suitable timing, fundamental instruction will be implemented based on the general knowledge for operation method regarding urban railway.
<b>3. Development of Operation Plan and Safety Control System</b>		<u>O&amp;M company</u>	
3-1 Prescription of filing an operation plan		(5) Team leader 1 person	
3-2 Development of procedures for investigation of accidents (including the preparation of safety standards and accident time procedure manual)	<u>O&amp;M company</u> (4) [Technical Leader] Safety / Engineering Management / Condition for Transfer of Line-2A 1 person	(6) Planning 1 person (7) Administration and safety 1 person	
<b>4. Clarification of Conditions for Transfer of Line-2A</b>		(8) Human resource 1 person	
4-1. Devising transfer plan for Line-2A		(9) Finance 1 person	
4-2. Preparation of agreement with MRB and VNRA		(10) Sales 1 person	
4-3. Preparation and execution of transfer agreement for Line-2A	(5) [Management Leader] Organization Management / General affairs / Human Resources 1 person	(11) Train operation 1 person	When requisite documents are provided, outputs of fundamental instruction should be coordinated in accordance with provided documents.
<b>5. Registration of the O&amp;M Company</b>		(12) Rolling stock 1 person	
5-1 Proposal for establishment of O&M company by MRB		(13) Facilities 1 person	
<b>6-1. Planning, General Affairs and Safety</b>		<b>2. Provision of facilities for the Project implementation :</b>	
6-1-1 Prescription of the rules on individual departments' roles and responsibilities	(6) Planning / Management and Business Planning / Non-fare Business 1 person	- Project office - Working equipment	When office IT system isn't procured as scheduled and system domains to be adapted aren't clarified, alternative plans will be devised and implemented in order that requisite system domains are processed without office IT system.
6-1-2 Prescription of the organization rules regarding planning, general affairs and safety operations	(7) Accounting / Treasury / Procurement 1 person	- Local cost for personnel - Cost for office rent and equipment	
6-1-3 Devising management and business plans (including consideration of common fare system)	(8) Financial Soundness / Registration / Office IT 1 person	- Other expenses: For research, local travelling other than by air (Hanoi and its vicinity), other activities	
6-1-4 Prescription of corporate philosophy and the Articles of Incorporation	(9) Sales 1 person		
6-1-5 Prescription of the rules on safety promotion (including the formulation of safety measures / transport safety management method)	(10) Train operation 1 person		
6-1-6 Prescription of draft basic rules of train operation (including the preparation of evaluation manual of train operation plan made by EPC)	(11) Rolling stock 1 person		When the integrated operation between. HQ and OU (i.e. sharing accidents
6-1-7 Preparation for the introduction of office IT system	(12) Civil engineering / Track / Architecture 1 person		

	(including devising necessary matters such as the basic specifications of office IT system for O&M company)
6-1-8	HQ's work trial after establishment of O&M company
<b>6-2.</b>	<b>Human Resources</b>
6-2-1	Prescription of organization rules regarding HR management
6-2-2	Prescription of employment rules
6-2-3	Prescription of internal rules regarding recruiting, salary, and sanction
6-2-4	Prescription of the rules on division of duties, office organization and official authorities
6-2-5	Devising HR-related plans including staffing plan
6-2-6	Prescription of employee welfare-related rules, including those on staff welfare and pension
6-2-7	Devising employee education plan (including the devising post-service launch education plan)
6-2-8	Development of Work Procedures without office IT system
6-2-9	HQ's work trial after establishment of O&M company
<b>6-3.</b>	<b>Finance</b>
6-3-1	Prescription of organization rules regarding finance
6-3-2	Devising an accounting system
6-3-3	Prescription of rules for budget and settlement
6-3-4	Prescription of purchasing rules
6-3-5	Consideration of the measures to maintain the company's financial soundness
6-3-6	Development of Work Procedures without office IT system
6-3-7	HQ's work trial after establishment of O&M company
<b>6-4.</b>	<b>Sales</b>
6-4-1	Prescription of organization rules regarding sales and non-fare businesses
6-4-2	Prescription of General Transport Contract
6-4-3	Preparation of <b>draft</b> cash handling manual for station staff
6-4-4	Development of fare setting system and calculation of fares (including the development of fare revising system)
6-4-5	Consideration of setting fares based on the common fare system (determined for the start of Line-2A operations)
6-4-6	Devising non-fare business plans <b>draft</b>
6-4-7	HQ's work trial after establishment of O&M company
<b>6-5.</b>	<b>Train Operation</b>
6-5-1	Prescription of <b>draft</b> organization rules regarding train operation

- (13) Station Facilities / IC card 1 person
- (14) Signal/Telecom Electricity / Machinery / Transformation of electricity 1 person
- (15) Secretary 1 person

## 2. Counterpart training in Japan

At least 13 persons

## 3. Equipment

Items needed for project implementation.

## 4. Expense

- Cost for employment of local consultants
- Other expenses:  
For research, travelling, training
- TC assistants:  
Japanese interpreter  
English interpreter

measures, managing and training human resources) is required, the operation system and division of works are reviewed from the viewpoint of the strengthening of cooperation and operation system. If needed, the principles of work trials are revised.

Regulator's work trial regarding the supervision of O&M company can be implemented on condition that the regulator for urban railway is set up (or established) and personnel are assigned in the regulator.

HQ's work trial after establishment of O&M company can be implemented on condition that O&M company is established and personnel are assigned in HQ. In addition to the conditions which are mentioned above, HQ's work trial towards the opening of Line-2A can be implemented only if facilities of Line-2A are installed, training for Line-2A personnel is completely finished and commissioning begins.

In order that facilities of Line-2A are handed over, it

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*[Signature]*

6-5-2	Learning about the process of preliminary study regarding <b>draft</b> staffing requirements (including prescription of the plan to manage operational staff and to train them)
6-5-3	Learning about the basic skill/knowledge for train drivers' management and operation (including prescription of training plans for crews)
6-5-4	Learning about a methodology to make train schedules
6-5-5	Learning about a methodology to draw run curves
6-5-6	Collecting train operation rules for the Line-2A (including learning about the general knowledge for urban railway regarding train operation)
<b>6-6.</b>	<b>Rolling Stock Maintenance</b>
6-6-1	Prescription of <b>draft</b> organization rules regarding rolling stock maintenance
6-6-2	Learning about the process of preliminary study regarding <b>draft</b> staffing requirements and maintenance budget
6-6-3	Learning about the process for implementation plan of rolling stock renewal (including the preparation of maintenance manuals and education plans)
6-6-4	Learning about countermeasures against rolling stock failures (including the preparation of rolling stock operation safety manual for dealing with circumstances such as accident)
6-6-5	Collecting maintenance rules for the Line-2A rolling stocks (including learning about the general knowledge for urban railway regarding rolling stock maintenance)
<b>6-7.</b>	<b>Facilities Maintenance</b>
6-7-1	Prescription of <b>draft</b> organization rules regarding facilities maintenance
6-7-2	Learning about the process of preliminary study regarding <b>draft</b> staffing requirements and maintenance budget
6-7-3	Learning about the process for <b>draft</b> implementation plan of facilities renewal (including the preparation of maintenance manuals and education plans)
6-7-4	Learning about countermeasures against facilities failures (including the preparation of facilities operation safety manual for dealing with circumstances such as accident)
6-7-5	Collecting maintenance rules for the Line-2A facilities (including learning about the general knowledge for urban railway regarding facilities maintenance)

is essential that the domestic systems such as safety certification and so on in Vietnam for launch of the urban railway shall be applied.



*anf*

**MINUTES OF MEETINGS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY  
AND  
HANOI PEOPLE'S COMMITTEE  
FOR AMENDMENT OF MEMORANDUM OF UNDERSTANDING  
ON  
THE TECHNICAL ASSISTANCE PROJECT TO STRENGTHEN THE CAPACITY OF  
REGULATOR AND TO ESTABLISH OPERATION AND MAINTENANCE COMPANY OF  
METROPOLITAN RAILWAY LINES IN HANOI CITY**

The Japan International Cooperation Agency (hereinafter referred to as "JICA") and Hanoi People's Committee (hereinafter referred to as "HPC") hereby agreed on the following amendment of the Memorandum of Understanding (hereinafter referred to as "MOU") on "the Technical Assistance Project to Establish an Agency Managing the Operation and Maintenance of Metropolitan Railway Lines in Hanoi City" (hereinafter referred to as "TA Project") signed on December 3<sup>rd</sup>, 2012.

1. Counterpart Agency (Implementing Agency)

Original Version	Amended Version
MRB (Hanoi Metropolitan Railway Management Board)	MRB, Department of Transport (hereinafter referred to as "DOT") and Hanoi Metro One Member Limited Liability Company (hereinafter referred to as "HMC")
Reason: Operation and Maintenance Company (hereinafter referred to as "the O&M Company" was successfully established in November 2014.	
MRB has played a role of the counterpart agency so far for all the activities of the TA Project, concerning both "Regulator" and "O&M Company" by the end of August 2015. Through a continued effort by the concerned parties of the TA Project, HMC was successfully established in November 2014 as the essential achievement of the T/A Project. Taking this successful progress of the TA Project into consideration, HPC decided to replace MRB by HMC which shall bear the responsibility to securely implement the TA Project as the counterpart agency for the activities of the O&M Company, according to the Decision (No. 4127/QD-UBND) on August 19, 2015, as the conclusion of 5th JCC Meeting held on July 16, 2015, and accordingly replace the JCC members, according to the Decision (No. 3625/QD-UBND) on July 29, 2015.	
On the other hand, MRB was replaced by DOT as a role of the counterpart agency for the activities concerning "Regulator" from September 2015 according to the Joint Circular (No. 42/2015/TTLT-BGTVT-BNV) on August 14, 2015.	

2. Duration

Original Version	Amended Version
2 (two) years	3 (three) years
Reason: Construction of Hanoi Metropolitan Railway Line 2A Project is unexpectedly far behind the schedule.	
JICA and HPC had already agreed to extend the TA Project up to "February 2016" at the 4 <sup>th</sup> JCC on September 24, 2014 as mentioned in the Notice (No. 221/TB-VP) on September 29 by HPC and the Decision (No.6642/QD-UBND) on December 12, 2014 by HPC.	






## 3. PDM and PO

Original Version	Amended Version
Appendix 1	Appendix 2
Reason: Construction of Hanoi Metropolitan Railway Line 2A Project is unexpectedly far behind the schedule.	
<p>(1) Activities related to "Regulator"</p> <p>Although the activities related to "Regulator" function had been almost completed, only the activity for "work trials towards the opening of Line 2A" (Activities 1-4, 2-4 and 3-4) cannot be executed because of unexpected delay of the construction of the Line 2A Project. Therefore, Activities 1-4, 2-4 and 3-4 for "work trials towards the opening of Line 2A" shall be deleted out of PDM and PO.</p>	
<p>(2) Activities related to the work trial towards the opening of Line 2A for the O&amp;M Company</p> <p>For HMC as the O&amp;M Company, the activity "work trials towards the opening of Line 2A" (Activities 6-1-9, 6-2-10, 6-3-8 and 6-4-8) cannot be executed because of unexpected delay of the construction of the Line 2A Project. Therefore, Activities 6-1-9, 6-2-10, 6-3-8 and 6-4-8 for "work trials towards the opening of Line 2A" shall be deleted out of PDM and PO.</p>	
<p>(3) Activities related to finalizing of the rules or manuals of the O&amp;M Company</p> <p>Although the activities related to the rules or manuals of the O&amp;M Company had been completed in large part, they are not yet finalized, due to the delayed construction of Line 2A as compared with the initial schedule. Therefore, the activities related to "finalizing the rules or manuals" (Activities 6-1-6, 6-4-3, 6-4-6, 6-5-1, 6-5-2, 6-5-6, 6-6-1, 6-6-2, 6-6-5, 6-7-1, 6-7-2, 6-7-3 and 6-7-5) shall be replaced by "drafting of the rules or manuals".</p>	

The 6th JCC meeting will be held in December 2015 for the joint terminal evaluation; a specific date will be proposed by JICA.

This amendment will become effective as of October 14, 2015.

Hanoi, October 14, 2015



Mr. Masahiko FURUICHI  
Mission Leader, Senior Advisor,  
JICA



Mr. NGUYEN Quoc Hung  
Vice Chairman  
Hanoi People's Committee, Vietnam

Appendix 1: Memorandum of Understanding (signed on December 3, 2012)

Appendix 2: Amend Version of PDM, PO

Appendix 3: Decision (No. 4127/QD-UBND) (issued by HPC on August 19, 2015)

Appendix 4: Decision (No. 3625/QD-UBND) (issued by HPC on July 29, 2015)

Appendix 5: Joint Circular (No. 42/2015/TTLT-BGTVT-BNV) (issued by MOT and MOHA on August 14, 2015)

Appendix 6: Notice (No. 221/TB-VP) (issued by HPC on September 29, 2014)

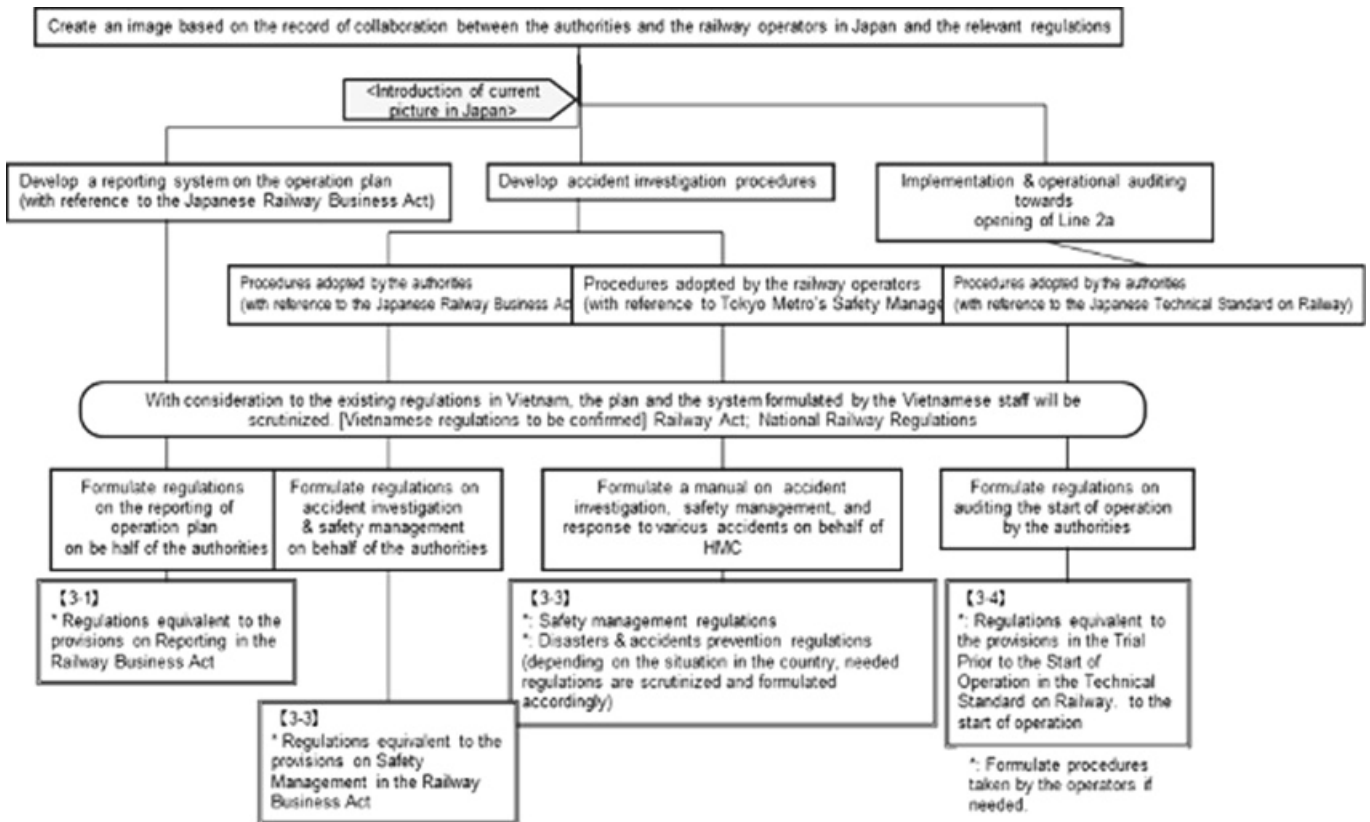
Appendix 7: Decision (No.6642/QD-UBND) (issued by HPC on December 12, 2014)



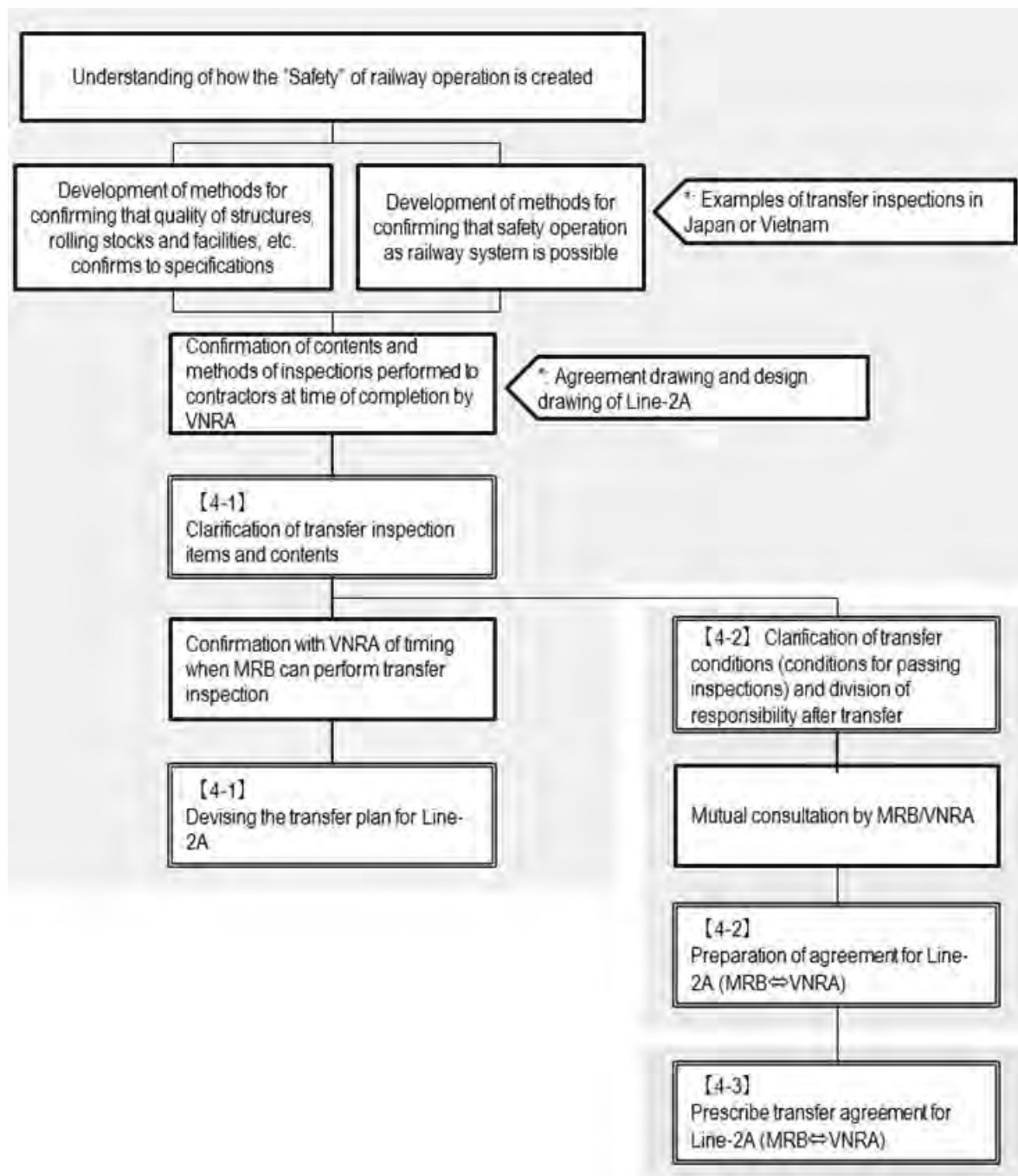


## Work flows of each activity

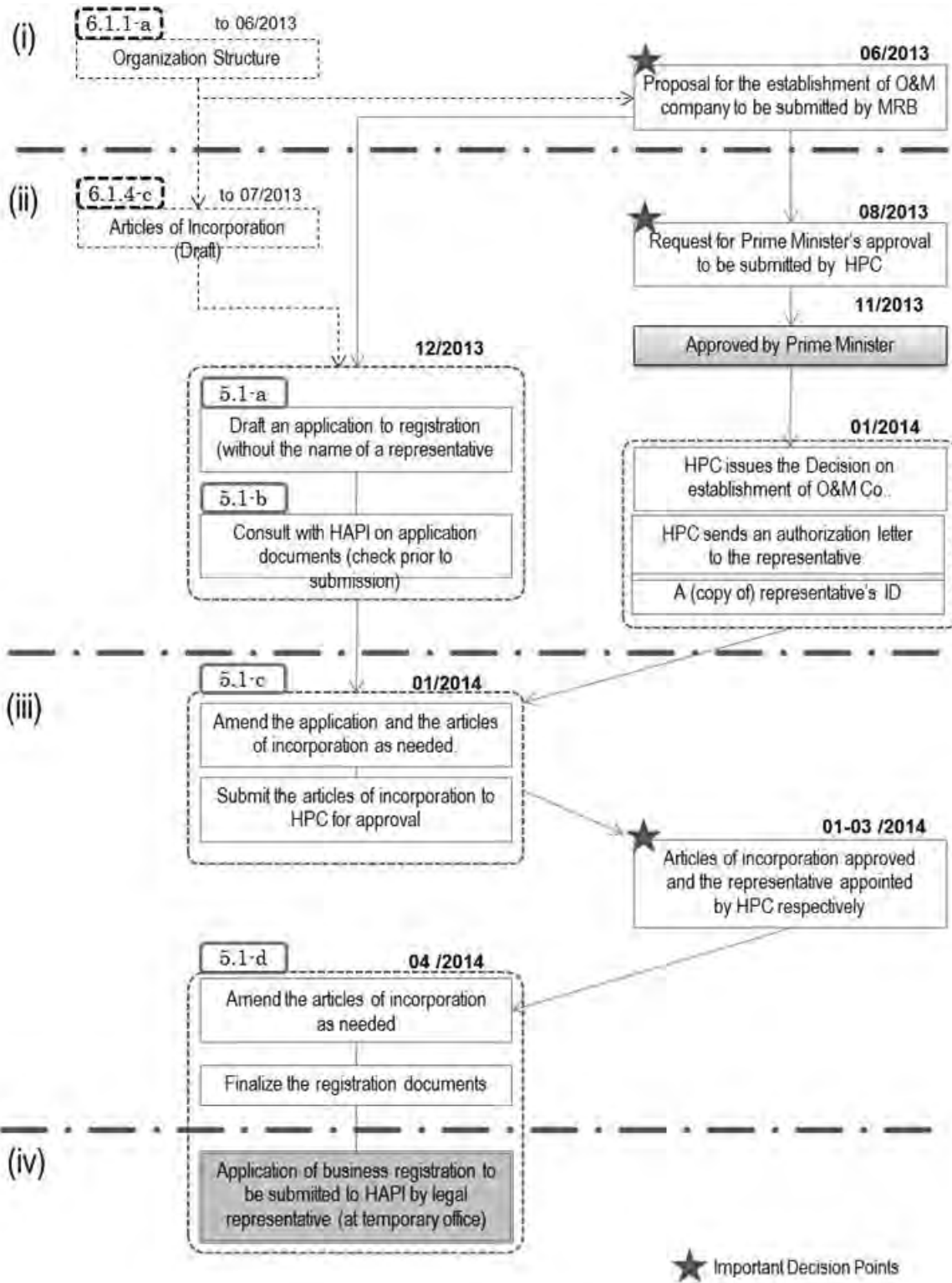
• Activity3 Development of Operation Plan for Train Operation Plan and Safety



活動 4 Clarification of the Conditions for the Transfer of Line 2A

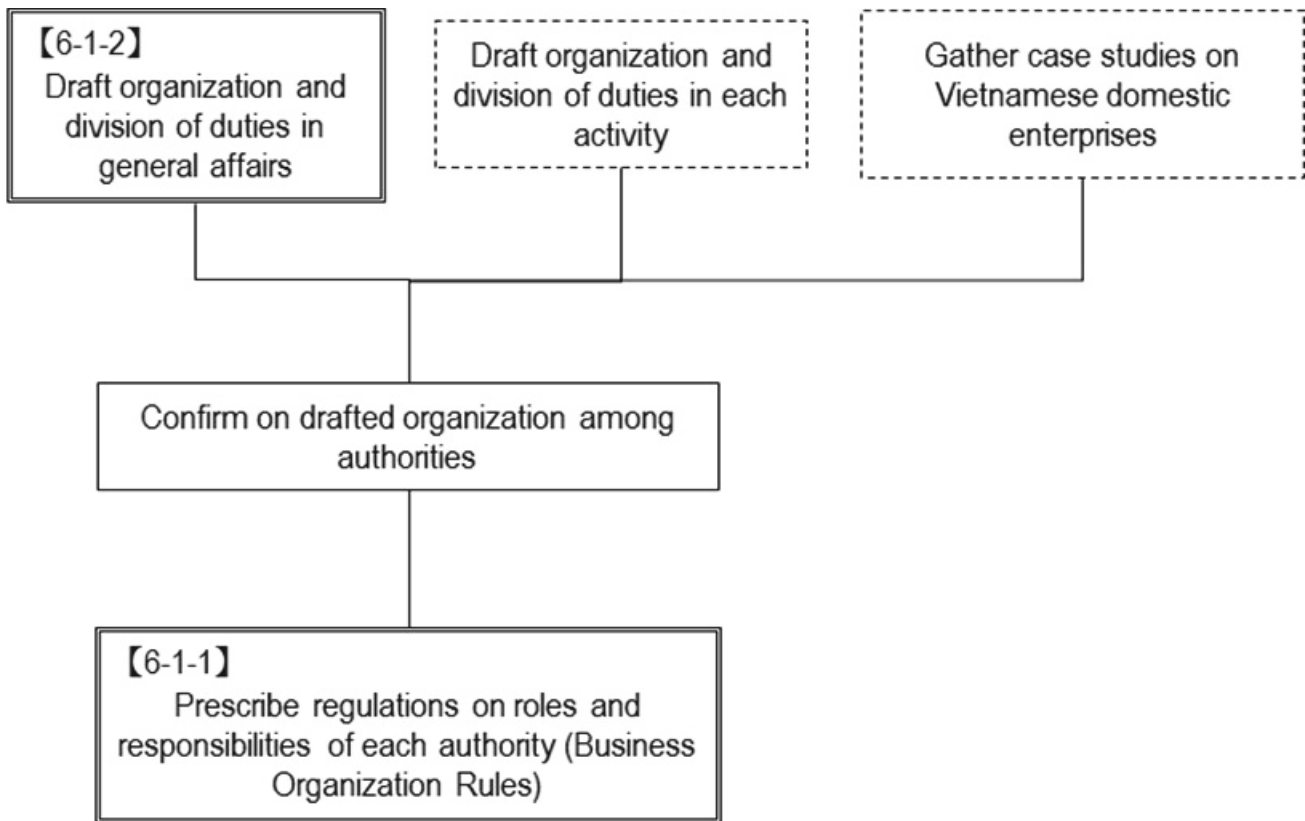


活動 5 Registration of the O&M company



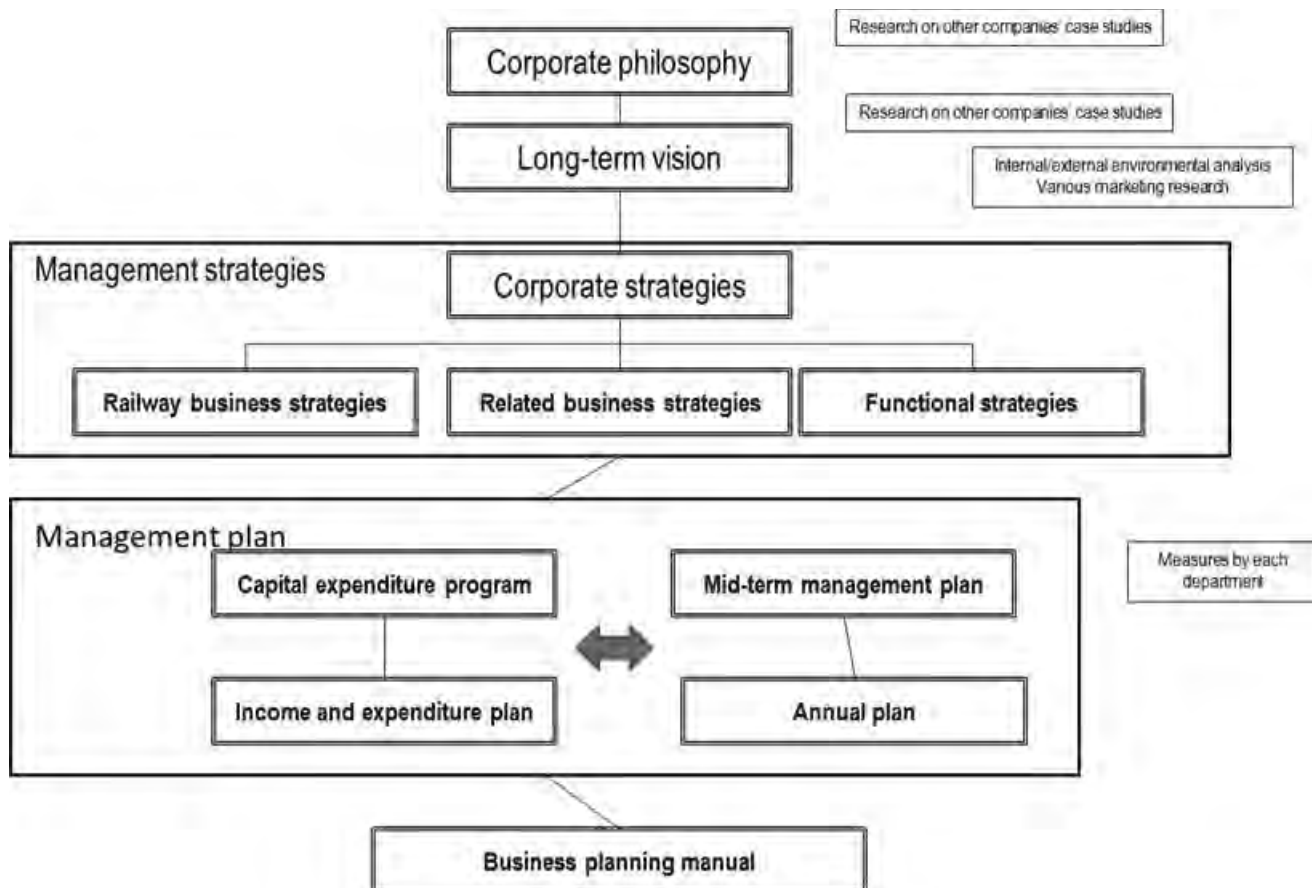
活動 6-1 Planning, General Affairs and Safety

(活動 6-1-1 6-1-2)

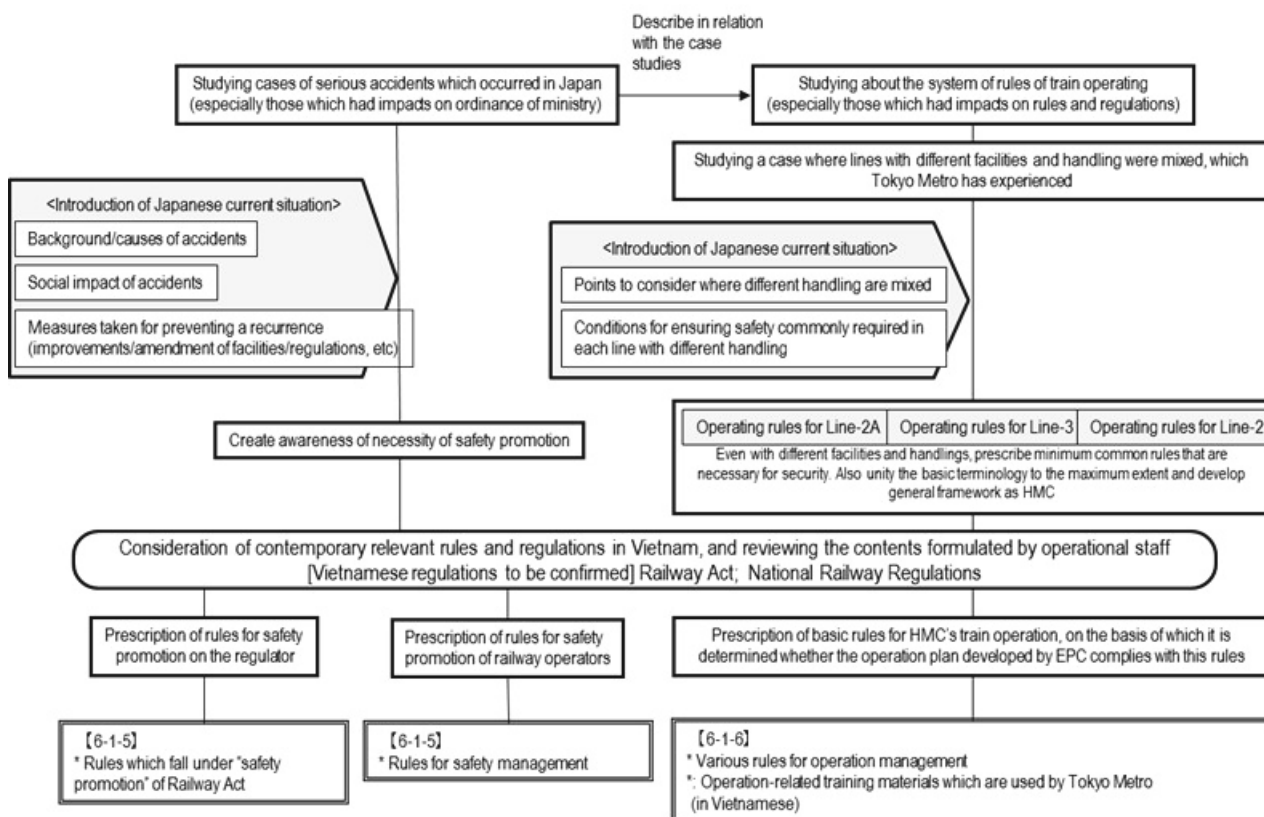


(活動 6-1-3 6-1-4)

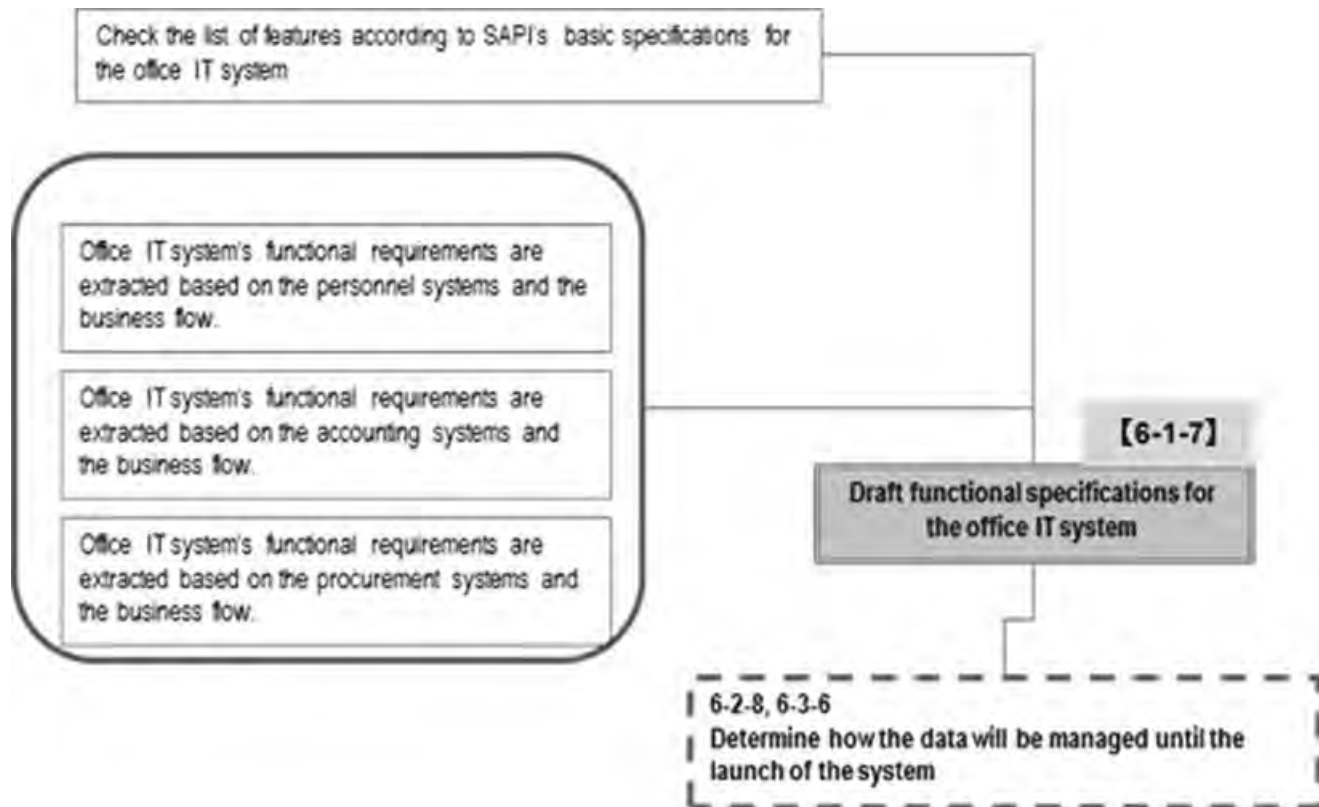




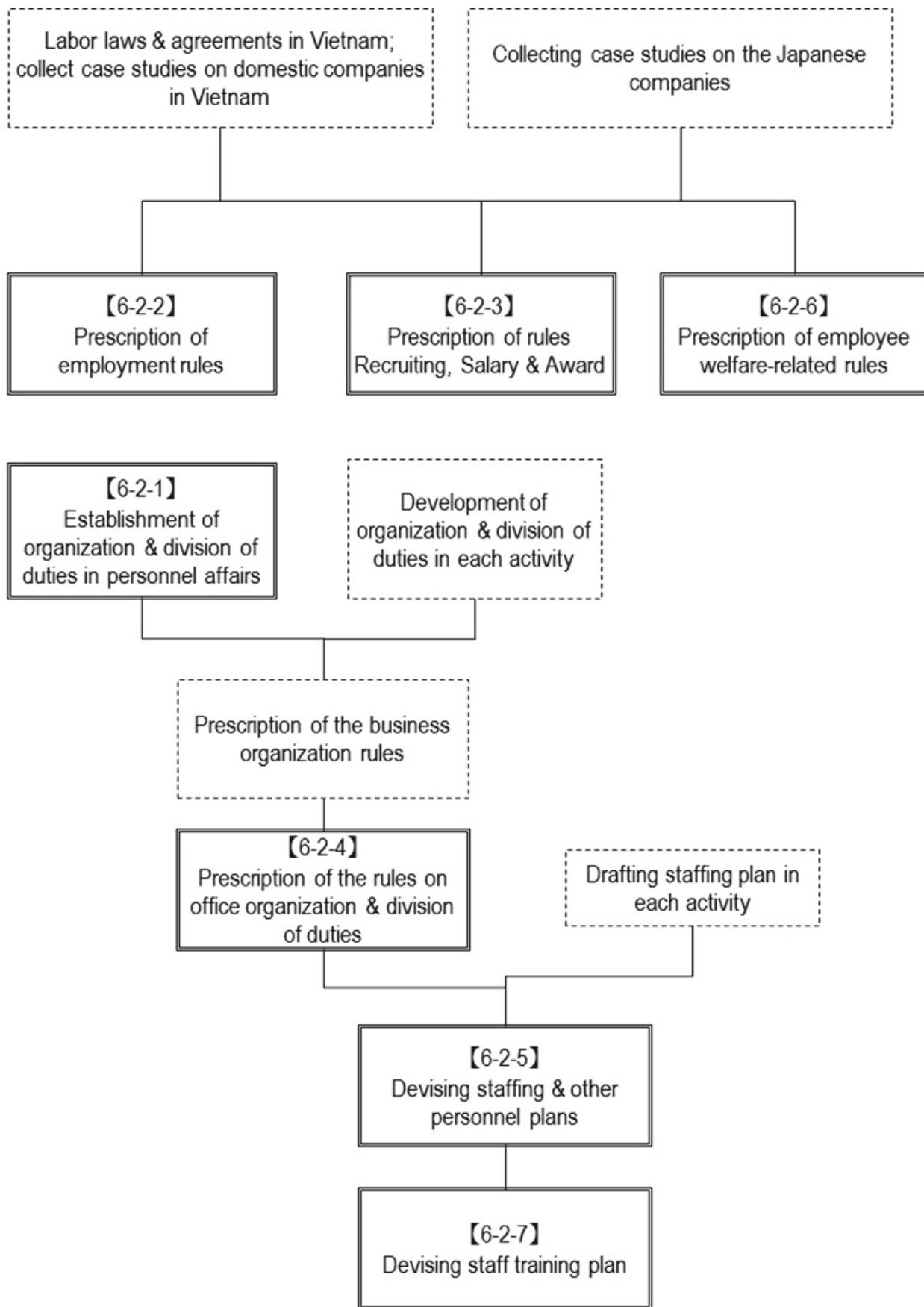
(活動 6-1-5 6-1-6)



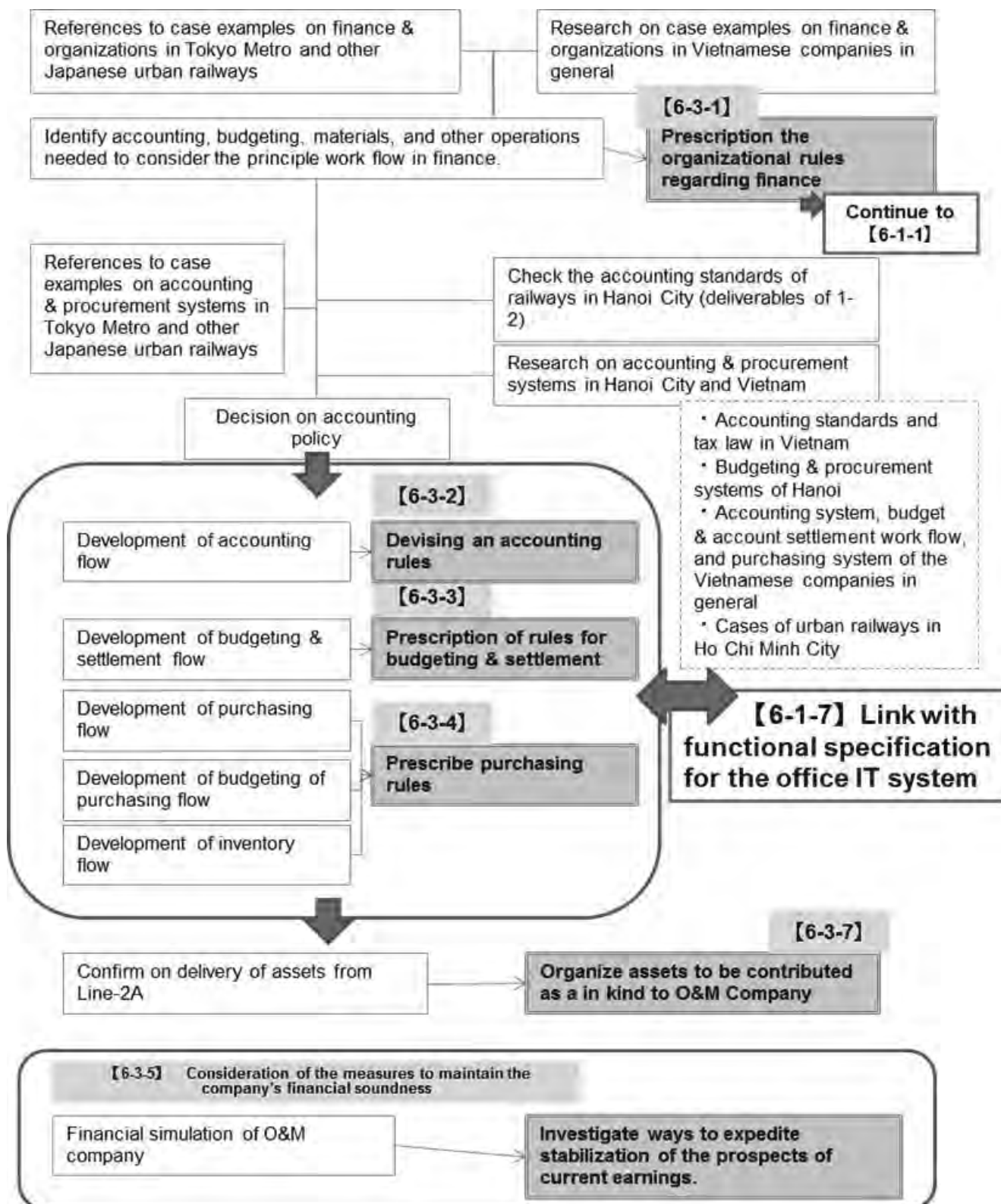
(活動 6-1-7)



活動 6-2 Human Resources

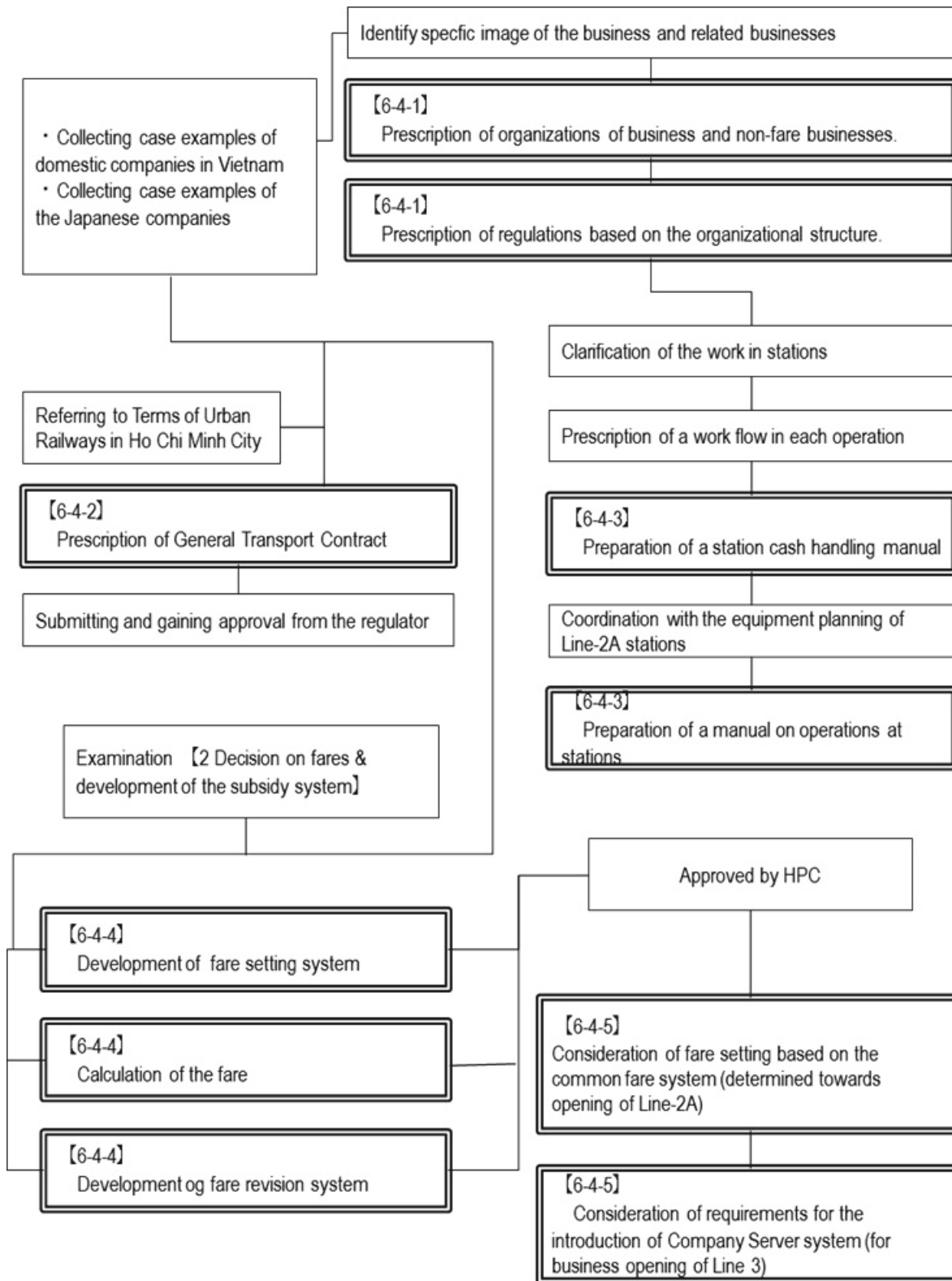


活動 6-3 Finance

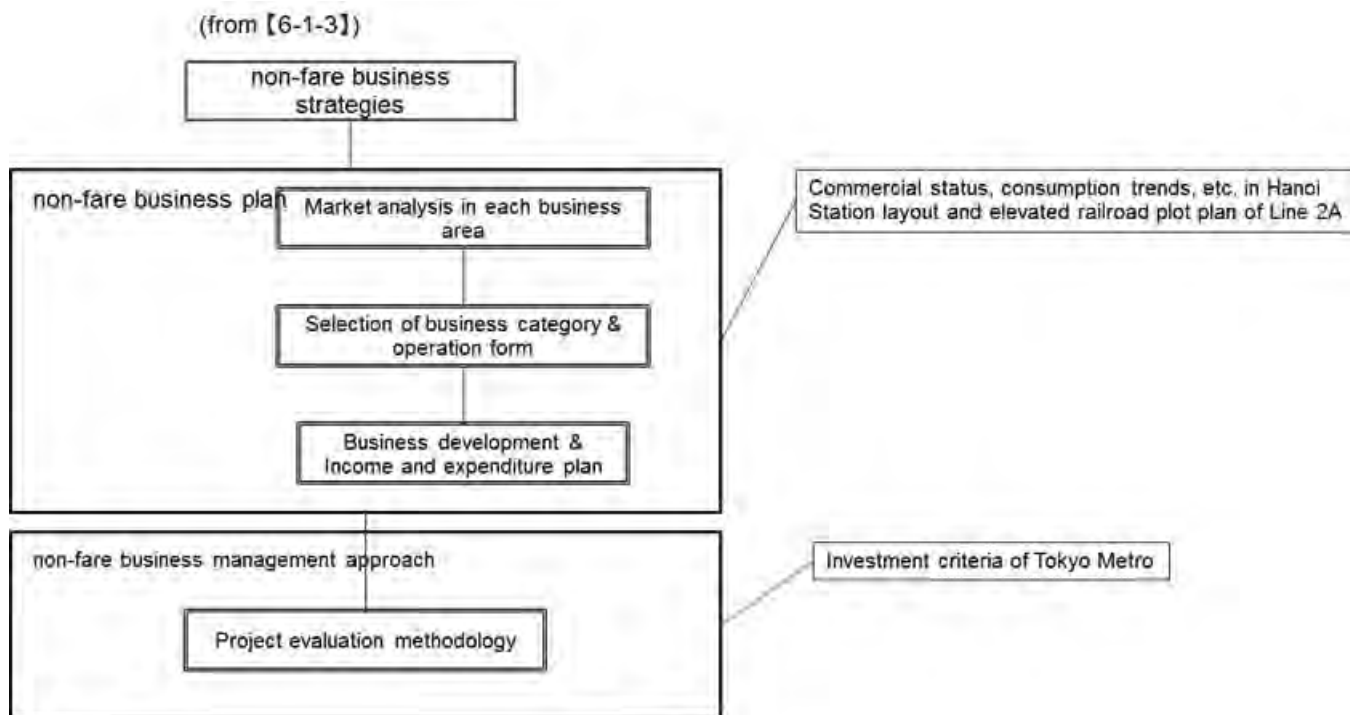




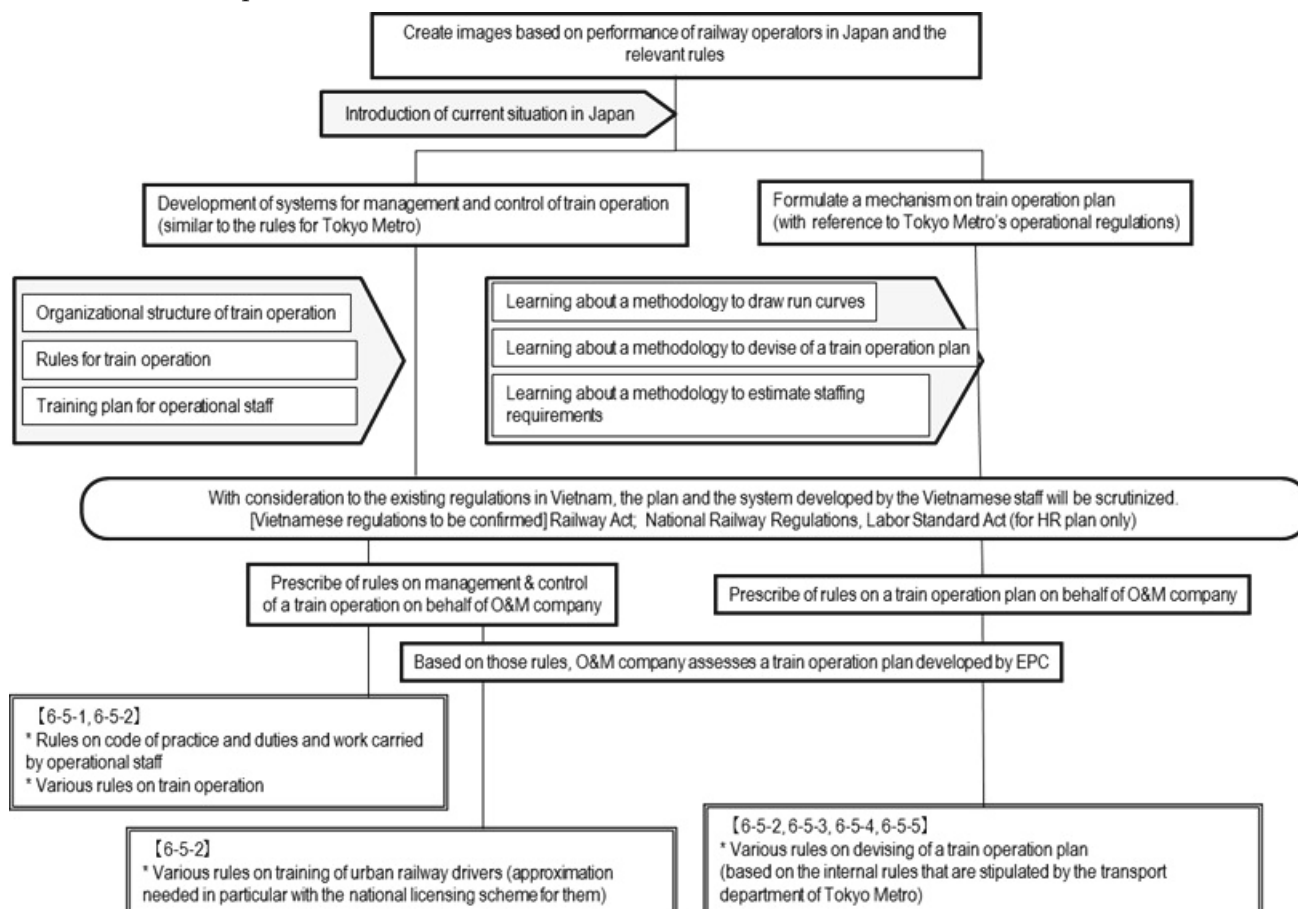
活動 6-4 Sales



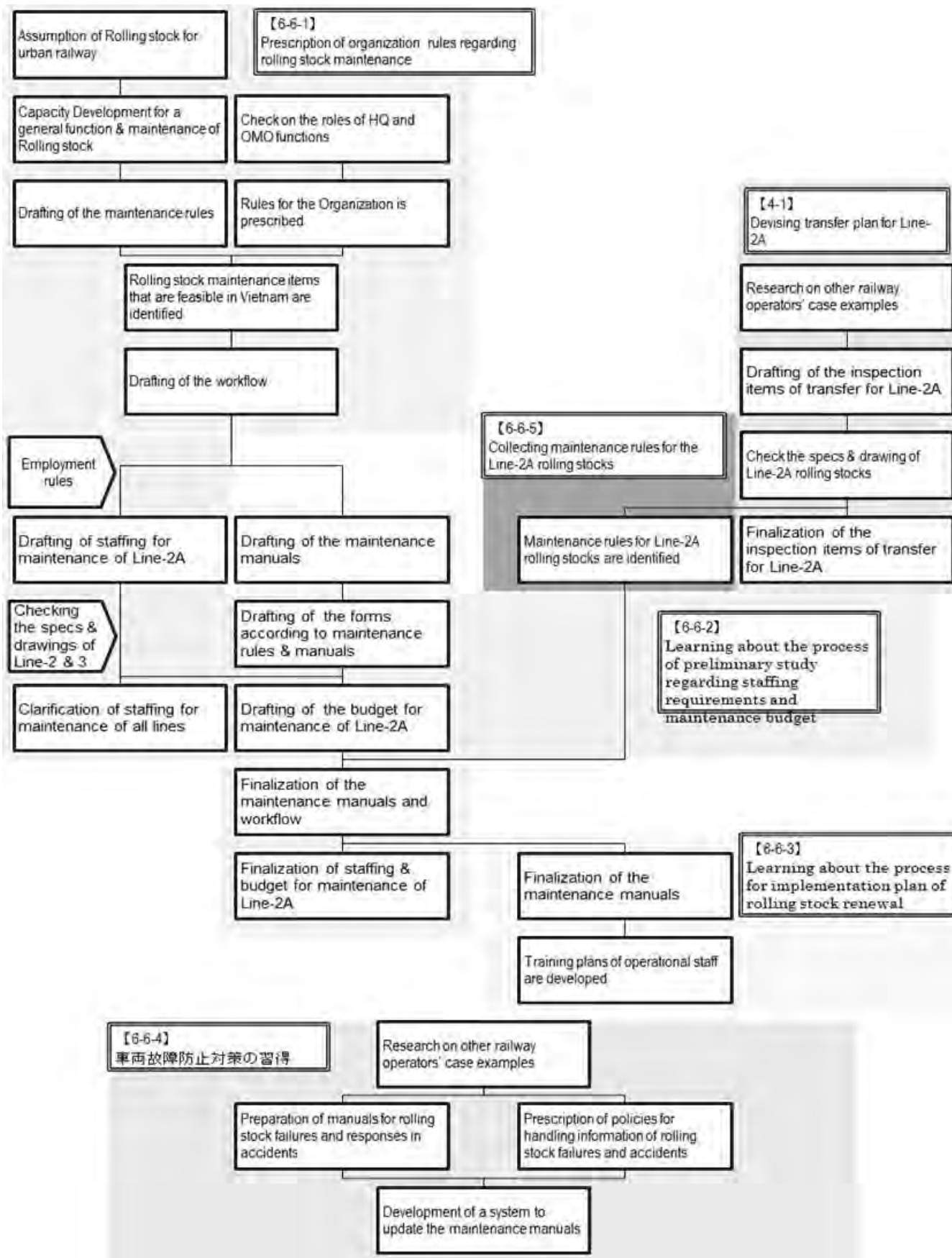
(活動 6-4-6)



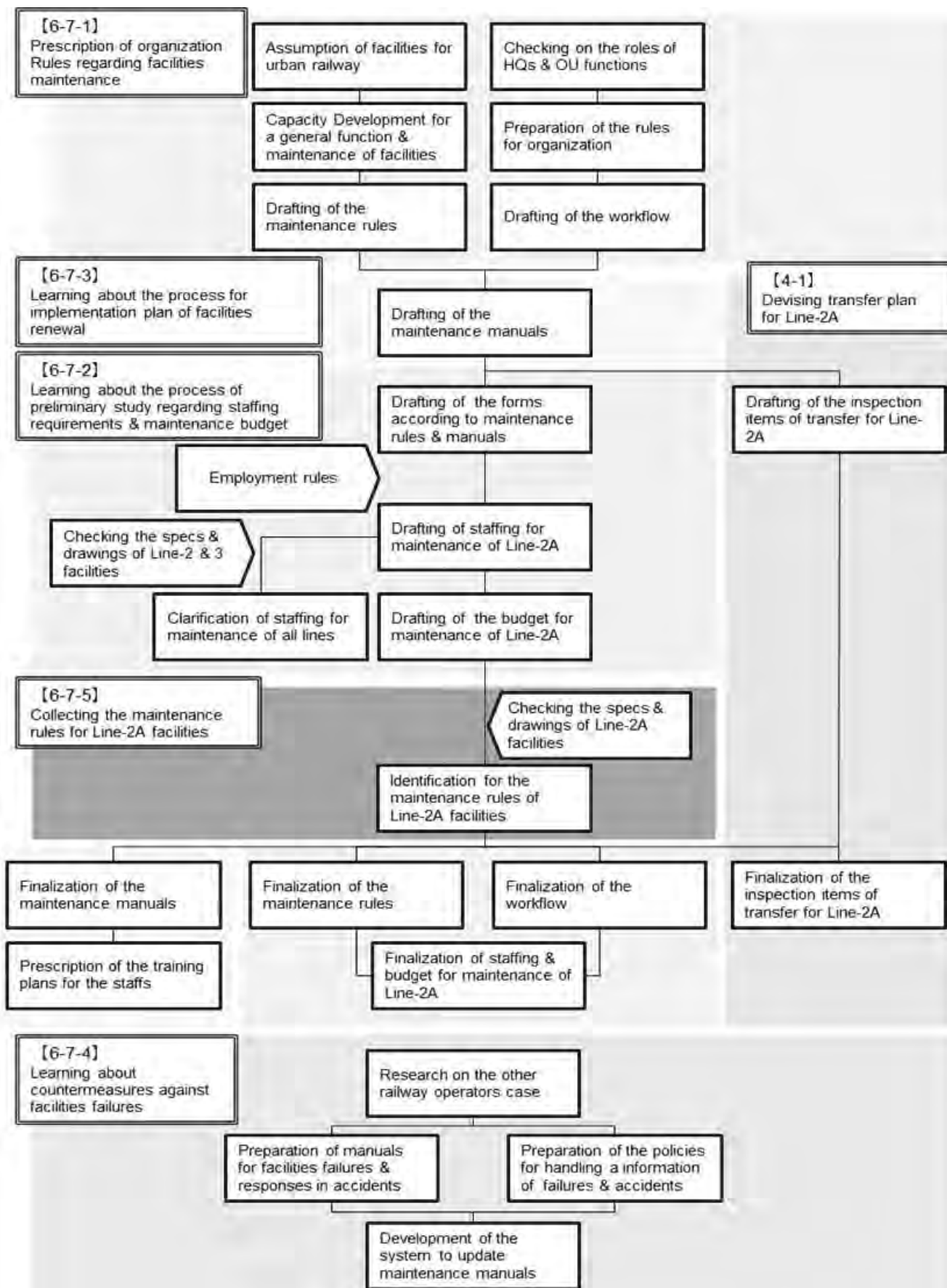
活動 6-5 Train Operation



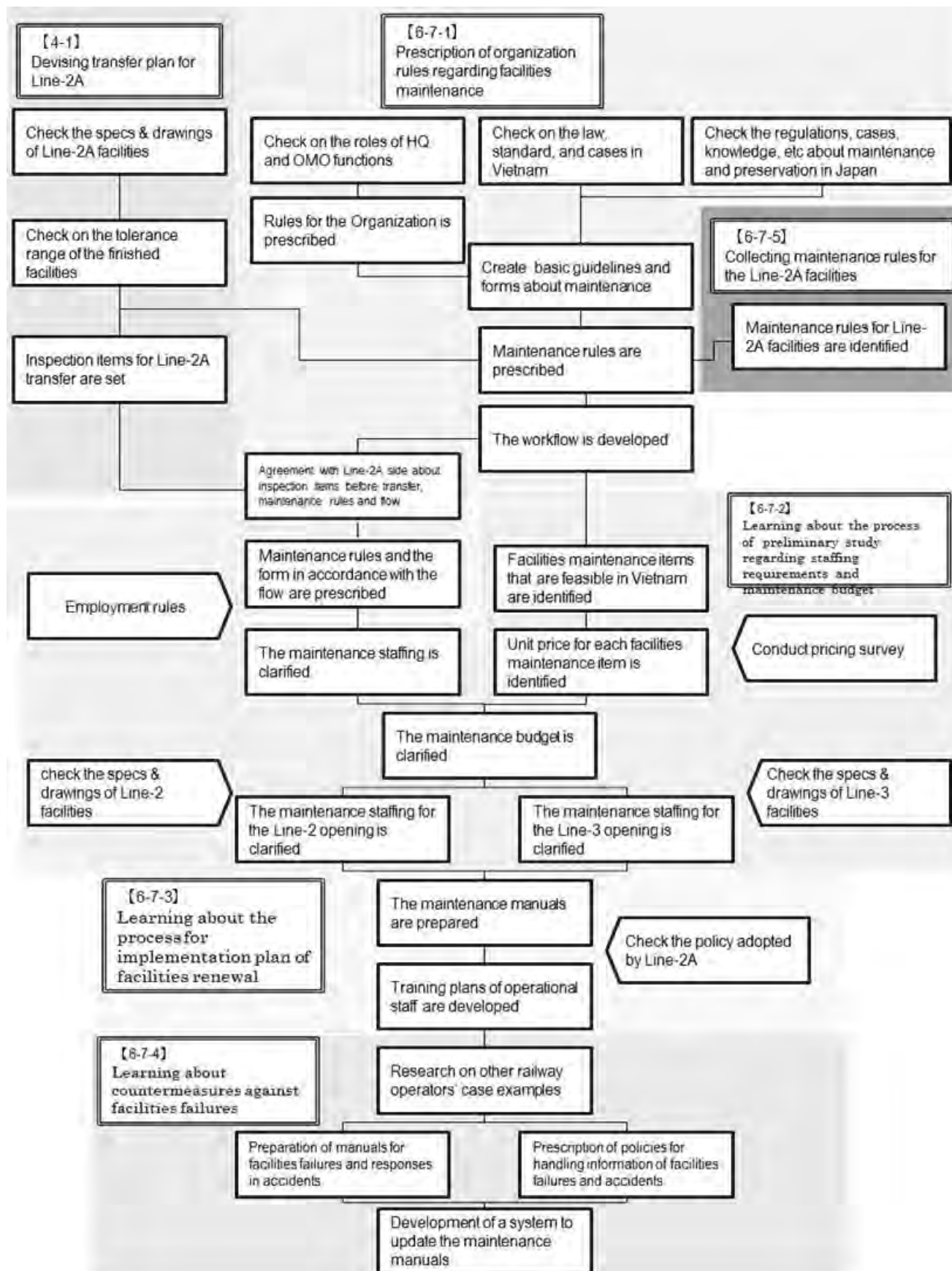
活動 6-6 Rolling Stock Maintenance



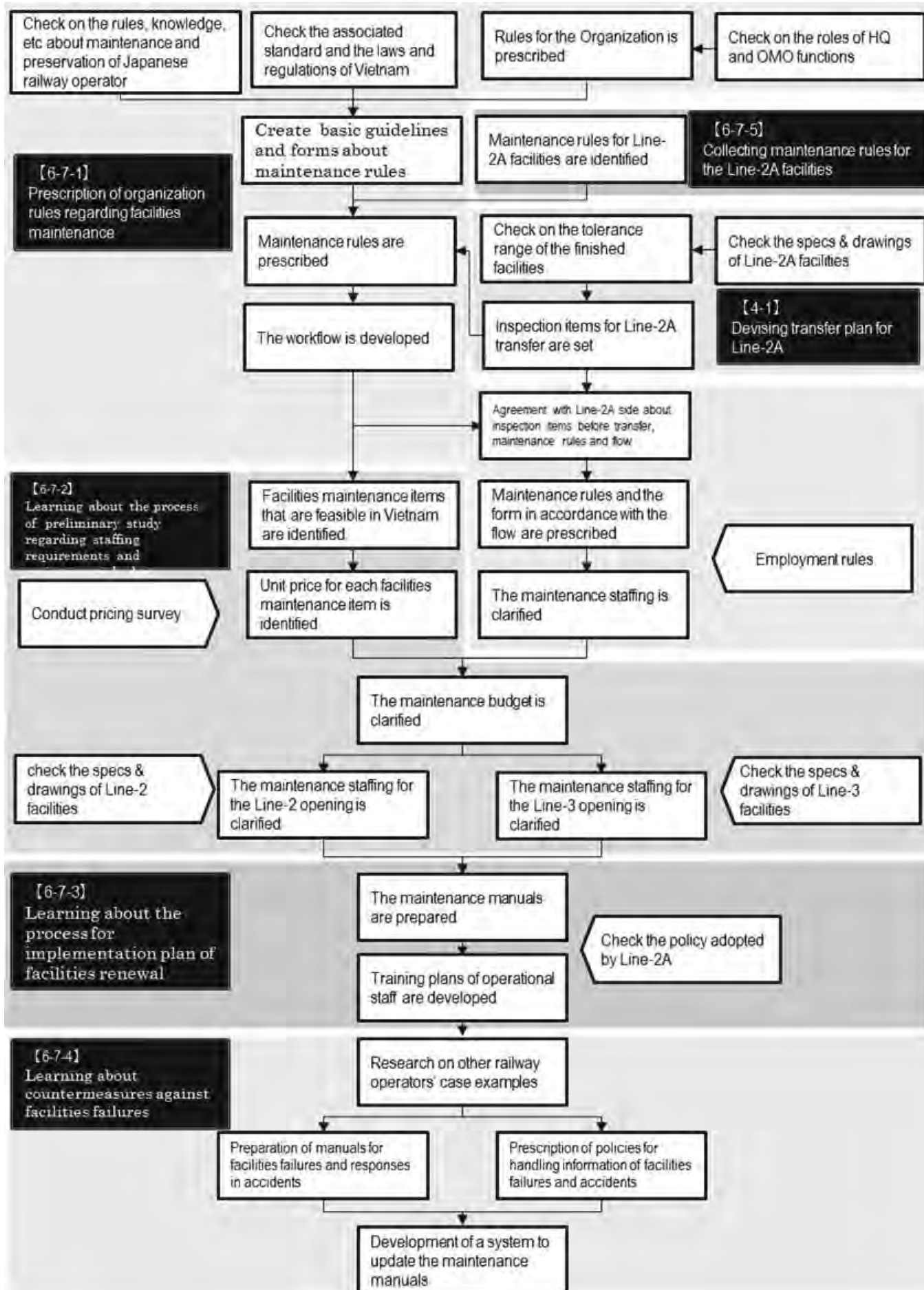
活動 6-7 Facilities Maintenance (Civil, Track, and Construction)



活動 6-7 Facilities (Electricity)



Activity6-7 (AFC)









## C/P JAPAN Training schedule (8/26 ~ 9/6, 9/9 ~ 9/20)

### Schedule – No. 1 Schedule

#### Day 1

Group 1	Group 2	Doc. No.	Time	Venue	Training contents	Guided by	Followed by	Remarks
8/26	9/9		am	JICA	General introduction	-	-	
			13:00 ~ 14:00	JICA→Ueno	Moving to Tokyo Metro head office	-	-	
			14:00 ~ 17:00	Tokyo Metro Head office	General introduction	Kashima	-	
		1-1	17:00 ~ 17:30	Ueno station	Works at Lost and Found Center	Horiuchi	-	
			17:30	Ueno	Finish	-	-	

Notice: If ① is put next to the guider name, this means this person is in charge of group 1, and same understanding for ② case

1

### Schedule – No. 2 Schedule

#### Day 2

Group 1	Group 2	Doc. No.	Time	Venue	Training contents	Guided by	Followed by	Remarks
8/27	9/10		8:30	Zoshigaya station	Gathering	-	-	
		2-1	8:30 ~ 9:15	Ikebukuro station	Rush hour situation (Fukutoshin and Marunouchi lines)	Ushida Horiuchi	Tanisaka①	
			9:15 ~ 9:30	Ikebukuro→Myogadani	Morning rush hour situation on Marunouchi line	Ushida	Tanisaka①	Drop at Station no. 2: Myodagani
		2-2	9:30 ~ 12:00	IOCC	Works at OCC and operation control	OCC staff	Kikuchi① Ushida① Tanisaka① Kurihara②	
			12:00 ~ 13:00	Canteen of RS depot	Lunch	-	Ushida Tanisaka①	
		2-3	13:00 ~ 14:00	Passenger center	Treatment to passengers...	Center staff	Ushida Tanisaka①	
		2-4	14:00 ~ 15:00	Driver office Koishikawa	Reporting works	Ushida	Tanisaka①	
		2-5	15:00 ~ 15:30	Myogadani→Korakuen	Moving and observing half height platform doors	Ushida	Tanisaka①	
		2-6	15:30 ~ 16:00	Korakuen→Iidabashi	Observing full-height platform door in Korakuen station	Ushida	Tanisaka①	
		2-7	16:00 ~ 16:30	In Iidabashi station	Visiting ticket offices and shops in station	Tanisaka Horiuchi	UshidaT	
	16:30	Iidabashi station	Finish	-	-			

2

## Schedule – no. 3 Schedule

### Day 3

Group 1	Group 2	Doc. No.	Time	Venue	Training contents	Guided by	Followed by	Remarks
8/28	9/11		9:15	Technical department of Marunouchi Line	Gathering	-	-	
		3-1	9:15 ~ 10:15	Technical department of Marunouchi Line	Introduction about Technical department of Marunouchi Line	Fijoka	Sakai	
			10:15 ~ 10:30	Technical department of Marunouchi Line → Nakano workshop	Moving	-	Sakai	
		3-2	10:30 ~ 11:15	Nakano workshop	Maintenance works at workshop	Kurihara	Sakai	
		3-3	11:15 ~ 12:00	Nakano Inspection yard	Maintenance works at inspection yard	Kurihara	Sakai	
			12:00 ~ 13:00	Nakano workshop canteen	Lunch	-	Sakai	
			13:00 ~ 13:30	RS management department of Nakano (OU)	Explaining questions	Kurihara	Sakai	
			13:30 ~ 13:45	Nakano RS management department → Training center	Moving	-	Sakai	
		3-4	13:45 ~ 17:30	Training center	Training visual aids, simulations, accident education exhibition, answering to questions	Training center staff and TA team	Ushida Sakai Horiuchi① Kurihara Kikuchi Tanisaka①	Dividing into two small groups when visiting those places
			17:30	Training center	Finish	-	-	

3

## Schedule – No. 4 Schedule

### Day 4

Group 1	Group 2	Doc. No.	Time	Venue	Training contents	Guided by	Followed by	Remarks
8/29	9/12		8:00	Nishikasai station	Gathering	-		
		4-1	8:00 ~ 8:45	Nishikasai station	Observing rush hour situation at one of crowded stations of Tokyo Metro	Ushida	Sakai① Horiuchi	
			8:45 ~ 9:00	Nishikasai → Otemachi	Observing rush hour situation of Tozai line – one of crowded line in Japan	Ushida	Sakai① Horiuchi	Stop at station no. 7: Otemachi
			9:00 ~ 9:30	In Otemachi station	Underground street in the city center connecting directly to metro stations	Horiuchi Kikuchi	Ushida Sakai①	
		4-2	9:30 ~ 11:15	Ga Otemachi	General works at stations, station equipment, fire preventing center, resting place for staff, electricity room, air-conditioner, etc.	Horiuchi Kikuchi	Ushida Sakai①	
			11:15 ~ 12:15	Otemachi	Lunch	-	Ushida Sakai① Horiuchi	
			12:15 ~ 12:30	Otemachi → Toyomachi	Moving	-	Ushida Sakai① Horiuchi	
		4-3	12:30 ~ 12:45	Signaling controlling location in Toyomachi station	Control routes at stations, etc.	Ushida	Sakai① Horiuchi	
			12:45 ~ 13:00	Toyomachi → Kasai	Moving	-	Sakai①	
		4-4	13:00 ~ 13:15	Kasai station	Observing the siding for prioritised trains	Ushida	Sakai①	
		4-5	13:15 ~ 16:30	Metro museum	Visiting the museum and learn about metro	TA Staff	Ushida Sakai①	Dividing into two groups to visit
		4-6	16:30 ~ 17:00	Kasai → Minamisuna machi → Zenmonnaka machi	Drop on the way to observe example of transport capacity enhancement	Ushida	Sakai①	
			17:00	Zenmonnaka machi	Finish	-	Sakai①	

4

# Schedule – no. 5 Schedule

## Day 5

Group 1	Group 2	Doc. No.	Time	Venue	Training contents	Guided by	Followed by	Remarks
8/30	9/13		9:30	Technical department Ayase	Gathering	-		
		5-1 5-2	9:30 ~ 10:45	E&M and signaling department on Chiyoda line	Listening to brief explanation about E&M, signaling department. Visiting inside of the building	Kikuchi Miyamoto	Sakai①	
		5-3	10:45 ~ 11:30	E&M department on Chiyoda line→ Ayase station	Observing solar energy system at Ayase station on the way	Kikuchi Miyamoto	Sakai①	
			11:30 ~ 12:30	Surrounding area of Ayase station	Lunch	-	Sakai①	
		5-4	12:30 ~ 13:15	Ayase At-grade station	Observing related business activities of suburban station	Tanisaka	Sakai①	
		5-5	13:15 ~ 13:45	Ayase→Shibuya	Stop along the way to witness the shift transferring activity between staff of Tokyo Metro and those of JR in Ayase station.	Ushida	Sakai①	Transfer at Otemachi station, turn to Hanzomon line
		5-6	13:45 ~ 14:15	Shibuya driver office	Observing the reporting activity at Conductor office.	Ushida	Sakai①	
		5-7	14:15 ~ 15:45	Shibuya	Observing the surrounding area in Shibuya station and related businesses	Tanisaka	Sakai①	
		5-8 5-9	15:45 ~ 16:30	Omotesando	Echika Omotesando business area and service management	Tanisaka Horiuchi	Sakai①	
			16:30 ~ 16:45	Omotesando→Akasakamitsuke	Moving	-	Sakai①	
		5-10	16:45 ~ 17:30	Akasakamitsuke	Observing the advertisement activities (MVS) and transferring location on the same station	Tanisaka Horiuchi	Sakai①	
		5-11	17:30	Akasakamitsuke	Finish	-	Sakai①	5

## 【Reference】 Schedule – Week 2

### 【Common management group】

9/2(Mon.)	9/3( Tue.)	9/4 (Wed.)	9/5 (Thu.)	9/6 (Fri.)	
9:30 gathering	9:30 Gathering	7:45 Gathering	8:30 Finish  (Finish night shift)	9:30 Gathering	
10:00 Visiting materials center	9:30 Observing driving works	8:00 Observing station works		8:30 Finish  (Finish night shift)	9:30 Report about training course  (Tokyo Metro Head office)
11:00 Visiting social welfare works					12:30 Finish
12:00 Lunch					
13:30 Visiting healthcare center					
15:00 Observing IT system					
17:30 Finish	17:30 Finish	(Remaining at site)			

### 【Business group】

9/2(Mon.)	9/3( Tue.)	9/4 (Wed.)	9/5 (Thu.)	9/6 (Fri.)		
9:30 Gathering	9:30 Finish  (Finish night shift)	7:45 Gathering	8:30 Finish  (Finish night shift)	9:30 Gathering		
9:30 Observing IOCC		9:30 Finish  (Finish night shift)		8:00 Observing station works	8:30 Finish  (Finish night shift)	9:30 Report about training course  (Tokyo Metro Head office)
						12:30 Finish
(Remaining at site)			(Remaining at site)			6

## 【Reference】 Schedule – Week 2

### 【Train operation】

9/16 (Mon.)	9/17 (Tue.)	9/18 (Wed.)	9/19 (Thu.)	9/20 (Fri.)
9:30 Gathering	9:30 Gathering	9:30 Gathering	(Remaining at site)	9:30 Gathering
9:30 Observing driving works	9:30 Observing station works (driving)	9:30 Observing IOCC	9:30 Finish	9:30 Report about training course
	12:00 Lunch		(Tokyo Metro Head office)	
	13:30 Observing works at inspection yard		(Finish night shift)	12:30 Finish
	14:30 Observing station improvement site			
15:30 Observing new signaling system and get on train				
19:00 Finish	17:30 Finish	(Remaining at site)		

### 【Rolling stock group】

9/16 (Mon.)	9/17 (Tue.)	9/18 (Wed.)	9/19 (Thu.)	9/20 (Fri.)
9:00 Gathering	9:30 Gathering	8:30 Gathering	(Remaining at site)	9:30 Gathering
9:00 Observing works at inspection yard	9:30 Observing inspection and repairing workshop	8:30 Visiting Depot	8:30 Finish	9:30 Report about training course
12:00 Lunch	12:00 Lunch		(Finish night shift)	(Tokyo Metro head office)
13:00 Observing works at the workshop	13:30 Management, design (Tokyo Metro head office)			12:30 Finish
19:00 Finish	17:30 Finish		(Remaining at site)	

7

## 【Reference】 Schedule – Week 2

### 【Electricity】

9/16 (Mon.)	9/17 (Tue.)	9/18 (Wed.)	9/19 (Thu.)	9/20 (Fri.)
8:00 Gathering	(remaining at site)	9:30 Gathering	(Remaining at site)	9:30 Gathering
8:00 Visiting IOCC	8:30 Finish	9:30 Observing works at substation	9:00 Finish	9:30 Report about training course
	(Finish night shift)		(Finish night shift)	(Tokyo Metro head office)
				12:30 Finish
			12:00 Lunch	
		13:00 Observing works of telecommunication department		
(Remaining at site)		(Remaining at site)		

### 【Track group】

9/16 (Mon.)	9/17 (Tue.)	9/18 (Wed.)	9/19 (Thu.)	9/20 (Fri.)
8:00 Gathering	(Remaining at site)	10:00 Gathering	1:00 Observing track maintenance works	9:30 Gathering
8:00 Visiting IOCC	8:30 Finish	10:00 Observing track parts	5:00 Finish	9:30 Report about the training course
	(Finish night shift)		(Finish night shift)	(Tokyo Metro head office)
				12:30 Finish
			12:00 Lunch	
		13:00 Practice track maintenance works		
(Remaining at site)		(Finish night shift)		

8

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Ref. no. : 59/BC-OM

Hanoi, October 2, 2013

**REPORT****Re.: Achievements of training trip in Japan by OMU and utilization orientation**

*To:* General Director of MRB  
Deputy General Director Luong Xuan Binh

OMU successfully finished the training trip in Japan in consecutive duration from August 26 till September 20, 2013. OMU would like to report the training results and orientation on the utilization of training knowledge into the implementation of TA project “to strengthen the capacity of regulator and to establish O&M Company for UR lines in Hanoi City” as following (Please find list of personal reports in last page):

**I. MAIN TRAINING CONTENTS**

1. History, organization of the Company
2. Operation philosophy, development policy of the Company (Tokyo Metro)
3. Service policy
4. Train operation related activities
5. Activities at Integrated OCC
6. Organization of train driving
7. Station activities
8. Activities at Depot
9. Maintenance activities
10. Coordination activities
11. Connection of lines of the Company
12. Coordinate railway enterprises
13. Safety security method
14. Reactions in case of incidents
15. Fare business
16. Real estate investment, business
17. Advertisement activities
18. Labor policy
19. Personnel training
20. Community – social activities of the Company

**II. IMPLEMENTATION OF THE TRAINING**

1. JICA provided living utilities and organizing the trip.
2. Tokyo Metro developed training program, implemented the trip.

3. Affiliated organizations of Tokyo Metro directly implemented the trip under the coordination of JICA TA Team.
4. The training was almost carried out at actual operation sites of Tokyo Metro.

### III. COMMON RESULTS

1. Training as schedule.
2. Conclusions and evaluation organized.
3. There is no unsafe case, or significant incidents.
4. Traveling to Japan and return Vietnam as schedule.
5. OMU members highly appreciated the training results, were well aware of training achievements and committed to utilize training results during the implementation of TA project (*Reports of each member are attached*).

### IV. ACHIVEMENTS

#### 1. General achievements

1. Tokyo Metro has long development history, gradually mastered the technology and finance. Till now, basically it has been mastering in terms of finance, i.e. profitability in its business.
2. The Company is self providing personnel training, and O&M activities.
3. The arrangement of the work is very scientific, flexible, high effective in activities, safe and high reliability.
4. The Company has comprehensive welfare system for labors.
5. Employees are trained and educated in terms of the Company's experience and development objectives; basically getting consensus on working for the common objective of the Company.
6. Passengers are organized properly, basically satisfying services provided by the Company.
7. Passengers are self-awareness, disciplined and having high community spirit.

#### 2. Findings of main reasons leading to success of Tokyo Metro

1. The Government delegated the decision making for operation to the Company: operation organizing, fare business organizing, real estate business organizing, and services at station adjacent areas.
2. The Company focused on HR training, developing a professional team, who are proactive and attached to the credit and development of the Company.
3. Optimizing its technology foundation properly, including the organizing, collecting, processing and sharing information of operation the Company in comprehensive manner, as well as building good relationship with customers, providing customer service for the development, and completion (of the Company and of the community).

## V. LESSONS FROM EXPERIENCES

(1) The development and operation of a UR company is a long process. The construction process shall need to define and confirm on the development policy of the Company, otherwise, major problems may occur, such as:

- (i) *Disaster in terms of safety issue (if professional employee team, who devote to the Company are not well built up);*
- (ii) *Failures in railway investment – business (unable to create mechanism to promote the proactiveness, improvement of productivity and innovation in business activities);*
- (iii) *Failures in planning and developing the City (weak organization and connection among public transport modes, inability of transferring from private transport modes to public ones; City stuck in traffic problems).*

(2) Forming framework of institution, assigning authority for the Company to be proactive in doing business and planning for its future (business strategy) in long term. On the one hand, the Government is monitoring, while it also promotes effectively the operation of the company on the basis of evaluations and commitment of sustainability for overall development of the Company and satisfaction of citizens in a continuously changing environment.

(3) Development of human / labor foundation: employees are special assets of the Company, they are trained, educated and inherited heritage and development philosophy of the company. The Company cares about Employees' living standards and allows them to share opinions and orientations for the development of the company; Thus, the labor is proactive, united and self devote for the development of the Company via innovations and conscientiousness in their activities, and keep on confirming the will to improve the Company's services. Employees are trained by the Company itself, from classroom till instructions in real jobs. The contents of training do not only include technical issues, but also incorporated with policy and development strategy of the company.

(4) The accommodation between parties are carried out on the basis of voluntariness, harmonizing mutual benefits, creating general development environment: in which, businesses (railway business, public transport business) can self discuss, connect stations, lines with each other; citizens can select services and lines which are in accordance with their demand and criteria. Transport businesses are eligible for self developing criteria, objectives and strategies to provide transport services (basically criteria are higher than general requirements of the Government); being proactive in developing and adjusting organization structure and working relationship (the government only has regulations for train driver, and the Company can regulate and train for other positions).

## VI. ANALYSIS ON LEGAL ENVIRONMENT OF TA PROJECT

TA Project is responsible for studying and proposing the establishment of Hanoi metro company, which will operate and maintain UR lines in Hanoi City (under HPC).

At present, Hanoi UR system is being studied and developed. The first line is expected to be put into operation in 2015. Thus, basically, current general governmental management system for UR has not been formed. The tasks of the TA project shall not only finish at studies about organization and building capability in operation and maintenance of UR lines in Hanoi, but it will also contribute opinions, propose ideas for the formation of legal framework, legal regulations of the Government for UR in general and towards this in Hanoi City in particular.

Hanoi UR system at present and in the far future is basically still invested from the Government's budget; the management of assets and of service provided are in accordance with policy and management system of the Government. Thus, the study on the establishment of the Company till its real establishment shall be developed based on two main aspects, including:

- (i) *Management of public investment;*
- (ii) *Management of State budget invested into businesses.*

With those methodologies, the following aspects shall be considered to orient the establishment and development of the Company.

### **3. Public investment management system**

At present, legal documents regarding public investment are still insufficient, or even overlapping and contradicted each other. The investment and using stage budget are regulated randomly in Law documents (Budget law in 2003, Construction law in 2003, Investment law in 2005, etc.), decrees, circulars and decisions, orders of the PM, instructing circulars of ministries and branches.

Draft of public investment law has been developed since 2010. In 2 first versions, there is also existence of regulations regarding "Operation and maintenance of public investment projects"; However, in the final version to submit Permanent committee of the National Assembly, this regulation had been omitted. And it is expected to be reviewed during the development of Law on management and using of state budget to invest into businesses (at present, this is being drafted by MOF).

As a result, due to a series of new law being drafted as currently, two following features have been confirmed:

- (i) *The state management system for public investment is still insufficient and not-united;*
- (ii) *In the long run, there will not be a state management system which is united, effective in terms of public investment.*

### **4. Organization, business authority and responsibilities:**

- (1) State budget law no. 01/2002/QH11 dated 16/12/2002;
- (2) Enterprise Law no. 60/2005/QH11 dated 29/11/2005;
- (3) Investment law no. 59/2005/QH11 dated 29/11/2005;
- (4) Railway law no. 35/2005/QH11 dated 14/6/2005;
- (5) Public debt management law 29/2009/QH12 dated 17/6/2009;
- (6) Price law no. 11/2012/QH13 dated 20/6/2012;



- (7) Decree no. 09/2009/NĐ-CP dated 05/02/2009 of the Government to promulgate Rules on financial management of state owned companies and management of state capital invested in other types of businesses.
- (8) Decree no. 99/2012/NĐ-CP dated 15/11/2012 of the Government regarding allocation and classification to implement authorities, responsibilities and obligations of state owner towards state owned enterprises and state capital invested into the enterprises.
- (9) Decree no. 71/2013/NĐ-CP dated 11/7/2013 regarding investing state budget into enterprises and financial management on enterprises which are owned 100% by the state.

*In general, above legal documents will allow enterprises to be proactive in its business, especially in its investment based on entity, including development capital sources. Still, the mechanism for controlling and promoting effectively in investment and business has not been sufficient and in appropriate to ensure the efficiency of management and usage of capital (state capital managed by enterprises).*

## **5. Management method, provision of public services**

At present, the supply of public services is carried out by following Decree no. 31/2005/NĐ-CP dated 11/3/2005 of the Government regarding manufacturing and supplying public goods and services. Decision no. 256/2006/QĐ-TTg dated 9/11/2006 of the PM to promulgate regulations of bidding, order and plan assigning for manufacturing and supplying public goods and services.

In fact, these regulations are based on invalid legal basis, including:

- (i) *State enterprise law dated 26/11/2003;*
- (ii) *Price Ordinance (no. 40/2002/PL-UBTVQH10 dated 26/04/2002).*

In 2012, MPI drafted replaced decree, estimating that it can replace both Decree 31 and Decision 256, in which, it orients towards solutions for problems, including:

- (i) *Lack of budget to invest into maintenance and upgrade of infrastructures for public services.*
- (ii) *Low quota/limit of expenses for public goods and services;*
- (iii) *Difficulties of methods of supplying public goods and services*
- (iv) *Lack of methods to supervise and evaluate manufacturing activities and supply of public goods and services for enterprises.*

## **6. Common evaluation**

The legal system relating to public investment and management of state capital are now in the process of completing. At present, it is still insufficient. This is difficulty, but also an opportunity for the proposal of establishing Hanoi metro company which can have its own foundation for long term and sustainable development; i.e. management mechanism can proceed the company to concentrate on improvement of its safety, service quality and productivity.

**“Opportunity to propose the development of the Company”** can be understood as that on the basis of referring to successful experiences and optimization of results in management scientific, TA project will be able to study and propose the best mechanism and conditions for the company, and can participate in proposing the framework of institutional issues, in order to promote the proactive role and effectiveness of the company, as well as monitoring the service quality and state-capital-utilization efficiency by this Company.

## VII. ANALYSIS OF SPECIFIC ENVIRONMENT OF THE PROJECT

The success of TA project shall depend on the analysis and correct evaluation of the environment; making suitable target plan and proposing and implementing solutions for difficulties. The below will explain initial understanding about several related methods:

### 7. Legal framework, institutional matters for the management of UR

Although the establishment and development of Hanoi metro company is difficult task, at present this task is still undergoing within the fringe of TA project. However, together with the formation and development of the company, it is necessary to develop legal framework, institution of management, monitoring and assistance of the company, with following main contents:

- (i) *Develop overall legal framework on state management for O&M company of UR lines: including Government regulations (ministries’) to local regulations (Hanoi City);*
- (ii) *Agree on the institutional framework for management of UR lines in Hanoi City;*
- (iii) *Build capacity for concerned competent authorities, firstly for those in Hanoi City.*

The implementation of above contents shall need long term process, under clear vision of execution. However, at present, basically, there has not yet united orientation. Regulator of Hanoi UR is the organization which has the most favorable conditions to be proactive in enhancing the capacity, implementing studies and proposals on a legal framework and forming institutional framework for the management of UR system in general.

If the preparation cannot be carried out early, the process of establishment, preparation of operation of the O&M Company shall be slow and face many difficulties.

### 8. Business assignment for the Company – Mechanism to promote the productivity

The enhancement of UR transport service shall not be only via the development of regulations towards the quality and implementation of inspection (by governmental agencies), but the quality of the service can be only developed continuously, sustainably and comprehensively by the self efforts of the Company. The government need to create a mechanism, in which, if a company shall make effort to improve the service quality, there will be chance for success in long time.

Similarly, “expense monitoring” is not main measurement for state budget management, but this management shall depend on the efficiency of budget usage. “Budget usage efficiency” shall be realized via the self development of business strategy and plan, professional organization and management system and increase of productivity. A series of those features are formed by the fact that the Government can delegate the Company for its self decision making in long term, but the Government still develops its system of overall evaluation criteria which will be suitable on the basis of classifying clearly between environmental features and price adjusting ones (by the Government).

With experiences in Japan, Hanoi metro company should be delegated with authority to issue tickets and doing fare business. The Company shall be assigned with certain limit for fare level adjustment (broader limit shall be assigned for Hanoi UR regulator, major policy shall be decided by City people’s council), establishing fare structure, applying marketing strategies to maintain and increase the number of passengers.

At the same time, the Company is also delegated of certain authority in developing plan for seasonal train operation and daily operation, ensuring effective and thoroughly operation of passengers, appropriate to respective duration of travel.

#### **9. Assignment of business responsibility for the Company, orienting social-eco effectiveness**

The assignment of business shall encourage proactive activities of the Company, which shall not only promote the improvements on labor productivity, enhancement of efficiency of state budget, but also helping to effectively orient the development in terms of eco-social efficiency. Via this assignment, the following activities shall be conducted proactively by the Companies:

- (i) *Propose, adjust and proactively carry out UR plan and urban area’s plan along the UR lines in effective manner;*
- (ii) *Propose, negotiate and supervise each other about types of connection; including connecting stations, lines, vehicles, tickets, services, development policy, etc.*

The Government should not focus too much resources into studying and developing detail plan. In contrast, it should orient towards master plan, and at the same time, paying attention to creation of investment and business environment which is favorable for enterprises. In fact, at present, the Government is managing too tight over detail planning - design; including common construction unit price, target. As a result, it somehow creates obstacles for the development and implementation of solutions for effective investment and business; concurrently, there will be not sufficient resources for implementing other important tasks.

*With those opinions, the TA project shall study, propose to delegate more power to the Company regarding provision of passenger transport service and affiliated investment and business activities.*

## 10. Development of management staff for Hanoi metro company

At present, the JICA funded TA project is assisting in development management staffs for the Company. The development of this group shall include 2 main tasks, i.e. *(i) training for enhancing capacity of personnel and (ii) assist to develop management system of the Company.* The first training was conducted based on increasing number of assigned members, till now it includes 12 persons from MRB and 4 persons from VNRA (2 of them are working directly in RPMU/VNRA, and the other 2 from office of VNRA who have not focused much on activities of the TA project). There have not yet many results of the training, but basically, the first foundation has been created.

In almost cases, the training for the staff is one of top important tasks, but it is the most difficult. For the case of TA project, it is proposed to leaders for determining unified policy, i.e.:

- (i) Current human resources shall be allowed for continuous studying, aiming at long term optimization for the Project;*
- (ii) The selection of next staffs shall be based much on quality, than on quantity; which is appropriate with important and complicated tasks of TA project;*
- (iii) The management, evaluation and assistance of those personnel are based on strategy and overall plan of the Project and suitable to important task of the project.*
- (iv) The training, development of staffs must be accompanied with clear vision towards the specific O&M of the Company, not just training of knowledge about UR.*

## 11. Unification in training activities for the entire Company

The TA Project shall focus on training personnel in headquarters of the Company. In the fringe of on-going UR projects, each project shall undertake the training for operation personnel of respective line.

However, the training for line operation staff shall not only include technical knowledge and skill, but also need to get consensus on training about development policy of the company, about organization and management system of the company. Thus, the coordination and adjustment of study results of TA project, and training plans, programs for personnel of each UR project is especially important. As a result, it is necessary to define authorities and mechanism for execution and coordination for TA project.

## 12. Development of training center for the Company

At present, Hanoi City has not policy to construct training center for the company. In the scope of work of Line 2A, it will construct a training center at Depot, but this task has not been implemented as schedule.

Via studies, it is understood that the development of a training center for the company and the management of the company over it is especially important task, which can secure the sustainable development for the company on the basis of technical

resources who are trained stably and equipped in early timing with culture and spirit of coordination and dedication, in compliant with the operation policy of the company.

To ensure timely development of the training center for the company, HPC should early discuss and recommend MOT regarding the implementation of training center at Depot of Line 2A.

### **13. Leaders of the company**

Leaders of the company shall firstly include representatives assigned by the owner – HPC – for controlling and supervising operation of the company.

HPC needs to timely take into account of an alternative of mobilizing those personnel. The capacity and experience of those people has close relationship towards the success of the company, especially experience relating to UR and company's operation.

### **14. Planning and developing technology foundation for the company**

The main business of Hanoi Metro company is operation and maintenance of UR lines in Hanoi. The company shall provide transport service to huge passenger flow, which shall needs to be safe and reliable, contributing to foster the development of social-eco of the city. With those conditions and objectives, the company shall only reach success if its operation is based on strong technology foundation.

At present, in the fringe of FS studies, UR projects also have or have few contents about IT investment. The main reason is that at the time of forming this project, there has not yet overall organization structure for operation and maintenance of UR lines in Hanoi. Currently, when such a comprehensive organization structure has been proposed (O&M Company for UR lines), IT systems available before may not be able to satisfy the targets/expected results of the company. As a result, the investment into such a IT system may be prepared and implemented as in a separated project, which shall need to be launched soon.

If the IT system cannot be invested timely, Hanoi metro company shall not be operating in effective, reliable and safe manner. To some extends, such type of development of the Company shall cause imbalance, resulting in a company with only structure but not quality.

### **15. Coordination during implementation of transfer of Line 2A**

The first task of Hanoi Metro company include operation and maintenance of Line 2A. The company can only prepare to receive and operate Line 2A if it can early approach to the progress and results of implementation of Line 2A; especially contributing opinions into the training for operation personnel of Line 2A.

Approaching ability to the information, implementing methods and results of Line 2A, and cooperation method between MOT and HPC, between VNRA and MRB will have important effects on the following main aspects:

- (i) *Developing plans, methods to implement TA project;*
- (ii) *Developing plans and organizing the transfer of Line 2A;*

- (iii) *Demarcation of responsibilities before, during and after transferring process;*
- (iv) *Developing trial operation plan by the Company, so that it can put the line into commercial operation.*
- (v) *Effectiveness of operation and maintenance of Line 2A at later stage.*

Announcement on Conclusions of Deputy PM at document no. 303/TB-VPCP dated 12/08/2013 requesting HPC “*to establish O&M organization to receive sub-project of training personnel following the progress of Line 2A project*”. As a result, the timely establishment of Hanoi metro company is perquisite task for execution of other transferring activities. This task is in compliant with orientation and method for approaching the TA project, in which the overall plan/process of the transfer and the establishment, development of Hanoi metro company will be explained.

Recently, HPC got consensus with MOT regarding the policy of coordinating in personnel recruitment for the 1<sup>st</sup> batch to send for training in China. This cooperation in recruitment has not based on sufficient discussions and preparation, thus, it may cause major problems for future stages, including clarifying responsibilities of positions to be recruited, the position of recruiting authority, mechanism for recruited personnel, especially method for recruiting/enrolment. At the same time, this issue shall have important affects on transferring options which are under study in the fringe of TA project.

The TA project as at current timing, other than other contents, shall continue to help HPC to study on plans, solutions and conditions of the transfer. At short term, the project determines that the organization of the receiving shall need to be prepared and organized in comprehensive way by HPC. Moreover, MOT will also need to organize, prepare conditions for transfer. It is also necessary to have working group which can coordinate with HPC/TA project to discuss on solutions and alternatives.

In fact, at present, MOT is focusing on the implementation of Line 2A, which is currently lack of real working team to cooperate with TA project; The consideration on the importance / complexity of the transfer of Line 2A from MOT to HPC has also not been evaluated properly. This is only one of leading obstacles of TA project.

*\* In general, the most difficult issue of the transfer is coordination in development of manpower who are capable enough and able to connect from HQs to OU; well optimizing the organization – management system of the company. However, currently, this task has not been evaluated and created with favorable conditions for implementation.*

## **16. Effectiveness of implementation of Hanoi UR project**

At present, MRB is both project owner for implementing Hanoi UR project, and project owner of TA project (including establishment and development of Hanoi metro company and enhancement of capability of regulatory functions towards Hanoi UR syste,).

At present, the management and implementation of UR projects aiming at quality (including timing, efficiency on costs and without any problems arisen) will be main mandate of MRB. If the implementation of UR projects has problems, which can have impacts on the image of MRB, TA project shall be also related (lack of support from competent authorities and people in consideration and approval of proposals of TA project).

*At short term, it is proposed to optimize the role of JCC, and to organize seminars on activities of this project, in order to gradually create the position of the TA project, improving the role of the study and establishment of Hanoi metro company.*

## **VIII. PROPOSAL OF ORIENTATION FOR IMPLEMENTATION OF TA PROJECT – STRENGTHENING THE CAPACITY OF REGULATOR AND ESTABLISHING HANOI METRO COMPANY**

### **17. Defining common policy, orientation**

(1) Develop mechanism and legal documents for the Company, orienting the delegation to Hanoi metro company for proactive role in management, operation of Hanoi UR system, in which, the company shall be delegated to self issue tickets and do fare business; preparing foundation so that the company can get agreement with other public transport operators.

(2) Hanoi metro company shall prepare to construct training center for personnel of the company, orienting to coordinate the training in terms of technical aspect, as well as in complaint with operation vision / philosophy of the company.

(3) Conduct overall study about IT system for the company, preparing legal foundation for investment and construction of IT system.

(4) Develop specific tasks for regulator about UR and propose the development of state management system in general in terms of UR, on the basis that MRB shall take the functions of governmental regulator in UR for HPC.

(5) Continue to develop the transfer plan of Line 2A based on the approach from overall to the specific ones, from principles to specific conditions, collecting information and evaluating the real situation and possibility of the implementation of Line 2A as well as coordination works between MOT and HPC. This is expected to serve as a basis for coordinating, planning of respective plans of TA project, including the preparation of trial operation plan by the Company (and related organizations of HPC) to examine the organization system, management system and the personnel of the Company (from HQs to OU).

(6) HPC should early prepare to establish the Company, to stabilize the organization, focusing on development of capacity and preparing the company's strategy.

### **18. Solutions of implementation**

(1) Study and propose in detail of applicable mechanism for the Company and related legal framework (relating to UR management, UR system), aiming at creating an environment to promote the improvement of quality and enhancement of productivity internally by the company.

(2) Develop overall framework of the tasks and orientation of development of the Company. Accordingly, programs/projects to develop plans for supporting infrastructures such as training center, IT center, fare system, etc.

(3) Study intensively about legal basis, implementation progress, plans and practical situation of implementation of Line 2A, to work out coordinating solutions.

(4) Review legal system for UR; study, report on significant contents which can promote the progress and the participation of related competent authorities.

(5) Early report and consult with functional Ministries to acquire policies, opinions for completion of the Plan, as well as for implementation of next tasks of TA project.

(6) Conduct studies, prepare specific reports on any discrepancy, unclear issues in new guidance, decisions of competent authorities, which can have major affects on objectives, implementation direction as well as the efficiency of the TA project.

(7) Promote the role of Donors, of the project expert team to enforce the quality and sustainability of the project.

O&MU would like to report as above./.

***Recipients:***

- As above;
- Mr. Luong Xuan Binh (to report)
- TA project & Pre-investment Dept. (to report);
- TA team (to coordinate);
- Kept at: O&M

**Team leader of OMU**

Nguyen Trung Thanh

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## Inquiry about VJCC Training for MRB

## I. Information of the course

## 1 Course

Management Training for Metropolitan Railway Management Board 及び Vietnam Railway Administration staff

## 2 Lecturers

Ms. Phung Kim Anh; Prof., Dr. Nguyen Thi Mo; Dr. Nguyen Thanh Binh; Dr. Nguyen Huu Chi; MBA Ngo Quy Nham; Dr. Nguyen Dang Minh; Mr. Sato Shoji

3 Date 4-20/12/2013

4 Number of trainees 16

5 Number of respondents 12

## II Review of the course

	Time length		Documents		Contents		Method of teaching		Points of improvement
	Suitable	Unsuitable	Suitable	Unsuitable	Suitable	Unsuitable	Suitable	Unsuitable	
Business Law	66.6%	33.4%	100%		100%		100%		Need more time
Tax Law	75%	35%	100%		100%		100%		Too many documents
Labor Law	83.3%	167.0%	100%		100%		100%		Need more examples
Leadership	66.6%	33.4%	100%		100%		100%		Need more time
Working skills(Japanese style)	75%	25%	100%		100%		100%		Need more time

## The impression of trainees

-I was very interested in the course and got new knowledge.

-The knowledge must be useful for the task which now I working on.

-The lecturers, who have many experiences, taught us enthusiastically and gave us useful knowledge.

※ Quoted from the letter of the inquiry aggregation of VJCC

HANOI CITY'S PEOPLE COMMITTEE  
JOINT COORDINATION  
COMMITTEE

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**HANOI METRO PROJECT**

No.: 74 /TB-JCC

*Hanoi, May 3, 2013*

## NOTICE

### **Conclusion of Joint Coordination Committee (JCC) in the Kickoff meeting of Technical Assistance Project “to Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of Metropolitan Railway Lines in Hanoi City” funded by JICA (Hanoi Metro Project)**

Under the authorization of Mr. Nguyen Van Khoi, Vice-Chairman of Hanoi City's People Committee, Chairman of JCC, on April 25, 2013, in the office of Hanoi Metropolitan Railway Management Board (MRB), Mr. Nguyen Quang Manh, General Director of MRB chaired the kickoff meeting of the Project. Participants are the representatives of JICA and JCC members including JICA's Residential Representative in Vietnam, VNRA's Deputy Director General, DOHA's Deputy Director, MRB's Vice General Director; RPMU (VNRA)'s Deputy Director, O&MU Leader (MRB); authorized representatives from HAPI, DOT, DOF, DOJ, JICA's Advisory Team, JICA TA Team, and O&MU.

After listening to the presentation of representative of MRB (O&MU's Leader) on general information of Hanoi Metro Project, brief report on ICR, PO, PDM, and comments of the attendees, the event chairperson would like to conclude the meeting as follows:

1. To approve for ICR, PDM, PO, and assign O&MU, with assistance of JICA TA Team, to coordinate with concerned agencies for organizing the implementation.

2. Regarding JCC Organization and Operation Rules: to assign MRB (O&MU) to finalize the draft of rules, and to issue letter for inquiring JCC members' written comments before May 3, 2013, then to report Vice Chairman of HPC - JCC's Chairman, for decision and instruction.

3. For opinion of VNRA's Deputy Director General: currently, staff training for Line 2A is very urgent mission. Hanoi Metro Project is proposed to study alternatives that enable HPC to timely recruit and provide staff for MOT/VNRA, in order to send them to China as the 1<sup>st</sup> batch to receive training in June, 2013 as scheduled. To assign MRB (O&MU), with assistance of JICA TA Team, to study and report to JCC's Chairman and HPC for consideration and discussion with MOT.

4. JCC Meeting is jointly agreed to be held every 6 months.

5. Regarding implementation of Hanoi Metro Project:

(1) To assign MRB (O&MU), with assistance of JICA TA Team, to implement activities in the Plan approved at the meeting, and to report on activities which shall need approval in the next JCC meeting.

(2) JCC members directs, speeds up and instructs MRB (O&MU), with assistance of JICA TA Team, to implement planned activities on the basis of their respective assigned tasks which are appropriate to functions and responsibilities of their representing organizations.

JCC of the Project would like to notice for acknowledgement and execution of JCC members and concerned organizations.

***Recipients:***

- Chairman of HPC; (for reporting)
- Mr. Nguyen Van Khoi - Vice Chairman of HPC (reporting)
- Participating agencies;
- Office Chief, and Deputy Chief Nguyen Van Thinh;
- HPC Office: Transport Planning and Development, General Affairs, Construction-Thang;
- Kept in: Docs control Dept., Construction. Thinh

**FOR JCC CHAIRPERSON  
PERMANENT JCC DEPUTY CHAIRPERSON  
MRB'S GENERAL DIRECTOR**

*(Signed and Sealed)*

**Nguyen Quang Manh**

**HANOI CITY PEOPLE  
COMMITTEE**

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**JCC – TA PROJECT**

No. 02/TB-JCC

*Hanoi, 19 Aug. 2013*

## **NOTICE**

**Conclusion of Mr. Nguyen Van Khoi - Vice Chairman of Hanoi City People Committee (HPC) – Chairperson of Joint Coordination Council (JCC) in the 2<sup>nd</sup> JCC Meeting of Technical Assistance Project to “Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of Metropolitan Railway Lines in Hanoi City”**

On 8 Aug. 2013, Mr. Nguyen Van Khoi, Vice-Chairperson of HPC, Chairman of JCC had hosted the 2<sup>nd</sup> JCC Meeting of Technical Assistance Project to “Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of Metropolitan Railway Lines in Hanoi City” on the Plan for Establishment of Hanoi Urban Railway Operation and Maintenance Company and Agency in charge of human resource recruitment for urban railway line 2A.

Participants of the meeting include the members of JCC (in accordance with Decision No. 2764/QĐ-UBND dated 24 Apr. 2013), the representative of JICA Vietnam, TA Team, O&MU/MRB, and HPC Office.

After listening to the presentation of MRB and comments of the participants, Mr. Nguyen Van Khoi, Vice-Chairperson of HPC, Chairman of JCC had concluded the meeting as follows:

1. Regarding the Plan for Establishment of Operation and Maintenance Company for urban railway lines in Hanoi (O&M Company).  
MRB is assigned to compile the comments of the JCC Members to finalize the Plan. In which, the responsibilities of EPC Contractor of Line 2A to the O&M Company must be clarified during the process of transferring operation and maintenance duties. MRB is also required to prepare materials to ask for comments on the Plan from the concerned ministries and sectors.  
DOF and HAPI are required to review the total investment amount and charter capital proposed in the Plan to report to HPC for consideration and allocation based on the regulations.
2. Regarding Agency in charge of recruitment and training for urban railway line 2A  
DOHA is assigned to chair and coordinate with VNRA – MOT and MRB to conduct the recruitment, and then transferring selected ones to

VNRA for training of driving as scheduled, by using budget of Line 2A Project.

3. For meeting system of JCC: In short term, JCC meeting shall be held monthly. Participants shall be decided on the basis of topic and contents of each meeting.
4. VNRA is kindly requested to contribute comments on the contents related to its responsibilities stated in the Plan, simultaneously to organize to ask for comments on the Plan from the bodies under MOT; to coordinate with DOHA and MRB in recruitment activities and expansion of candidates to be trained for Line 2A to meet the requirement of the Project.

MRB would like to announce such conclusions of Mr. Nguyen Van Khoi - HPC's Vice-Chairperson cum Chairperson of JCC for acknowledgement and implementation of related organizations and individuals.

***Recipients:***

- Chairperson of HPC
- Mr. Nguyen Van Khoi
- JICA Office
- JCC Members
- Dept. of HR & Training, Dept. of Planning and Investment, Dept. of TA & Investment Preparation/O&M
- Filed, O&M

**On behalf of JCC Chairperson  
Vice JCC Chairperson**

*(signed & stamped)*

**Nguyen QuangManh  
General Director of MRB**

HANOI PEOPLE'S COMMITTEE  
OFFICE

THE SOCIALIST REPUBLIC OF VIETNAM  
**Independence - Freedom - Happiness**

Ref. No.: 40/ TB-VP

*Hanoi, March 14, 2014*

### NOTICE

**On Conclusions of Mr. Nguyen Van Khoi – Vice Chairman of HPC/Chairman of JCC at the 3<sup>rd</sup> JCC meeting of TA Project “To Strengthen the Capacity of Regulator and to Establish O&M Company for Metropolitan Railway Lines in Hanoi City”**

Mr. Nguyen Van Khoi – Vice Chairman of HPC/Chairman of JCC chaired the 3<sup>rd</sup> JCC meeting of TA Project “To Strengthen the Capacity of Regulator and to Establish O&M Company for Metropolitan Railway Lines in Hanoi City” on March 6, 2014, which discussed on: the establishment of Hanoi Metro Company, the recruitment for Line 2A project and the transfer of Line 2A.

Attendees in the meeting included JCC members (in accordance with Decision no. 2764/QD-UBND dated April 24, 2013), representative of JICA Tokyo, representative of JICA Vietnam, Japanese expert team, MRB, OMU and Office of HPC.

After listening to MRB's report on the progress and schedule of implementation for TA project, as well as opinions from attendees, the Vice Chairman of HPC/Chairman of JCC concluded as the following:

During the past time, there have been close and often coordination between HPC, MOT, sub-ordinate organizations of HPC and those of MOT while implementing relevant contents. The results of the implementation have been mentioned in the report of MRB.

Still, there are few outstanding contents which are being implemented slowly, and need to pay more attention for settling. HPC requests:

1. With regards to schedule to implement TA Project's tasks in the next stage:

a) Task 1: Strengthening of the capacity of regulator: to acquire comments from relevant organizations, to complete draft of responsibilities in May, 2014; to report for consideration and decision making from June, 2014.

b) Task 2: Development of fare setting method and subsidy system: MRB is requested to closely refer to framework of e-ticket policy approved by HPC, to acquire opinions from relevant organizations to complete in March, 2014; to send to DOT for appraisal and submission to HPC for consideration and approval in April, 2014; to transfer the document to VNRA in May, 2014.

c) Task 3: Development of safety controlling system and operation plan: to complete draft in June, 2014; to acquire comments from relevant organizations in the City and of MOT

in July, August, 2014, to complete and submit HPC for consideration and decision making in September, 2014.

d) Task 4: Conditions of transfer of Line 2A: MRB to coordinate with VNRA to develop master plan and detail plan of the transfer, to complete in April, 2014.

đ) Task 5: Establishment of Hanoi Metro Company:

To complete procedures to establish the Company in June, 2014; to develop and complete operation rules of the Company in September, 2014; to submit HPC for approval in December, 2014.

2. Specific tasks relating to establishment of the Company:

- To remain the name as mentioned in the meeting pursuing directions of Permanent committee of the City's Communist Party: Hanoi Metro One Member Liability Limited Company;

- Charter capital: MRB is assigned to discuss and exchange with DOF to get consensus on the calculation of the capital amount and structure of capital resources, to complete on March 10, 2014;

- Business categories: Include business categories mentioned in the plan submitted to the Permanent committee of the City's Communist Party, and to implement other tasks as assigned by HPC.

Relevant departments and organizations/boards are requested to contribute written comments on the dossiers of submission for Company's establishment before March 10, 2014.

MRB is assigned to complete the Plan and submit HPC in April, 2014 to report to the Prime Minister; to establish the Company in June, 2014.

3. Prequalification and training: DOHA is requested to coordinate with VNRA to supplement sufficient number of trainees for all positions within March, 2014, to dispatch for training. The list of trainees must include signaling supervisors, senior signaling supervisors. To transfer the trainees to be dispatched for training to TRANSERCO, this company is responsible for managing, paying salaries and developing policies and mechanism for those labors. DOHA is requested to chair and coordinate with VNRA and TRANSERCO to execute since March, 2014.

4. JCC is responsible for studying and developing Rules of coordination for Operation, maintenance and warranty stage; in which, the responsibilities of Line 2A's project owner (i.e. VNRA), City's management organizations, MRB and operating organization, and specific procedures of transferring shall be clarified.

MRB is assigned as leading agency to coordinate with VNRA in implementing above contents, to complete in April, 2014.



5. VNRA is requested to regularly coordinate and timely provide technical papers and related documents to MRB and JICA experts.

Office of HPC would like to notice the above conclusions of the Vice Chairman of HPC/Chairman of JCC for acknowledgement and execution of concerned departments, organizations and individuals./.

***Received by:***

- Secretary of City's Communist Party;
- Permanent Committee of City's Communist Party;
- Chairman of HPC; (To report)
- Vice Chairman Nguyen Van Khoi;
- JICA Vietnam Office;
- VNRA;
- JCC members, meeting attending organizations;
- MRB;
- HPC Office: Chief, Deputy Chief N.V.Thinh, Transport planning and development Dept. Dat, Thang, Thinh, General Affairs;
- Kept at Docs control Dept., Transport planning and development Dept. Ph.

**FOR CHIEF OF OFFICE  
DEPUTY CHIEF**

*(Signed and Sealed)*

**Nguyen Van Thinh**

HANOI PEOPLE'S COMMITTEE  
OFFICE

THE SOCIALIST REPUBLIC OF VIETNAM  
Independence – Freedom – Happiness

No. 221/TB-VP

*Hanoi, September 29, 2014*

**NOTICE**

**On Conclusions of Mr. Nguyen Quoc Hung – Vice Chairman of HPC, Chairman of JCC - at the 4<sup>th</sup> JCC meeting of TA Project to “Strengthen the Capacity of Regulator and to Establish O&M Company for Metropolitan Railway Lines in Hanoi City”.**

On September 24, 2014, Mr. Nguyen Quoc Hung – Vice Chairman of HPC, Chairman of JCC, hosted the 4<sup>th</sup> JCC meeting of JCC for TA Project “to Strengthen the Capacity of Regulator and to Establish O&M Company for Metropolitan Railway Lines in Hanoi City”. Attendees in the meeting included members of JCC (pursuant to Decision no. 4139/QD-UBND dated August 5, 2014), representatives of JICA Tokyo and JICA Vietnam Office, JICA TA Team, MRB and HPC Office.

After hearing report of MRB about implementation results till September 2014 and plan for implementation in coming time, opinions of JICA Tokyo, JICA Vietnam Office and participants, Vice Chairman of HPC – Chairman of JCC concluded as following:

Since the 3<sup>th</sup> JCC meeting, all the works have been progressing, but still not satisfied original schedule. Members of JCC, related departments and organizations are requested by HPC to closely coordinate with JICA TA Team to concentrate on completing six (6) tasks of the Project in quality and timely manner.

1. Proposal of extending TA project to one (1) more year:

To consent to proposal of MRB, JICA TA Team and meeting participants to extend TA Project to one (1) more year (to complete in February 2016);

- JICA is kindly requested to allocate sufficient additional fund for extended period of Project's implementation and keep on dispatching experienced experts to take part in the Project.

- HAPI is assigned to lead and coordinate with MRB to propose and draft a letter of HPC to request JICA for funding sufficient additional budget and for acceptance of extending the Project till February 2016;

- MRB is assigned to work with JICA TA Team about extended contents, roadmap, specific plan of implementation in order to propose and report to JCC at the next meeting.

2. Plan of implementing project tasks in the coming time:

Related Departments, organizations, agencies, and JCC members are requested to closely coordinate with MRB and JICA TA Team in order to concentrate on completing six (6) tasks of the project as schedule;

and to proactively handle with contents which are under their respective authorizes, as well as proposing and reporting for consideration and settlement of HPC for any contents beyond their authorities.

Office of HPC would like to notice the conclusions of Vice Chairman of HPC - Chairman of JCC for acknowledgment and implementation of related departments, organizations and individuals./.

***Recipients:***

- Chairman of HPC
- Vice Chairpersons of HPC | To report
- JICA Vietnam Office (16<sup>th</sup> floor, Daeha Business Center, 360 Kim Ma);
- Departments: HAPI, DOF, DOT, DOJ, DOHA, JCC members;
- VNRA;
- Office of HPC: Office Chief, Vice Chief Nguyen Van Thinh, Transport development dept. (Dat, Thg, Thinh), General Affairs;
- Kept at Docs Control Dept., Transport development dept. (Hai).

**FOR CHIEF OF OFFICE  
VICE CHIEF**

*(Signed and sealed)*  
**Nguyen Van Thinh**

HANOI PEOPLE'S COMMITTEE  
OFFICE

THE SOCIALIST REPUBLIC OF VIETNAM  
Independence – Freedom – Happiness

Ref. No.: 234/TB-VP

*Hanoi, July 21, 2015*

**NOTICE**

**On Conclusions of Mr. Nguyen Quoc Hung – Vice Chairman of Hanoi People's Committee – Chairman of JCC at the 5<sup>th</sup> JCC meeting of TA Project “To Strengthen the Capacity of Regulator and to Establish Operation and Maintenance Company for Metropolitan Railway Lines in Hanoi City”**

Mr. Nguyen Quoc Hung - Vice Chairman of Hanoi People's Committee & Chairman of JCC-chaired the 5<sup>th</sup> JCC meeting of TA Project “To Strengthen the Capacity of Regulator and to Establish Operation and Maintenance Company for Metropolitan Railway Lines in Hanoi City” on July 16, 2015. Participating in the meeting includes members of JCC (in accordance with Decision no. 728/QD-UBND dated February 10, 2015 by HPC), DOF, Office of HPC, Representative of JICA Vietnam Office, JICA TA Team, MRB and Hanoi Metro Company.

After hearing report of MRB and opinions of participants in the meeting, the Vice Chairman of HPC cum Chairman of JCC has concluded as following:

To consent to contents in the report of MRB: till now the Project has been basically met the schedule; HPC highly appreciates the support of Japanese experts, efforts and activeness of related Departments and organizations as well as of MRB during the past time. Members of JCC, related departments and organizations are requested to closely coordinate with JICA TA Team to concentrate on completing six (6) tasks of the project in quality and timely manner:

1. Establishment of Hanoi Railway One Member Limited Liability Company (HMC): HPC has established HMC as schedule.

2. Remaining tasks of the TA Project in the upcoming time:

a) Assign MRB:

- To complete project tasks as schedule, ensuring the quality; accelerate the completion of documents and procedures of taking over, settlement for sponsor budget and reciprocal budget of the Project as regulations; timely disburse the budget allocated within 2015 (equipment procurement, office rent, etc.);

- To coordinate with DOHA, HMC to transfer personnel (who have been trained in JICA TA project) to HMC, and complete before August 30, 2015;

- To consult and report HPC about the supplement, replacement of members in JCC, and complete in July, 2015.

b) Assign HMC:

- To chair and coordinate with TRANSERCO, DOHA, and PMUR (MOT) to complete transferring and receiving 37 train drivers, who are being trained in China, from TRANSERCO to HMC in July 2015.

- To chair and coordinate with DOHA, DOT, PMUR (MOT) and concerned departments to accelerate the recruitment and training for the remaining personnel in accordance with regulations; to propose and report HPC in July 2015.

- To actively work with PMUR (MOT), MRB to hasten receiving activities of documents and materials of Hanoi Urban Railway Project (Cat Linh – Ha Dong Line) and Hanoi Pilot urban railway project (Nhon – Hanoi Station Line).

c) Assign HAPI to propose and report HPC about the shifting of TA Project’s project owner role to HMC in accordance with regulations.

d) Assign DOT to accelerate the completion of proposal for application and management of e-ticket system for public transport network in Hanoi City as well as fare policy and fare setting method applicable to the urban railway system in Hanoi.

dd) Assign DOHA to chair, propose and report HPC about supplementing DOT’s functions and responsibilities for state management over urban railways.

e) PMUR (MOT) is requested to speed up handing over documents and materials of Hanoi Urban Railway Project (Cat Linh – Ha Dong Line) to HMC.

g) To agree with the opinion of JICA’s representative regarding the holding of JCC Meeting by the end of the project for evaluation of the entire project (expected in November 2015)

The Office of HPC would like to notice the conclusions of Vice Chairman of HPC – Chairman of JCC to for acknowledgement and execution of concerned departments, units, organizations and individuals.

**Recipients:**

- Chairman of HPC;
- Vice Chairman of HPC;
- JICA Representative Office (16th flr., Deaha Building, 360 Kim Ma);
- VNRA;
- HAPI, DOF, DOT, DOJ, DOHA and JCC Members;
- HMC;
- PMUR (MOT)
- TRANSERCO;
- Office of HPC: Office Chief, Deputy Chief Mr. Luu QuangHuy, Transport planning & development dept. (Dat, Thang, Thinh), General affairs dept.;
- Kept at Docs. Control dept., Transport planning & development dept. (Hai)

**FOR CHIEF OF OFFICE  
VICE CHIEF**

*(signed and sealed)*

**Luu QuangHuy**

HANOI PEOPLE'S COMMITTEE  
OFFICE

THE SOCIALIST REPUBLIC OF VIETNAM  
Independence- Freedom – Happiness

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No. 334/TB-VP

Hanoi, October 21, 2015

**NOTICE**

**On the Conclusions of Mr. Nguyen Quoc Hung –Vice Chairman of Hanoi City People Committee, Chairman of JCC in 6<sup>th</sup> JCC Meeting of the Technical Assistance Project “to strengthen the capacity of Regulator and establish operation and maintenance company for Metropolitan railway lines in Hanoi City”**

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On 14 Oct 2015, Mr. Nguyen Quoc Hung Vice Chairman of Hanoi City People Committee, Chairman of JCC chaired the 6<sup>th</sup> JCC meeting of the Technical Assistance Project “to strengthen the capacity of Regulator and establish operation and maintenance company for Metropolitan railway lines in Hanoi City”. Participants include JICA Tokyo Mission Team, JICA Vietnam Office, JICA TA Team; HPC's Office, representatives of DOHA, HAPI, DOT, MRB and Hanoi Metropolitan Railway One Member LLC (HMC).

After listening to reports by HAPI and HMC, and opinions of JICA Mission Team and representatives, Mr. Nguyen Quoc Hung - Vice Chairman of Hanoi City People's Committee, Chairman of JCC concluded the meeting as follows:

1. Consent to the contents of the report of HMC that to date, the Project has basically completed as scheduled; HMC, JCC Members, and the concerned departments are assigned to closely coordinate with JICA TA Team to complete project activities ensuring the quality and the schedule.
2. Consent to the proposals of the meeting participants, HPC and JICA signed the amended Memorandum of Understanding in the meeting.
3. Agree to the proposal of the meeting participants and the concerned parties regarding the omission of some activities in the TA Project, which are relating to trial operation of HMC and regulator (due to delayed schedule of Line 2A caused by external factors).
4. Assign DOT to replace MRB as the counterpart undertaking activities related to the task of “strengthening the capacity of Regulator”; DOT shall be responsible to coordinate with JICA TA Team and relevant departments to jointly complete the

project and receive related documents and materials in order to ensure sustainable and durable management.

5. Assign DOT to early finalize documents on adjustment of functions and responsibilities of the Department (in accordance with Joint-Circular No. 42/2015/TTLT-BGTVT-BNV dated 14 Aug. 2015 of MOT and MOHA) in order to send to DOHA for its appraisal and submission to HPC for decision signing.
6. Consent to JICA's proposal on holding the final JCC Meeting in December, 2015 for reviewing and evaluating the results of the Project. Time of the meeting is upon JICA's suggestion.

The Office of HPC would like to notice the meeting conclusions of the Vice Chairman of HPC - JCC Chairman for acknowledgement and implementation of related agencies, departments, organizations, and individuals./.

**Recipients:**

- Chairman of HPC (to report);
- Vice Chairpersons of HPC (to report);
- JICA Vietnam Office (*16<sup>th</sup> Daeha Building, 360 Kim Ma*);
- Meeting Participants;
- VNRA;
- DOF, DOJ; JCC Members;
- PMU-Rail - MOT;
- Chief of HPC Office, Vice Chief Mr. Luu Quang Huy; Planning and Transport Development Dept. (Dat, Thg, Think); General Affairs Dept.;
- Kept in Docs. Control Dept, Planning and Transport Development Dept. Hai

**FOR OFFICE CHIEF  
VICE CHIEF**

*(Signed and sealed)*

**Luu Quang Huy**

HANOI PEOPLE'S COMMITTEE  
HANOI RAILWAY ONE MEMBER LLC

THE SOCIALIST REPUBLIC OF VIETNAM  
Independence- Freedom – Happiness

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No. 154/TB-DSHN

Hanoi, December 9, 2015

## NOTICE

### **On the Conclusions of 7<sup>th</sup> JCC Meeting of the Technical Assistance Project “to strengthen the capacity of Regulator and to establish operation and maintenance company for Metropolitan railway lines in Hanoi City”**

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On 4 December 2015, under authorization of Mr. Nguyen Quoc Hung Vice Chairman of Hanoi People's Committee, Mr. Vu Hong Truong – Chairman cum General Director of Hanoi Railway One Member LLC, Permanent Vice Chairman of JCC chaired the 7<sup>th</sup> JCC meeting of the Technical Assistance Project “to strengthen the capacity of Regulator and establish operation and maintenance company for Metropolitan railway lines in Hanoi City”. Participants include JICA Tokyo Representative, JICA Vietnam Office, JICA TA Team, JICA Joint Terminal Evaluation Team, HAPI, DOHA, DOT, DOJ, MRB and Hanoi Metropolitan Railway One Member LLC (HMC).

After listening to the report by representative of HMC, the report on project evaluation results by JICA Joint Terminal Evaluation Team and opinions of the meeting participants and asking for instructive opinions of Mr. Nguyen Quoc Hung - Vice Chairman of Hanoi City People's Committee, Chairman of JCC, the Meeting agreed as follows:

1. Consent to the contents of HMC's report: To date, the project has completed as scheduled. High appreciation and thanks are expressed for the assistance of JICA Tokyo, JICA Vietnam, Japanese Experts (Tokyo Metro), the efforts and activeness of the concerned departments, MRB and HMC during the recent time.
2. Approve the terminal evaluation report of Vietnamese-Japanese Joint Terminal Evaluation Team for the project, and submit to HPC for signature of the minutes of the meeting on the project terminal evaluation report.



3. HMC and DOT which are the two main units that benefit from the project's reports, shall urgently complete the final outputs to report JCC for approval and to submit HPC for acceptance.
4. In order for high sustainability of the project, JCC is consent to the recommendations of Japanese Evaluation Team and HMC and will report HPC to request JICA for its consideration for supporting another Technical assistance project on urban railway management training for both regulator and operator.

HMC would like to notice the conclusions of 7th JCC Meeting of the Technical Assistance Project “to strengthen the capacity of Regulator and to establish operation and maintenance company for Metropolitan railway lines in Hanoi City” for acknowledgement and implementation of to the related agencies, departments, organizations, and individuals.

**Recipients:**

- Chairman of HPC (to report);
- Vice Chairpersons of HPC (to report);
- JICA Vietnam Office (*11<sup>th</sup> CornerStone Building, 16 Phan Chu Trinh*);
- HAPI, DOT, DOHA, DOF, DOJ; JCC Members;
- MRB
- Planning and Project Dept.; General Train Operation Dept.;
- Kept in Docs. Planning and Project Dept.

**FOR JCC CHAIRMAN  
PERMENANT VICE CHAIRMAN  
(Signed and sealed)**

**Vu Hong Truong  
Chairman of Board of Members Cum  
General Director of HMC**

**MINUTES OF MEETING  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) AND  
HANOI PEOPLE'S COMMITTEE (HPC) ON  
THE JOINT TERMINAL EVALUATION OF TECHNICAL ASSISTANCE PROJECT  
TO STRENGTHEN THE CAPACITY OF REGULATOR AND  
TO ESTABLISH OPERATION & MAINTENANCE COMPANY OF  
METROPOLITAN RAILWAY LINES IN HANOI CITY**

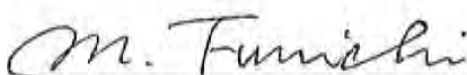
The Japanese Terminal Evaluation Team (hereinafter referred to as "the Japanese Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") led by Mr. Masahiko Furuichi, visited the Socialist Republic of Vietnam (hereinafter referred to as "Vietnam") from 23<sup>rd</sup> November to 4<sup>th</sup> December 2015, for conducting a terminal evaluation of "the Technical Assistance Project to Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of Metropolitan Railway Lines in Hanoi City" (hereinafter referred to as "the Project").

The joint terminal evaluation of the Project was conducted by the Joint Terminal Evaluation Team (hereinafter referred to as "the Team"), which consists of the Japanese Team and the Vietnamese Terminal Evaluation Team (hereinafter referred to as "the Vietnamese Team") organized by Hanoi People's Committee (hereinafter referred to as "HPC") led by Ms. Le Thu Huyen, University of Transport and Communications.

As a result of a series of discussions among Joint Coordination Committee (hereinafter referred to as "JCC") members, the joint terminal evaluation report (hereinafter referred to as "the Report") was approved by JCC. Consequently, JICA and HPC officially approved the Report as proposed by JCC.

December 4, 2015

Hanoi, Vietnam



Mr. Masahiko Furuichi  
Senior Adviser,  
Japan International Cooperation Agency,  
Japan



Mr. Nguyen Quoc Hung  
Vice Chairman,  
Hanoi People's Committee,  
Socialist Republic of Vietnam

(Attachment)

1. Minutes of Meeting of the 7<sup>th</sup> Joint Coordination Committee (JCC) on the Joint Terminal Evaluation of Technical Assistance Project to Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of metropolitan Railway Lines in Hanoi City
2. The Joint Terminal Evaluation Report for the Technical Assistance Project to Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of metropolitan Railway Lines in Hanoi City

**MINUTES OF MEETING  
OF  
THE 7<sup>TH</sup> JOINT COORDINATION COMMITTEE (JCC)  
ON  
THE JOINT TERMINAL EVALUATION OF TECHNICAL ASSISTANCE PROJECT  
TO STRENGTHEN THE CAPACITY OF REGULATOR AND  
TO ESTABLISH OPERATION & MAINTENANCE COMPANY OF  
METROPOLITAN RAILWAY LINES IN HANOI CITY**

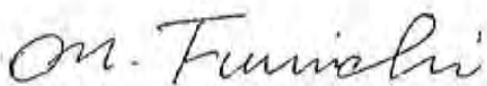
The Japanese Terminal Evaluation Team (hereinafter referred to as “the Japanese Team”), organized by the Japan International Cooperation Agency (hereinafter referred to as “JICA”) led by Mr. Masahiko Furuichi, visited the Socialist Republic of Vietnam (hereinafter referred to as “Vietnam”) from 23<sup>rd</sup> November to 4<sup>th</sup> December 2015, for conducting a terminal evaluation of “the Technical Assistance Project to Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of Metropolitan Railway Lines in Hanoi City” (hereinafter referred to as “the Project”).

The joint terminal evaluation of the Project was conducted by the Joint Terminal Evaluation Team (hereinafter referred to as “the Team”), which consists of the Japanese Team and the Vietnamese Terminal Evaluation Team (hereinafter referred to as “the Vietnamese Team”) organized by Hanoi People’s Committee (hereinafter referred to as “HPC”) led by Ms. Le Thu Huyen, University of Transport and Communications.

As a result of a series of surveys and discussions, the Team agreed on the contents of the joint terminal evaluation report (hereinafter referred to as “the Report”) attached hereto, and submitted the Report to Joint Coordination Committee (hereinafter referred to as “JCC”) for approval.

JCC, which was held on the 4<sup>th</sup> of December, 2015, approved the Report through a series of discussions and agreed to deliver the Report to the respective authorities concerned of the Project.

December 4, 2015  
Hanoi, Vietnam



Mr. Masahiko Furuichi  
Senior Adviser,  
Japan International Cooperation Agency,  
Japan



Mr. Vu Hong Truong,  
Member Council President and CEO,  
Hanoi Metro One Member Company Limited (HMC)

(Attached Document)

THE JOINT TERMINAL EVALUATION REPORT  
FOR  
THE TECHNICAL ASSISTANCE PROJECT  
TO STRENGTHEN THE CAPACITY OF REGULATOR AND  
TO ESTABLISH OPERATION & MAINTENANCE COMPANY OF  
METROPOLITAN RAILWAY LINES IN HANOI CITY

December 4, 2015

Hanoi, Vietnam



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Mr. Masahiko Furuichi  
Leader of the Japanese Terminal Evaluation  
Team,  
Japan International Cooperation Agency,  
Japan



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Ms. Le Thu Huyen  
Leader of the Vietnamese Terminal Evaluation  
Team,  
University of Transport and Communications,  
Socialist Republic of Vietnam

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## **1. Introduction**

### **1-1. Background of the Project**

In Hanoi, the capital of Vietnam, the volume of road traffic has been increasing rapidly in recent years as the population increases. Problems such as increased traffic congestion, lowered traffic safety, and air pollution interfere with urban activities. In the future, the traffic problems will become increasingly serious; therefore, it is necessary to establish an urban railway system for the sustainable development of the City. Under the situation, JICA conducted a comprehensive urban development program in Hanoi capital city of the Socialist Republic of Vietnam (ended in March 2007). As a result of the study, a master plan was prepared on the transportation and traffic sector targeting 2020, which includes the construction of an urban mass rapid transit system in Hanoi. Based on the master plan, the construction of urban railway lines have been implemented: Line 1 and Line 2 (I) (Nam Thang Long – Tran Hung Dao Section) by the Japanese yen loan project "Hanoi City Urban Railway Construction Project", Line 2A with cooperation from China, and Line 3 with cooperation from France in collaboration with ADB and other organizations.

Meanwhile, Vietnam needed knowledge and experience on the establishment of an organization which operates and maintains the urban railways (O&M company). For the purpose of setting the appropriate course for the establishment and operation of O&M company, JICA conducted a study for special assistance for project implementation of the construction of urban railway Line 2 (SAPI study). The recommendations from the SAPI study have been put in practice: the Government of Vietnam placed Hanoi Metropolitan Railway Management Board (MRB) as the regulator of the urban railways.

Under the circumstances, the Government of Vietnam requested the Government of Japan to cooperate in the Technical Assistance Project to Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of Metropolitan Railway Lines in Hanoi City (the Project), for the purpose of contributing safe and reliable operations of urban railways in Hanoi, through the commencement of operation of the regulator and operator jointly, by strengthening the capacity of the regulator and establishing an O&M company. The Project has been under implementation since February 2013 and is scheduled to be completed in February 2016.

### **1-2. Objectives of the Joint Terminal Evaluation**

A joint terminal evaluation is performed a few months prior to the completion of a project, as a tool for judging as objectively as possible the relevance, effectiveness, efficiency, impact and sustainability of cooperation activities.

There are three objectives of the evaluation:

- (1) To use evaluation feedback as a means for project operation and management;
- (2) To enhance the "learning effects" of the personnel and organizations concerned for more effective project implementation; and
- (3) To disclose information widely to secure project accountability.

These are intended to ensure accountability to the public as well as implement projects more effectively and efficiently.

#### **- Members of the Joint Terminal Evaluation Team**

Annex 1

#### **- Schedule of the Joint Terminal Evaluation Study**

Annex 2

## **2. Progress and Achievement of the Project**

### **2-1. Inputs to the Project**

(1) Inputs from Japanese side so far are as follows:

- 1) Experts:

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*[Handwritten signature]*



- One Project Manager, two experts to the regulator and twelve experts to the O&M company.
  - Project Manager
  - Experts to the regulator include consultants on 1) strengthening capacity of the regulator and 2) fare policy, planning coordination.
  - Experts to the O&M company include consultants on 1) safety, engineering, management, condition for transfer of Line-2A, 2) organization management, general affairs, human resources, 3) planning, management and business planning, non-fare business, 4) accounting, treasury, procurement, 5) financial soundness, registration, office IT, 6) sales, 7) train operation, 8) rolling stock, 9) civil engineering, track, architecture, 10) integrated circuit card (IC card), 11) signal, telecom electricity, machinery, transformation of electricity, station facilities, 12) secretary.  
(Refer to Annex 3)
- 2) Equipment for the implementation of the Project
- None
- 3) Training in Japan:
- Training in Japan was conducted in August and September 2013, with the participation of seventeen C/Ps who were separated into two groups.(Refer to Annex 4)
- 4) Local activity expenses of 18 million yen in total by the end of the Project
- (2) Inputs from Vietnamese side so far are as follows:
- 1) Allocation of counterparts (C/Ps):
- Sixteen C/Ps in the O&M company includes 1) team leader/planning, sales, 2) organization, human resource, 3) fare policy (2), 4) administration and safety, train operation and safety, 5) finance, 6) non-fare business, 7) train operation, 8) rolling stock (2), 9) facilities (track, IC card), 10) facilities (civil engineering, architecture), 11) facilities (signal, telecom electricity, machinery, transformation of electricity, station facilities), 12) organization, human resource, 13) train operation, rolling stock, 14) train operation and rolling stock.  
(Refer to Annex 3)
- 2) Office space and other necessary facilities.
- 3) Expenses for personnel, facilities, research and others activities.

## 2-2. Progress of Activities and Achievement of Outputs

### Output 1: The regulator's capabilities are strengthened

(1) The progress of each activity for Output 1 is as follows:

- Activity 1-1 "Adjustment with the Ministry of Transport (MOT)": This activity was completed by recommending to HPC the roles sharing on urban railways among the regulating agency, the central government and the local government. Information regarding "basic roles of a regulator of urban railways" and "sharing the roles on safety control by related agencies" was arranged by referring to the circumstances in Japan and other foreign countries. The definition of "urban railways management" has been clarified, which is the task of the local government under the Railway Act.
- Activity 1-2 "Prescription of the regulator's organization and the function & powers in the regulator": This activity was completed by recommending to HPC the function and authority of the regulator consisting of the following items, and to establish the department of urban railways operation and management in the regulator organization.
  - 1) Quality control of the transportation services
  - 2) Safety control
  - 3) Implementation of the fare and subsidy policy
  - 4) Implementation of the policy for promoting use of urban railways

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- Activity 1-3 "Learning about policies to encourage the use of urban railways": Research on the policy for promoting use of urban railways has been conducted, by referring to the circumstances in foreign countries and the reports prepared by HPC. The followings are the alternatives of policies for Hanoi.
  - To spread the system of commuting allowance for the use of public transportation thereby reducing the individual cost burden
  - To increase the taxes on personal transportation such as motorcycles
  - To limit or charge the vehicles entering the city

(2) Achievement of Output 1

There is a one indicator set for output 1. Current status and expectation of the achievement of the indicator are as follows:

Indicator: "The regulator's organization and its function & powers in the organization are prescribed and approved by HPC": In the Project, a division for urban railway operation and maintenance was established in MRB, which thereafter acted as the project C/P. A proposal on the function and authority of urban railway regulator was prepared and submitted to HPC, which is now under the process for approval. Therefore, the Project almost achieved the indicator.

Activities for output 1 have mostly been implemented as planned, and the output "strengthening the regulator's capability" has mostly been achieved.

However, the urban railway regulator was changed to Hanoi Department of Transportation (DOT) by the decision of HPC in September 2015, from MRB which had acted as the C/P agency until then. It has become a task for DOT to ensure that the outputs of the Project are succeeded in an appropriate manner.

**Output 2: Fare setting and subsidy system is established**

(1) The progress of each activity for Output 2 is as follows:

- Activity 2-1 "Development of fare revision method": A proposal for fare policy was prepared and submitted to HPC for approval, and covers necessary items for decision making on fares including the issues in the existing fare revision system, the methodology of setting fare levels, the methodology of regulating fare settings, decision-making organization, criteria for fare revision (including the formula) etc.
- Activity 2-2 "Development of subsidy system": Use of the existing subsidy system became a premise for this activity at the commencement. Therefore, consideration was made on the framework necessary for HPC to appropriate financial support to the O&M company, centered on the interpretation of the existing subsidy system. Analysis on the service cost of the O&M company was implemented which is a necessary element for considering the financial support.
- Activity 2-3 "Consideration and determination of fares on Line-2A opening": The method of fare level calculation is indicated in the proposal for fare policy, which was formulated by analyzing the existing fare levels of public transportations, reviewing the proposal for fare level made by other projects and the elements that should be taken into consideration when setting the fare level (economic, financial, and social aspects). The proposed method has already been reviewed by the respective agencies.

(2) Achievement of Output 2

There are two indicators set for output 2. Current status and expectation of the achievement of

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the indicators are as follows:

Indicator:

- 2-1 "Subsidy system for the O&M Company is developed and shared in the Guideline": A methodology of financial support to the O&M company has been developed based on the existing subsidy system. Consideration has been continued for the specific items of subsidy including an assumed amount and the scope according to the progress of Line-2A construction.
- 2-2 "Fares for opening of Line-2A is set": Calculation will be made in accordance with the method described in the proposal for fare policy as the Line-2A construction progress, and the fares will be determined just before the opening.

Activities for output 2 have been implemented in an appropriate manner, depending on the situation. As for the output "development of fare setting system", the fares are able to be set with the proposal for fare policy. As for the output "development of subsidy system", a methodology of financial support to the O&M company has been developed based on the existing subsidy system. Therefore, output 2 has mostly been achieved. Tasks for setting subsidy and the fares will be taken over by DOT and done as the Line-2A construction progress (refer to 5-1, Recommendations).

### **Output 3: Operation plan and safety control system are established**

(1) The progress of each activity for Output 3 is as follows:

- Activity 3-1 "Prescription of filing an operation plan": This activity was completed by preparing a train operation plan and a guideline for the notification of train operation plan. The guideline describes rules for the obligation to submit a train operation plan.
- Activity 3-2 "Development of procedures for investigation of accidents (including the operation of safety standards and accident time procedure manual)": A guideline for reporting railway accidents was prepared by this activity as a manual customized for Hanoi urban railway, referring to the MOT circular "regulation for railway and traffic accidents" and the rules in Japan for reporting railway accidents.

(2) Achievement of Output 3

There are three indicators set for output 3. Current status and expectation of the achievement of the indicators are as follows:

Indicator:

- 3-1 "Guideline for filing the train operation plan is prepared": The guideline was prepared.
- 3-2 "Guideline for accident reporting procedure is prepared": The guideline was prepared.
- 3-3 "Guideline for accident investigation procedure is prepared": Preparation of the guideline will be done after the finalization of the regulation for accident investigation at the state level by MOT.

Activities for output 3 have mostly been implemented as planned. The output "establishment of operation plan and safety control system" has mostly been achieved. Finalization of the guidelines is undertaken by DOT as the regulator.

### **Output 4: Conditions for the transfer of Line-2A are clarified**

(1) The progress of each activity for Output 4 is as follows:

- Activity 4-1 "Devising transfer plan for Line-2A": This activity was completed by preparing a transfer plan for Line-2A, referring to a transfer process plan devised based on the practical

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examples of inspection for the opening of a new line of Tokyo Metro Co., Ltd. (Tokyo Metro).

- Activity 4-2 "Preparation of agreement with MRB and Vietnam Railway Administration (VNRA)": This activity was completed as the detailed transfer plans for each area were prepared by activity 4-1, based on the transfer plan for Line-2A.
- Activity 4-3 "Preparation and execution of transfer agreement for Line-2A": The transfer plan prepared by activities 1 and 2 was proposed at the 4<sup>th</sup> JCC meeting and agreed upon through the approval process by relevant organizations (approval by HPC on December 15, 2014 and by MOT on January 8, 2015).

#### (2) Achievement of Output 4

There is one indicator set for output 4. Current status and expectation of the achievement of the indicator are as follows:

Indicator: "Transfer plan is devised and agreed between HPC / MRB and MOT / VNRA": This indicator was achieved as the transfer plan was made as a consensus document.

Activities for output 4 were implemented as planned, and the output "clarifying conditions for the transfer of Line-2A" was achieved. The time of transfer shall be reviewed and renewed by both HPC and MOT, when the time of Line-2A opening is clarified.

Regarding the implementation of transfer contract, the Project continues to follow-up the actions. The time of transfer has not been clarified, as the effect of unexpected delay in the construction. Transferred document materials by the time of terminal evaluation are the documents of civil engineering structure and investment preparation and the technical design report, which is a part of the whole prior transfer.

#### Output 5: O&M company is registered

(1) The progress of each activity for Output 5 is as follows:

- Activity 5-1 "Proposal for establishment of O&M company by MRB": The approval process for the establishment of a state enterprise was completed with the HPC's decision (approval by the Prime Minister on November 13, 2014).

#### (2) Achievement of Output 5

There is one indicator set for output 5. Current status and expectation of the achievement of the indicator are as follows:

Indicator: "Business registration license is issued": This indicator was achieved by the registration of incorporation of Hanoi Metro One-member Limited Liability Company (HMC) in June 2015.

Activities for output 5 were implemented as planned, and the output "registration of O&M company" was achieved.

The company was established on June 1, 2015 and has started a part of its business operation. HMC became the C/P agency of the Project in September 2015, with the nomination of executive managers and securing the necessary number of personnel (twenty seven people were hired including twelve C/Ps from MRB and fifteen from other agency among forty staffs approved by HPC).

Output 6: Rules of function, duty for each department of the O&M company are

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**prescribed**

(1) The progress of each activity for Activity 6 "Prescribing the rules of function and duty for each department of O&M company" is as follows:

- Activity 6-1 "Planning, general affairs and safety (activity 6-1-1 – 6-1-8)":
  - Activity 6-1-1 "Prescription of the rules on individual departments' roles and responsibilities" was completed as a company establishment proposal included in the articles of incorporation of the O&M company, by putting together the work sharing of each division prepared through the activities for output 6.
  - Activity 6-1-2 "Prescription of the organization rules regarding planning, general affairs and safety operations" was completed by preparing the rules and including those in the company establishment proposal, together as the component of the articles of incorporation of the O&M company.
  - Activity 6-1-3 "Devising management and business plans (including consideration of common fare system)": Based on the corporate philosophy prepared by activity 6-1-4, a long-term vision together with business strategies, a 5-year business plan and annual business plans were prepared respectively. Preparation of the plans for the facility investments and the revenue and expenditures were canceled as the effects of delay in the Line-2A construction. A draft form for the management of facility investment was prepared in the work trial after the establishment of HMC.
  - Activity 6-1-4 "Prescription of corporate philosophy and the Articles of Incorporation" was completed by preparing those what are needed for incorporation, by conducting case-study of railway operators in Japan including Tokyo Metro and referring to corporate law and those of similar corporations in Vietnam.
  - Activity 6-1-5 "Prescription of the rules on safety promotion (including the formulation of safety measures / transport safety management method)": Drafts of the safety management rule and the rules of countermeasure against urban railway accidents and incident were prepared.
  - Activity 6-1-6 "Prescription of draft basic rules of train operation (including the preparation of evaluation manual of train operation plan made by EPC<sup>1</sup>)" was completed by drafting the train operation manual and the train operation management manual. HMC has been acting for the arrangement of the main points in preparation for finalizing them, which will be completed after the hand-over of Line-2A documents.
  - Activity 6-1-7 "Preparation for the introduction of office IT system (including devising necessary matters such as the basic specifications of office IT system for O&M company)": This activity has been implemented by altering to not using the office IT system as it was not procured by the contract of Line-2A construction (refer to the preconditions of activities). In the activity, analysis of the office IT system was conducted towards the development of future IT environment, regarding the component of the system and the overview of the function of the financial and human resource areas. In addition, the participants of a training session in Japan visited Tokyo Metro and observed its office IT system.
  - Activity 6-1-8 "Headquarter (HQ)'s work trial after establishment of O&M company" has been implemented to finalize the draft rules etc., which were prepared by the above activities.
  
- Activity 6-2 "Human resources (activity 6-2-1 – 6-2-9)":
  - Activity 6-2-1 "Prescription of organization rules regarding human resource (HR) management" was completed by preparing, among others, the rules in the company

<sup>1</sup> Contract of Line-2A construction project: Engineering, Procurement and Construction.

establishment proposal, together as a component of the articles of incorporation of the O&M company.

- Activity 6-2-2 "Prescription of employment rules" and activity 6-2-3 "Prescription of internal rules regarding recruiting, salary and sanction" were completed by drafting those rules and proposing both to JCC.
  - Activity 6-2-4 "Prescription of rules on division of duties, office organization and official authorities" was completed by examining the roles and authority of each division and prepared as a part of the work sharing of each division described in activity 6-1-1 above.
  - Activity 6-2-5 "Devising HR-related plans including staffing plan" was completed by examining the plan based on the rules on individual departments (activity 6-1-1) and proposing those together. Following the preparation of the plan, consideration was made for the number of staff members of each division of the HQ.
  - Activity 6-2-6 "Prescription of employee welfare-related rules, including those on staff welfare and pension" was completed by preparing the rules and including the employment rules assigned as activity 6-2-2 above.
  - Activity 6-2-7 "Devising employee education plan (including the devising post-service launch education plan)" was completed by preparing the plan and including it in the HR-related plans assigned as activity 6-2-5 above.
  - Activity 6-2-8 "Development of Work Procedures without office IT system" has been under implementation as described in activity 6-1-7, towards the development of future IT environment. A workflow for payroll operation has been prepared.
  - Activity 6-2-9 "HQ's work trial after establishment of O&M company" has been under implementation to finalize the draft rules etc., which were prepared by the above activities.
- Activity 6-3 "Finance (activity 6-3-1 – 6-3-7)":
    - Activity 6-3-1 "Prescription of organization rules regarding finance" was completed by preparing the rules and including them in the company establishment proposal, together as a component of the articles of incorporation of the O&M company.
    - Activity 6-3-2 "Devising an accounting system", Activity 6-3-3 "Prescription of rules for budget and setting" and Activity 6-3-4 "Prescription of purchasing rules" were completed by drafting and proposing those to JCC.
    - Activity 6-3-5 "Consideration of the measures to maintain the company's financial soundness" has been being under implementation by the C/Ps to prepare a report, based on the explanation materials on financial soundness prepared by the experts.
    - Activity 6-3-6 "Development of Work Procedures without office IT system" has been being under implementation as described in activities 6-1-7 and 6-2-8, towards the development of future IT environment. Marketed accounting software is used after the establishment of HMC. A workflow for accounting procedures has been under preparation, and the important parts have already prepared.
    - Activity 6-3-7 "HQ's work trial after establishment of O&M company" has been being implemented to finalize the draft rules etc., which were prepared by the above activities.
- Activity 6-4 "Sales (activity 6-4-1 – 6-4-7)":
    - Activity 6-4-1 "Prescription of organization rules regarding sales and non-fare business" was completed by preparing the rules and being included in the company establishment proposal, together as a component of the articles of incorporation of the O&M company. It is supposed that both fare and non-fare businesses are handled together by the same division, as the workload is not large at the beginning.
    - Activity 6-4-2 "Prescription of General Transport Contract" was completed by drafting

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a passenger transport contract and proposing it to JCC. The draft was prepared by referring the rules of Tokyo Metro and the transport contract of Ho Chi Minh City railways project, and ensuring consistency with the railway law of Vietnam.

- Activity 6-4-3 "Preparation of draft cash handling manual for station staff": The C/Ps obtained general knowledge of cash handling by understanding the process in Tokyo Metro and observing the practices during the training session in Japan. However, preparation of a draft manual was postponed as specific items including fares and ticketing have not yet decided, as an effect of delay in Line-2A construction.
- Activity 6-4-4 "Development of fare setting system and calculation of fares (including the development of fare revising system)": Report on fare policy for Hanoi urban railways was prepared and submitted to HPC for approval.
- Activity 6-5-5 "Consideration of setting fares based on the common fare system (determined for the start of Line-2A operations)" has not yet been completed, as an effect of delay in Line-2A construction.
- Activity 6-4-6 "Devising non-fare business plans draft" was completed by drafting the non-fare business plan, which covers the businesses at and around the station, real estate, advertisement etc.
- Activity 6-4-7 "HQ's work trial after establishment of O&M company" has been implemented to finalize the organization rules and transportation contract, which were assigned as activities 6-4-1 and 6-4-2, respectively.
- Activity 6-5 "Train operation (activity 6-5-1 – 6-5-6)":
  - Activity 6-5-1 "Prescription of draft organization rules regarding train operation" was completed by drafting the rules by examining mainly the HQ's train operation division and the operation control center (OCC) and submitting that to JCC. In addition, the HMC office organization of train operations staff and the function and task rules of the train operation department were drafted in accordance with the MOT regulation for the tasks of staff members in charge of train operation of urban railways.
  - Activity 6-5-2 "Learning about the process of preliminary study regarding draft staffing requirements (including prescription of the plan to manage operational staff and to train them)" was completed by arranging the main points of staffing of both the HQ's train operation division and OCC, and included in the draft train operation manual. The C/Ps have obtained the basis for staffing by operation lines.
  - Activity 6-5-3 "Learning about the basic skill/knowledge for train drivers' management and operation (including prescription of training plans for crews)" was completed by drafting the HMC Driver's training rules and the HMC Driver's management rules based on the examination for training and management of train operators of urban railways in Vietnam. The examination referred to MOT regulation for the train operator license (draft) and case studies in Japan.
  - Activity 6-5-4 "Learning about a methodology to make train schedules" and Activity 6-5-5 "Learning about a methodology to draw run curves": The C/Ps learned about and obtained basic knowledge on the following four items necessary for drawing train diagrams:
    - a) Travel time between stations
    - b) Stop time at stations
    - c) Forecasting passenger demand
    - d) The number of railcars and staff members against the number of passengers

The main points of the above were arranged in the draft train operation manual, as the prerequisites for train operation facilities, the planning for train operation and the evaluation of train operations.
  - Activity 6-5-6 "Collecting train operation rules for the Line-2A (including learning

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about the general knowledge for urban railway regarding train operation)" has not yet been completed, as the necessary document materials of Line-2A have not been handed over, such as the rules, manuals drawings and maintenance plans of the facility. In terms of the capacity development, however, the C/Ps have obtained necessary knowledge and will be able to reflect the above mentioned information of Line-2A to the outputs.

- Activity 6-6 "Rolling stock maintenance (activity 6-6-1 – 6-6-5)":
  - Activity 6-6-1 "Prescription of draft organization rules regarding rolling stock maintenance" was completed by drafting and proposing the rules to JCC, by clarifying the contents and definitions of functions of the HQ and at the operation sites regarding rolling stock maintenance.
  - Activity 6-6-2 "Learning about the process of preliminary study regarding draft staffing requirements and maintenance budget": Methodologies for budgeting and calculating the number of staff members were arranged and included in the draft maintenance manual, by obtaining basic understanding from case studies of railway operators in Japan.
  - Activity 6-6-3 "Learning about the process for implementation plan of rolling stock renewal (including the preparation of maintenance manuals and education plans)": The C/Ps obtained the methodologies of rolling stock maintenance, training plan and rolling stock renewal plan, from case studies of railway operators in Japan. Methodologies for preparing plans regarding rolling stock were arranged, covering renewal, allocation, management of inspection units, arrangement for plural lines and training and were included in the draft maintenance manual.
  - Activity 6-6-4 "Learning about countermeasures against rolling stock failures (including the preparation of rolling stock operation safety manual for dealing with circumstances such as accident)": The C/Ps obtained understanding from case studies of railway operators in Japan, and arranged the methodologies of responding to accidents, utilizing trouble information, and renewal of rules and manuals.
  - Activity 6-6-5 "Collecting maintenance rules for the Line-2A rolling stocks (including learning about the general knowledge for urban railway regarding rolling stock maintenance)": Since the necessary document materials of Line-2A have not been handed over, general maintenance rules have been under preparation. A very basic material was made first by referring to the information from Tokyo Metro, and it is now being modified to suit the laws and regulations of Vietnam. Information of Line-2A will be reflected when received (refer to the preconditions of activities).
- Activity 6-7 "Facilities maintenance (activity 6-7-1 – 6-7-5)":
  - Activity 6-7-1 "Prescription of draft organization rules regarding facilities maintenance" was completed by drafting and proposing the maintenance rules to JCC, by clarifying the contents and definitions of functions of the HQ and at the operation sites regarding facility maintenance.
  - Activity 6-7-2 "Learning about the process of preliminary study regarding draft staffing requirements and maintenance budget": The C/Ps obtained the methodology of budget preparation for facility maintenance, through the preparation of draft maintenance rules (activity 6-7-1) and draft maintenance manual (activity 6-7-3), and learning about the budget preparation by Japanese railway operators. Regarding the methodology for calculating the number of staff members, a staff allocation plan was drafted for the HQ and the operation sites, reviewing the draft employment plan in the Line-2A EPC contract.
  - Activity 6-7-3 "Learning about the process for draft implementation plan of facilities renewal (including the preparation of maintenance manuals and education plans)": The

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C/Ps obtained the methodology of facility renewal by referring the case studies of railway operators in Japan and observing the construction for facility renewal and engineering work for maintenance during the training session in Japan. In addition, a maintenance manual was drafted based on the draft maintenance rules which were assigned as activity 6-7-1 above.

- Activity 6-7-4 "Learning about the countermeasures against facilities failure (including the preparation of facilities operation safety manual for dealing with circumstances such as accident)": The C/Ps have been obtaining general understanding by referring to the case studies of railway operators in Japan, as the specification, drawings and maintenance manuals for the facilities of Line-2A have not yet been provided.
- Activity 6-7-5 "Collecting maintenance rules for the Line-2A facilities (including learning about the general knowledge for urban railway regarding facilities maintenance)" The C/Ps obtained general understanding by referring to the case studies of railway operators in Japan, as the specification, drawings and maintenance manuals for the facilities of Line-2A have not yet been provided. Information of Line-2A will be reflected when received (refer to the preconditions of activities).

## (2) Achievement of Output 6

There are two indicators set for output 2. Current status and expectation of the achievement of the indicators are as follows:

### Indicator:

- 6-1 "Each department has rules of function and duty": This indicator was achieved by preparing the work sharing of each division, which was included in the articles of incorporation of the O&M company.
- 6-2 "Annual plan is made" This indicator has almost been achieved as the preparation of management and operation plans is in progress.

Activities for output 6 have mostly been implemented as planned. The output "prescribing the rules of function and duty for each department of the O&M company" has mostly been achieved, by drafting those based on the organizational rules of Tokyo Metro and ensuring consistency with the common organizational rules of Vietnamese corporations. The drafts are now being finalized through the activities of work trial.

The Project originally planned to transfer technical skills regarding the function and roles of the O&M company, specifically on the operation of Line-2A. However, the implementation needed to be modified as an effect of delay in the construction, and the technical transfer for most of the targeted areas was conducted at a general level. After the termination of the Project, HMC shall continue to finalize the rules, etc. as the information of Line-2A is provided.

## 3. Evaluation Results

### 3-1. Relevance

*A criterion for considering the validity and necessity of a project regarding whether the expected effects of a project meet with the needs of target beneficiaries; whether a project intervention is appropriate as a solution for problems concerned; whether the contents of a project is consistent with policies, etc.*

#### The Project is highly relevant.

##### (1) Relevance to the national development policy

During the time from the planning to this terminal evaluation, the ten-year socio-economic development strategy (2011-2020) enhances facilitation of urban infrastructure including transportation infrastructure in Hanoi and Ho Chi Minh City. The five-year socio-economic development plan (2011-2015) further enhances prompt development of the public transportation system as a measure for traffic congestion, which is the critical task in urban areas especially in



Hanoi and Ho Chi Minh City.

(2) Relevance to the sector development policy

The construction of Lines 1, 2, 2A and 3 was decided based on the plan for the development of five urban railway lines under the Hanoi city transportation planning by 2020 (prepared in 2008). The Project was planned to provide technical cooperation necessary for the development of these urban railway lines. In addition to the above, Lines 6 through 8 have been planned under the master plan on the transportation and traffic sector targeting 2030.

There have been target settings for the share ratios of public transportation during the time from the planning to this terminal evaluation: 30% by 2010 under the five-year socio-economic development plan (2006-2010), 35% by 2015, and 50% by 2025 under the basic policy concerning the development of the urban system 2025.

(3) Relevance to the development needs

Hanoi will be the first city to operate urban railways in Vietnam; therefore, it needs the knowledge and experience to be shared for both the regulator and the operator. It also needs a working flow for appropriate inspection and verification at the transfer of Line 2A, from the viewpoint of safe railways operation in particular.

(4) Relevance to Japan's ODA policy

The basic policy of the country assistance policy for the Socialist Republic of Vietnam at the time of planning is to provide support for achieving sustainable development by strengthening international competitiveness, conquer vulnerability and create a fair society and country towards the industrialization of the country by 2020 as stated in the ten-year socio-economic development strategy (2011-2020) and the five-year socio-economic development plan (2011-2015). The Project is consistent with the "urban transport network" stated in one of the priority areas "promotion of economic growth and strengthening of international competitiveness" in this country assistance policy.

(5) Appropriateness of the project approach

The external conditions of the Project were the development of urban railway lines (construction of 2A Line as the preceding part). Its implementation has largely been affected by delay in the construction, and some activities were deleted from the plan of the Project. Considering the scheme of the Project, there have been negative aspects observed as a result of such external effect. From the technical viewpoint, however, the original plan of the Project was appropriate which covers practical trainings. Therefore, it is concluded that the project approach is relevant.

In addition, in the technical viewpoint, the experts expressed their concept of the technical assistance: it is to be desired that assistance during the preparation phase of railway operation is included from the beginning, which enables taking actions to unexpected and specific issues together with the C/Ps in a practical manner. Since the urban railway is the first introduced in the country, it is considered that transfer of technical skills will greatly contribute to the preparation of operation, especially during the trial operation through a certain period of time after the opening.

(6) Comparative advantage of Japanese technological skill

The Project shares Japan's advanced technology and wealth of experience accumulated by taking a long-term perspective on urban railways, which takes a central role in increasing the sharing ratios of public transportation in the urban area in Japan. Therefore, it is considered meaningful that the technical assistance is provided to HPC which is introducing the first urban railways in Vietnam.

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In light of the above, the Project is highly relevant to the development policy and development needs of Vietnam, as well as Japan's ODA policy. In addition, the project approach has been appropriate in terms of Japan's technological advantages regarding urban railways.

### 3-2. Effectiveness

*A criterion for considering whether the implementation of project has benefited (or will benefit) the intended beneficiaries or the target society.*

#### Effectiveness of the Project is fair.

##### (1) Achievement of outputs

As described in "2-2. Progress of Activities and Achievement of Outputs," most of the outputs for "strengthening the capacity of the regulator and developing the environment for establishing an O&M company" have basically been achieved in accordance with the PDM (Refer to Annex 5).

In the original PDM, activities for work trial were included toward the achievement of the project purpose "the commencement of operation of the regulator and operator jointly." However, it was determined at the 6<sup>th</sup> JCC meeting held in October 2015 that the activities for work trial by the regulator and the activities for work trial towards the opening of Line-2A by the O&M company were deleted from PDM, considering the situation where the implementation of the activities by the end of the Project is difficult, affected by the delay in the construction of Line-2A and the change in the regulator.

##### (2) Important assumption for the outputs

The Project has been affected by the delay in construction among the important assumption for the outputs, and therefore some activities were deleted and modified.

	Important Assumptions	Status and Effects to the Project
1	All related projects such as UMRT Line 2A, 2 and 3 proceeds as scheduled	Construction has been delayed.
2	There is no big change in urban railway policy of Vietnam central government and HPC	No specific effects have been observed.

##### (3) Expectation of achieving the project purpose

**Project Purpose: The urban railway regulator (O&M management) and the O&M company begin to function jointly**

Two indicators are set for the project purpose. Under the current situation of the Project, it is necessary that the following conditions are fulfilled in achieving each indicator.

#### Indicator:

1. "Initial work of the regulator is commenced": As described in 2-2. Progress of Activities and Achievement of Outputs, the urban railways regulator was changed from MRB to DOT in September 2015, and DOT is in a process to set up a new division for the regulator at the time of terminal evaluation. To achieve "commencement of initial work of the regulator," it is necessary that organizational setup of the regulator be completed and the transferred technical skills are succeeded by the new regulator.
2. "The trial of management control work of the O&M company is commenced": As described in "(1) Achievement of outputs," the activities for work trial towards the opening of Line-2A were deleted. As a result, the transfer of technical skills completed by the Project was general and not as specific as that were originally planned. At the time of the terminal evaluation, work trials have been implemented mainly on finalizing the

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organization rules as the information of Line-2A is provided. The implementation of “trial of management control work of the O&M company” will become possible as the specifications and details of the operation of Line-2A become clear.

(4) Important assumption for the project purpose

The Project has been affected by the important assumption, and therefore some activities were modified as follows.

	Important Assumptions	Status and Effects to the Project
1	The formalities of organization establishment and hire, training and assignment of the personnel are smooth at the competent authorities' level.	Organizational setup, personnel allocation, and training have been completed in HMC, although delayed compared with the plan.
2	Coordinating about Urban railway policy among competent authorities is implemented smoothly and requisite decisions are made at the suitable timing.	Coordination has been in process: determinations on fares, subsidy, operation plan, and safety control time procedures have not been confirmed.
3	Requisite documents about operation and maintenance of Line-2A are provided at the suitable timing.	Since handing over of Line-2A documents necessary for operation and maintenance has been delayed, the activities have been implemented based mainly on referring to general cases of operation, and the output materials have been modified according to the documents as handed over.
4	Office IT system is procured as scheduled.	As the procurement of office IT system was not included in the EPC contract of Line-2A construction project, activities have been modified toward future introduction of IT system.

In light of the above, effectiveness of the Project is fair. Outputs of the Project “strengthening the capacity of the regulator and developing the environment for establishing an O&M company” have basically been achieved. However, the achievement of the project purpose “commencement of joint function of the regulator and the O&M company” has been limited so far, as effects of the change in the regulator and the delay in the construction of Line-2A: the former was not supposed at the planning, whereas the latter was included in the preconditions and important assumptions.

In order to achieve the project purpose, as for the regulator, it is necessary that organizational setup be completed and the transferred technical skills succeeded by the new regulator. As for the O&M company, it is necessary that HMC takes its own initiative to conduct work trial as the materials of Line-2A are provided including the specifications and details of the operation. Considering the rest of the project period, these activities can be conducted and the project purpose will be realized after the termination of the Project. For this reason, recommendations are made together with those for sustainability (refer to 5-1. Recommendations).

### 3-3. Efficiency

*A criterion for considering how economic resource/inputs are converted to results. The main focus is on the relationship between project cost and effects.*

Efficiency of the Project is relatively high.

(1) Inputs to the Project

Inputs into the Project have basically been made as planned by both the Japanese side and Vietnamese side for the achievement of the outputs (refer to 2-1. “Inputs to the Project” for detail).

Regarding the training in Japan, participants point out the effects of the session: greatly impressed by the technology and efforts on safety operation, learned about how the urban railway be operated at the high level and enabled to having clear images by looking at the actual operation, etc.

(2) Preconditions for the activities

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The Project has been affected by the preconditions, and therefore some activities were deleted and modified.

	Preconditions	Status and Effects to the Project
1	If approved specifications, design conditions and so on of Line-2A aren't provided at the suitable timing, fundamental instructions will be implemented based on the general knowledge for operation method regarding urban railway. When requisite documents are provided, outputs of fundamental instruction should be coordinated in accordance with provided documents.	Since handing over of approved Line-2A documents such as specifications and design situation has been delayed, the activities have been implemented based mainly by referring to general cases of operation and the output materials have been modified according to the documents as handed over.
2	When office IT system isn't procured as scheduled and system domains to be adopted aren't clarified, alternative plans will be devised and implemented in order that requisite system domains are processed without office IT system.	As the procurement of office IT system was not included in the EPC contract of Line-2A construction project, the Accounting Dept. uses marketed software and the HR Dept. uses Excel in its activities.
3	When the integrated operation between HQ and OU (i.e., sharing accidents measures, managing and training human resources etc.) is required, the operation system and division of works are reviewed from the viewpoint of the strengthening of cooperation and operation system. If needed, the principles of work trials are revised.	Each activity has been implemented so that the cooperation of both sides and the management systems are strengthened as the HQ and OU have to operate in an integrated manner in the railway operation.
4	Regulator's work trial regarding the supervision of O&M company can be implemented on condition that the regulator for urban railway is set up (or established) and personnel are assigned in the regulator.	This precondition is regarded as deleted together with the activities for trial work of regulator.
5	HQ's work trial after establishment of O&M company can be implemented on condition that O&M company is established and personnel are assigned in HQ.	HQ's work trial has been implemented after the establishment of HMC.
6	In addition to the conditions which are mentioned above, HQ's work trial towards the opening of Line-2A can be implemented only if facilities of Line-2A are installed, training for Line-2A personnel is completely finished and commissioning begins.	This precondition is regarded as deleted together with the activities for trial work towards the opening of Line-2A of HMC.
7	In addition to the conditions which are mentioned above, HQ's work trial towards the opening of Line-2A can be implemented only if facilities of Line-2A are installed, training for Line-2A personnel is completely finished and commissioning begins.	Systems and frameworks necessary for opening urban railway operation such as safety authentication have not yet been established, and should be ready at the physical handover of the facilities.

The project period has been extended for one year mainly due to time taken for the establishment of O&M company longer than presumed and the delay in the construction of Line 2A, which affected the progress of activities.

Inputs to the Project have basically been made as planned to achieve the outputs; therefore, efficiency of the Project is relatively high.

The C/P agency as the urban railway regulator has been changed under the circumstances outside the framework of the Project. From the viewpoint of efficiency, change in the C/P agency to which technical skills are transferred during the project implementation means that the input is inefficient. In this Project, C/P agency was changed at approximately the end of the project period, where the technical transfer to the regulator has almost been completed. Therefore, effects of the change in C/P are considered a matter of effectiveness and sustainability rather than efficiency, and recommendations are made from the viewpoint of these criteria (refer to S-1. Recommendations).

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### 3-4. Impact

*A criterion for considering the effects of the project with an eye on the longer term effects including direct or indirect, positive or negative, intended or unintended.*

Impact of the Project is fair.

(1) Expectation of achieving the overall goal

**Overall Goal: The Operation and Maintenance (O&M) company for urban railways in Hanoi city provides safe and reliable urban mass rapid transit operation**

Two indicators are set for the overall goal. Whether the indicators will be achieved is not possible to predict at the time of terminal evaluation, considering the situation where the achievement of the project purpose would be limited in comparison with the level that was originally planned and the situation of important assumptions. It is necessary that both C/P agencies take initiative in achieving the project purpose, and that the important assumption "start of the operation of Line 2A" is realized as well.

Indicator:

1. "The company becomes acquainted with train operation and management of urban railway systems, ensuring high punctuality and infrequent service stoppages"
2. "A comprehensive safety operation system in line with "Transport Safety Management Method" is developed"

It is emphasized by the related agencies interviewed during the evaluation survey that for the achievement of the overall goal, capacity of the operation and maintenance staffs should be highly developed, which shall be one of the most important elements for the safety and reliable railway operation.

(2) Important assumption for the overall goal

	Important Assumptions	Status and Effects to the Project
1	Line 2A starts its operation as scheduled fully complied with delivery conditions prescribed in the EPC contract	Opening of Line-2A will be in 2016 according to the public notice.

(3) Unintended positive/negative impact

The Project has widely contributed to the development of the legal system of first urban railways operation in the country. Revision of the railway law is scheduled in 2017, which will include articles regarding urban railways, and the outputs of the Project have been referred to in the process of drafting the articles. The Project has also provided supporting in the preparation of MOT regulations and rules, by reviewing and making comments drafts.

It is considered that the Project potentially requires cooperation among relevant organizations, at both municipal and national levels: in its implementation, they have been engaged in certain activities either directly or indirectly toward the urban railway as the common objective. Such involvement contributed to the development of cooperation among organizations and the capacity of the officials; which would be used for the railway operation. In the future introduction of urban railways in other cities, the outputs and experiences of the Project will be available as a valuable precedent.

In light of the above, impact of the Project is fair. Whether the impact of the Project will be realized is not possible to predict at the time of terminal evaluation. It is expected that both C/P agencies will make continuous efforts on the recommendation items toward the commencement of operation jointly (Refer to 5-1. Recommendations). In addition, capacity development of the

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operation and maintenance staffs should continuously be emphasized and monitored. Indirect effects of the Project will contribute to the introduction of urban railways in other cities.

### 3-5. Sustainability

*A criterion for considering whether produced effects continue after the termination of the assistance.*

Sustainability of the Project is relatively low.

#### (1) Policy and systems aspects

As described in "3-1. Relevance," policy on enhancing the development of urban transportation system will be continued.

Under the circumstances, preparations are underway in Hanoi for the introduction of urban railways and a bus rapid transit (BRT) system. DOT regards the integration between these new public transportations mode and existing fixed-route buses as important.

#### (2) Organizational aspects

##### (Regulator)

As described in "3-2. Effectiveness", the urban railways regulator was changed from MRB to DOT. Regarding the organizational aspect as the regulator, DOT has been conducting study on the roles and responsibilities of urban railways regulator, since the decision of the transfer has just been made by HPC. Following this study, consideration will be made for the number and qualifications of the staffs for the division in charge of urban railway regulation. At the time of terminal evaluation, it has not been decided when a new division will be established and how many staff personnel will be allocated to the division.

From the viewpoint of the organizational aspect, it is an essential requisite that the functions as a regulator are secured in DOT for the sustainability of the project effects. For this reason, recommendation is made on the monitoring of administrative procedures for the organizational setup through the rest of the project period (refer to 5-1. Recommendations).

##### (O&M company)

As described in "2-2. Progress of Activities and Achievement of Outputs," HMC was established through the activities for output 5. The members of Board of Directors are the Directorate General and two Deputy Directors, and five divisions are set up including 1) project planning, 2) finance and accounting, 3) general affairs and organization, 4) train operation, and 5) facility technical. The number of HMC personnel is twenty seven so far, of which twelve C/Ps were transferred from MRB, and fifteen personnel were transferred from other organizations and agencies.

Currently, HMC is preparing the preliminary infrastructure of the company, and it is estimated to recruit 681 staffs for operating Line-2A until the end of 2016.

#### (3) Technical aspects

##### (Regulator)

Capacity development of DOT staffs members in charge of urban railway is necessary as no one has knowledge or experience of urban railway operation, this being the first in the country. However, it is the next step that DOT succeeds the technical skills transferred by the Project, because the issue of setting up a new division has been in consideration by the respective personnel in DOT as described in "Organizational aspects" above. The project outputs have been handed over, and DOT has looked over the reports etc and made comments so far. DOT intends to keep having communication with the experts for the preparation of starting its tasks as the regulator.

It would be necessary that consideration be made for the technical assistance to DOT anew, when the organizational setup is complete as the urban railway regulator after the termination of the Project (refer to 5-1. Recommendations).

**(O&M company)**

As described in "3-2. Effectiveness," the transfer of technical skills made by the Project was general but not as specific as that originally planned, as the activities for work trial towards the opening of Line-2A were deleted. HMC recognizes that practical training is necessary in the whole area of railway operations, towards the first opening in the country; therefore, it will continue the development of human resources by taking technical assistance from overseas including Japan. HMC allocates staff members from MRB, the C/Ps of the Project, to the Train Operation Division and Facility Technical Division in which the knowledge and experience are needed most, and it will continue to focus on the capacity development of these two divisions. These staffs now have certain level of knowledge and experiences, and HMC also contributed into selecting the rollingstock in Line-2A.

Based on the experiences as an urban railway operator, the experts recognize the need for continuing assistance to HMC, in the form of practical training and support on dealing with unexpected and specific issues during the trial operation through a certain period of time after the opening.

**(4) Financial aspects****(Regulator)**

Budget allocation for the regulator functions of DOT has not been made as the organizational setup has not yet been completed. The budget will be allocated by the City following the administrative procedures: roles and responsibilities are determined first, and the necessary number and qualification of the staff members are decided. According to the system, it is concluded that there is no specific issue on the financial aspect of sustainability as a regulator.

**(O&M company)**

Regarding the management of HMC, HPC takes a stance of appropriating the city's budget for the operation and maintenance costs while it sets the fare level. HPC considers the appropriation of subsidy necessary especially to secure sufficient amount of operation and maintenance costs to maintain safe operation of the urban railways. Therefore, the business operation of HMC will be more like municipally-owned than financially self-supporting. According to the business operation, it is concluded that there is no specific issue on the financial aspect of sustainability as an operator.

In light of the above, Sustainability of the Project is relatively low. It is necessary, for the sustainability of the project's effects, that those issues on the organizational and technical aspects of the regulator be handled in an appropriate manner (refer to 5-1. Recommendations).

**4. Conclusions**

The Project is highly relevant to the development policy and development needs of Vietnam, as well as Japan's ODA policy. As for the effectiveness, outputs have mostly been achieved, whereas the achievement of the project purpose has been limited so far, as the effects of the change in the regulator and deleting a part of activities due to the delay in the construction of Line-2A. It is expected that the C/P agencies will take initiative in activities after the Project to achieve the project purpose and the overall goal as well. It is necessary for the sustainability of the project's effects that the regulator proceeds with organizational setup and succeeds the technical skills transferred by the Project.

**5. Matters Discussed****5-1. Recommendations**

- (1) To ensure the transfer of the urban railway regulator function to DOT

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As described in 3-2 Effectiveness and 3-5 Sustainability, the regulator for urban railway has been changed from MRB to DOT. In order to securely achieve the Project purpose and Sustainability of the Project effects, a new division should be setup in DOT as a regulator on urban railway and necessary personnel in charge of regulator activities should be assigned under the supervision of HPC. DOT should conduct administration procedure of the organization set-up of the regulator and it will be monitored by the Japanese Experts during the Project period and JICA Vietnam after the Project completion.

On the other hand, technical skills transferred to MRB in the Project should be appropriately succeeded to DOT.

(2) To secure the establishment of fare setting policy and subsidy system

DOT will succeed the Project outputs concerning the establishment of fare setting policy and subsidy system, when a new division as a regulator is setup in DOT. Since DOT will be required to function as a regulator to establish fare setting and subsidy system when the business operation plan of Line-2A is determined, DOT should complete technical transfer to the concerned personnel in charge of regulator activities from MRB.

Progress of technical transfer to the concerned personnel in charge of regulator activities in DOT should be monitored by the Japanese Experts who will be assigned to the technical assistance project for promoting smart card usage for public transportation in Hanoi, of which C/P agency is DOT.

(3) To implement work trial after completion of the Project

Work trial concerning regulator (DOT) for urban railway and O&M company (HMC) were deleted from the original PDM, due to unexpected delay of the construction of Line-2A project. Consequently, both HMC and DOT are expected to take an initiative to implement the work trial for their respective activities when the preconditions are satisfied. However, Vietnamese counterparts expressed their strong requests on Japanese technical assistance for the work trial of the urban railway operation in Hanoi City so as to secure "Sustainability" of the Project, because urban railway operation is purely the first experience for the Vietnamese urban railway services.

## 5-2. Lessons Learned

(1) Assistance on the system aspect at the introduction of urban railways

The Project was implemented for the introduction of a track type public transportation system as one of measures addressing traffic congestion, an accelerating issue in Hanoi city and urban environment as well. The Project successfully transferred the technical skills and experiences of urban railways in Japan, which take a central role in increasing the share ratios of public transportation in the urban area in Japan. Especially, strengthening of the regulator is important at the introduction stage, to be the basis of the system aspect which sustains safe and reliable railways operation.

Issues of transportation in connection with urbanization are the urgent challenges in many recipient countries, and introduction of urban railways is considered. The assistance on the system aspect in this Project should be reviewed and utilized as meaningful lessons at the forth coming opportunity for assisting the introduction of urban railways in other countries and/or regions.

## 6. Other Business

The relevant agencies request continuous cooperation and support for the training of operation and maintenance staffs. JICA will take this into consideration, observing the follow-up situation of the recommendations and the changes in the conditions surrounding the urban railways as well.

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**Annex 1. Members of the Joint Terminal Evaluation****(1) Japanese side (the Japanese Team)**

Name	Position
Mr. Masahiko Furuichi	Team Leader, Senior Advisor, JICA
Mr. Yasuaki Shoji	Cooperation Planning, Deputy Director, Planning and Coordination Division, Team 2, Transportation and ICT Group, Infrastructure and Peace building Department, JICA
Mr. Hideyuki Takagi	Evaluation Analysis, Ernst & Young Sustainability Co., Ltd.

**(2) Vietnamese Side (the Vietnamese Team)**

Name	Position
Ms. Le Thu Huyen	PhD of Transport, University of Transport and Communications
Mr. Tran Huu Minh	PhD of Transport, Specialist of National Traffic Safety Committee (NTSC)

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## Annex 2. Schedule of the Joint Terminal Evaluation

No	Date	Day	Team Leader and Cooperation Planning	Evaluation Analysis
1	Nov. 22	Sun.		Departure from Japan Arrival in Hanoi
2	Nov. 23	Mon.		Meeting with JICA Vietnam Meeting with Vietnamese Evaluation Team
3	Nov. 24	Tue.		Meeting with Hanoi Metro Company (HMC) Meeting with Department of Transportation(DOT)
4	Nov. 25	Wed.		Meeting with Experts Meeting with Hanoi Authority of Planning and Investment
5	Nov. 26	Thu.		Meeting with Vietnam Railway Administration (VNRA) Meeting with PMU-Rail, MOT
6	Nov. 27	Fri.		Meeting with Department of Home Affairs (DOHA) Meeting with Department of Finance
7	Nov. 28	Sat.		Report preparation
8	Nov. 29	Sun.		Report preparation
9	Nov. 30	Mon.	Departure from Japan Arrival in Hanoi	Meeting with Hanoi Metropolitan Railway Management Board (MRB) Meeting with JICA Vietnam
10	Dec.1	Tue.	Evaluation team meeting for draft evaluation report Meeting with long-term expert at VNRA	
11	Dec.2	Wed.	Meeting with HMC and DOT (discussion for the evaluation report)	
12	Dec.3	Thu.	Meeting with HMC and DOT (discussion for the evaluation report)	
13	Dec.4	Fri.	7th JCC meeting /Signing on the M/M	
14	Dec.5	Sat.	Departure from Hanoi	
15	Dec.6	Sun.	Arrival in Tokyo	

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**Annex 3. List of Japanese Experts and Vietnamese Counterparts****(1) Japanese Experts**

Name	Task/Expertise
Mr. Masamichi Ono	Project Manager
Mr. Akira Hosomi	Deputy project manager / Strengthening capacity of the regulator
Mr. Takayuki Hagiwara	Fare policy, planning coordination
Mr. Tsutomu Otsuka	Safety, engineering, management, condition for transfer of Line-2A
Mr. Masaki Mitsumori	Organization management, general affairs, human resources
Mr. Takahiro Tanisaka	Planning, management and business planning, non-fare business
Mr. Naoshi Sakai	Accounting, treasury, procurement
Mr. Koya Honda	Financial soundness, registration, office IT
Mr. Satoru Horiuchi	Sales
Mr. Kohei Ushida	Train operation
Mr. Jun Kurihara	Rolling stock
Mr. Takaaki Fujioaka	Civil engineering, track, architecture
Mr. Tatsuo Otsuki	IC card
Mr. Takeshi Ikeda	Signal, telecom electricity, machinery, transformation of electricity, station facilities
Mr. Daisuke Miyamoto	Secretary

**(2) Vietnamese Counterparts (as of November, 2015)**

Name	Task in the Project / Position
Mr. Kieu Quang Huynh	Team leader/ Planning, Sales and Non-fare business/ Train operation division, Operation and maintenance management Department, HMC
Ms. Dinh Thi Mai Anh	Organization and Human resources/ Deputy Director, General affairs and organization division, Operation and maintenance management Department, HMC
Mr. Nguyen Trung Thanh	Fare policy/ Project planning division, Operation and maintenance management Department, HMC
Ms. Phan Thanh Huyền	Fare policy/ Project planning division, Operation and maintenance management Department, HMC
Mr. Nguyen Dinh Duy	Administration and safety, Train operation and safety/ Train operation division, Operation and maintenance management Department, HMC
Ms. Bach Huyen Trang	Finance/ Project planning division, Operation and maintenance management Department, HMC
Mr. Nguyen Quang Khai	General affairs and organization division, HMC

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Name	Task in the Project / Position
Mr. Nguyen Van Bang	Train operation/ Train operation division, Operation and maintenance management Department, HMC
Mr. Ngo Van Bang	Rolling stock/ Facility technical division, Operation and maintenance management Department, HMC
Mr. Hoang Tuan Dat	Facilities (Track, IC card)/ Train operation division, Operation and maintenance management Department, HMC
Mr. Do Quang Ngoc	Facilities (Civil engineering, architecture)/ Facility technical division, Operation and maintenance management Department, HMC
Mr. Nguyen Viet Quan	Facilities (Signal, telecom electricity, machinery, transformation of electricity, station facilities)/ Train operation division, Operation and maintenance management Department, HMC
Mr. Nguyen Le Viet	Organization, Human resource/ Deputy Director, Examination technical department, PMU-Rail, MOT
Mr. Dao Chi Thanh	Rolling stock/ Facility and technical division, PMU-Rail, MOT
Mr. Le Phuong	Train operation, Rolling stock/ Vietnam railway transportation and traffic safety division, MOT
Mr. Bui The Thanh	Train operation and Rolling stock/ Deputy Director, Vietnam railway transportation and traffic safety division, MOT

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#### Annex 4. List of Training in Japan

The seventeen C/Ps were separated into two groups and each took a two-week training session (the first group: from August 26 to September 6, 2013, the second group: from September 9 to 20, 2013). Both groups visited Tokyo Metro Co., Ltd. and the related companies, learned about the management of urban railways in general, observed the practices, and took practical training in each field.

##### 1) Training subjects

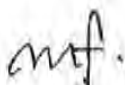
General training (1st week)	Specific training (2nd week)
Participants visited Tokyo Metro and the related companies and learned about the management of urban railways in general. <ul style="list-style-type: none"> <li>• Headquarters office</li> <li>• General control center, operation office</li> <li>• Train depot, factory, train management center</li> <li>• Station yard, customer center, lost articles center</li> <li>• Training center, etc.</li> </ul>	Separated into groups of specific areas, and observed the practices and took practical trainings in each field. <ul style="list-style-type: none"> <li>• Administrative Management Department</li> <li>• Sales Department</li> <li>• Train Operation Department</li> <li>• Rolling Stock Department</li> <li>• Electricity Department</li> <li>• Technical Department, etc.</li> </ul>

##### 2) List of the Participants

Name	Task in the Project / Position
Mr. Luong Xuan Binh	Deputy Director of MRB
Mr. Nguy Nhu Nguyen	Chief of Department at Urban railway Operation and Maintenance Department of MRB
Mr. Nguyen Trung Thanh	Fare policy/ Project planning division, Operation and maintenance management Department, HMC
Ms. Dinh Thi Mai Anh	Organization and Human resources/ Deputy Director, General affairs and organization division, Operation and maintenance management Department, HMC
Mr. Kieu Quang Huynh	Planning and Sales/ Train operation division, Operation and maintenance management Department, HMC
Ms. Bach Huyen Trang	Finance/ Project planning division, Operation and maintenance management Department, HMC
Mr. Nguyen Quang Khai	Planning for non-fare businesses/ General affairs and organization division, Operation and maintenance management Department, HMC
Mr. Hoang Tuan Dat	Facility (rail and AFC)/ Train operation division, Operation and maintenance management Department, HMC
Mr. Nguyen Van Bang	Train operation/ Train operation division, Operation and maintenance management Department, HMC
Mr. Do Quang Ngoc	Facility (civil engineering structure)/ Facility technical division, Operation and maintenance management Department, HMC
Mr. Nguyen Viet Quan	Facility (electricity, communication and signal)/ Train operation division, Operation and maintenance management Department, HMC
Mr. Ngo Van Bang	Rolling stock/ Facility technical division, Operation and maintenance management Department, HMC
Mr. Nguyen Dinh Duy	Train operation and safety/ Train operation division, Operation and maintenance management Department, HMC

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Name	Task in the Project / Position
Ms. Phan Thanh Huyền	General affairs and fare policy/ Project planning division, Operation and maintenance management Department, HMC
Mr. Nguyen Le Viet	Organization and Human resources/ Deputy Director, Examination technical department, PMU-Rail, MOT
Mr. Dao Chi Thanh	Rolling stock/ Facility and technical division, PMU-Rail, MOT
Mr. Le Phuong	Train operation and Rolling stock/ Vietnam railway transportation and traffic safety division, MOT



**Annex 5. List of the Output Materials prepared by the Project**

1. Final Report to Strengthen the Capacity of Regulator
2. Report on Fare Policy for Hanoi Metro
3. COMPREHENSIVE ALTERNATIVE OF LINE 2A TRANSFER
4. MASTER PLAN FOR LINE 2A PROJECT TRANSFER (DRAFT)
5. HAND-OVER AND TAKE-OVER PLAN FOR LINE 2A (DRAFT)
6. 15th December 2014 No.9796/UBND-XDGT (Accepting Hand-over, Take-over Plan for Hanoi Urban Railway Project, Cat Linh – Ha Dong)
7. 8th January 2015 No.199/BGTVT-CQLXD (Accepting Hand-over, Take-over Plan for Hanoi Urban Railway Project, Cat Linh – Ha Dong)
8. Company Establishment Proposal
9. FUNCTIONS, RESPONSIBILITIES OF UNITS UNDER O&M COMPANY
10. Long-term Vision
11. THE ARTICLES OF INCORPORATION OF THE O&M COMPANY
12. Mid-term Management Plan (5 year Business Plan)
13. Annual Management Plan (Annual Business Plan)
14. THE SAFETY MANAGEMENT RULE (DRAFT)
15. THE RULE OF COUNTERMEASURE AGAINST URBAN RAILWAY ACCIDENT AND INCIDENT (DRAFT)
16. Train Operation Rule (Draft)
17. Train Operation Management Manual (Draft)
18. LABOR REGULATIONS
19. RULES ON RECRUITMENT
20. RULES ON WAGES
21. REGULATIONS ON REWARD AND EMULATION
22. WORKING RULES
23. HQ personnel plan
24. Salary Payment Workflow
25. Accounting Rules
26. Rules for Fixed Assets
27. Cash Handling Rules
28. Rules for Budgeting
29. Rules for Setting
30. Contract Management Rules
31. Tender and Contract Process Rules
32. Service and Procurement Rules for Outside Scope of Article of Tender
33. Material Management Rules
34. Study of Measures to Maintain Financial Soundness
35. Accounting Workflow
36. General Transport Contract
37. Non-fare Business Plan

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38. HMC Office organization of train operations staff (Draft)
39. Function and task rules of train operation department (Draft)
40. HMC Driver's training rules (Draft)
41. HMC Driver's management rules (Draft)
42. Draft of Rolling Stock Maintenance Rules
43. Draft of Rolling Stock Maintenance Manuals
44. DRAFT OF MAINTENANCE RULE ON CONSTRUCTION WORK
45. DRAFT OF CONSTRUCTION WORK MAINTENANCE MANUAL
46. Equipment maintenance rules
47. Equipment maintenance manual
48. Structures of AFC Systems (Equipment)
49. Basics of the Maintenance of AFC Equipment
50. Systems for Maintenance Work
51. Organizations and Functions needed for Maintenance Work
52. Rules for Organizations.
53. Criteria for staffs of sections and departments dedicated for AFC
54. Estimation of staffing number for maintenance of AFC equipment and facilities
55. Maintenance Items Available in Vietnam
56. Standard Price Information for Maintenance Items
57. Method to estimate staffing number for maintenance of AFC equipment
58. Learning about the process for implementation plan of facilities renewal
59. Rules for the Number of Installed Equipment
60. Renewal planning of equipment
61. Method to estimate number of equipment
62. Countermeasures against facility failure
63. Collecting maintenance rules for the Line-2A facilities
64. Key Issues for the Urban Railway in Hanoi
65. Securing the Safety of Railway Transportation
66. Tokyo Metro's Experience
67. Incentive Policies Supporting Sustainable Fare Structure for Hanoi Metro
68. SUMMARY OF THE DRAFT CONTENT FOR THE CREATION OF THE MULTI-MODAL PUBLIC TRANSPORT POLICY STEERING COMMITTEE

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**Annex 6. Project Design Matrix (PDM) (revised on October 14, 2015)**

Technical Assistance Project to Strengthen the Capacity of Regulator and to Establish Operation & Maintenance Company of Metropolitan Railway Lines in Hanoi City

Project Site: Hanoi City

Project Implementation Period: From February 2013 to February 2016 (36 months in total)

Target Group: Hanoi People's Committee (HPC), Hanoi Metropolitan Railway Management Board (MRB), Department of Transportation (DOT), Hanoi Metro One Member Limited Liability Company (HMC)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p><b>Overall Goal</b></p> <p>The Operation and Maintenance (O&amp;M) company for urban railways in Hanoi City provides safe and reliable urban railway operation.</p>	<p>1. The company becomes acquainted with train operation and management of urban railway systems, ensuring high punctuality and infrequent service stoppages.</p> <p>2. A comprehensive safety operation system in line with "Transport Safety Management Method" is developed.</p>	<p>1. Annual report of O&amp;M company (After commencement)</p>	
<p><b>Project Purpose</b></p> <p>The urban railway regulator (O&amp;M management) and the O&amp;M company begin to function jointly.</p>	<p>1. Initial work of the regulator is commenced.</p> <p>2. The trial of management control work of O&amp;M company is commenced.</p>	<p>1. Approved document to railway operator - Fare - Level of service</p> <p>2. Company rules, working instructions, work implementation flow and other necessary documents are finalized for actual operation.</p>	<p>1. Line-2A starts its operation as scheduled fully complied with transfer conditions prescribed in EPC contract.</p>
<p><b>Outputs</b></p> <p>1. The regulator's capacities are strengthened.</p> <p>2. Fare setting method and subsidy system are established.</p> <p>3. Operation plan and safety control system are established.</p> <p>4. Conditions for transfer of Line-2A are clarified.</p> <p>5. O&amp;M company is registered.</p> <p>6. Rules of function and duty for each department of O&amp;M company are prescribed.</p>	<p>1. The regulator's organization and its function &amp; powers in the organization are prescribed and approved by HPC.</p> <p>2-1 Subsidy system for O&amp;M company is developed and shared in the Guideline.</p> <p>2-2 Fares for the opening of Line-2A are set.</p> <p>3-1 Guideline for filling the train operation plan is prepared.</p> <p>3-2 Guideline for accident reporting procedure is prepared.</p> <p>3-3 Guideline for accident investigation procedure is prepared.</p> <p>4. Transfer plan is devised and agreed between MRB and Vietnam Railway Administration (VNRA).</p> <p>5. Business registration license is issued.</p> <p>6-1 Each department has rules of function and duty.</p> <p>6-2 Annual plan is made.</p>	<p>1. Approval of HPC concerning the organization chart, function and power of the regulator</p> <p>2-1 Guideline for subsidy</p> <p>2-2 Fares for the opening</p> <p>3-1 Guideline for filing an operation plan</p> <p>3-2 Guideline for accident reporting procedure</p> <p>3-3 Guideline for accident investigation procedure</p> <p>4. Agreement documents</p> <p>5. Business registration license</p> <p>6-1 Rules of function and duty of each department</p> <p>6-2 Annual plan</p>	<p>1. The formalities of organization establishment and hire, training and assignment of the personnel are smooth at the competent authorities' level.</p> <p>2. Coordinating about Urban Railway policy among competent authorities is implemented smoothly and requisite decisions are made at the suitable timing.</p> <p>3. Requisite documents about operation and maintenance of Line-2A are provided at the suitable timing.</p> <p>4. Office IT system is procured as scheduled.</p>



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Activities	Inputs		
	(Japanese side)	(Vietnamese side)	
<b>1. Strengthening capacity of the regulator for urban railways (MRB)</b> 1-1. Adjustment with MOT (Ministry of Transport) 1-2. Prescription of the regulator's organization and the function & powers in the regulator 1-3. Learning about policies to encourage the use of urban railways <b>2. Development of Fare Setting Method and Subsidy System</b> 2-1. Development of fare revision method 2-2. Development of subsidy system 2-3. Consideration and determination of fares on Line-2A opening <b>3. Development of Operation Plan and Safety Control System</b> 3-1. Prescription of filing an operation plan 3-2. Development of procedures for investigation accidents (including the preparation of safety standards and accident time procedure manual) <b>4. Clarification of Conditions for Transfer of Line-2A</b> 4-1. Devising transfer plan of Line-2A 4-2. Preparation of agreement with MRB and VNRA 4-3. Preparation and execution of transfer agreement for Line-2A <b>5. Registration of the O&amp;M company</b> 5-1. Proposal for establishment of O&M Company by MRB <b>6-1. Planning, General Affairs and Safety</b> 6-1-1. Prescription of the rules on individual departments' roles and responsibilities 6-1-2. Prescription of the organization rules regarding planning, general affairs and safety operations 6-1-3. Devising management and business plans (including consideration of common fare system) 6-1-4. Prescription of corporate philosophy and the Articles of Incorporation 6-1-5. Prescription of the rules on safety promotion (including the formulation of safety measures / transport safety management method) 6-1-6. Prescription of draft basic rules of train operation (including the preparation of evaluation manual of train operation plan made by EPC) 6-1-7. Preparation for the introduction of office IT system (including devising necessary matters such as the basic specifications of office IT system for O&M company) 6-1-8. HQ's work trial after establishment of O&M company	<b>1. Dispatch of Japanese Experts</b>  (1) Project manager 1 person  <b>Regulator</b> (2) Deputy project manager, Strengthening capacity of the regulator 1 person (3) Fare policy, planning coordination 1 person  <b>O&amp;M company</b> (4) [Technical leader] Safety /engineering / management / condition for transfer of Line-2A 1 person (5) [Management leader] Organization management / general affairs / human resources 1 person (6) Planning / management and business planning / non-fare business 1 person (7) Accounting / treasury / procurement 1 person (8) Financial soundness / registration / office IT 1 person (9) Sales 1 person (10) Train operation 1 person (11) Rolling stock 1 person (12) Civil engineering / truck / architecture 1 person (13) Station facilities / IC 1 person	<b>1. Assignment of Counterpart Personnel for O&amp;MU at the beginning of the Project</b>  <b>Regulator</b> (1) Team leader 1 person (2) Organization 1 person (3) Fare policy 1 person (4) Train operation and safety 1 person  <b>O&amp;M company</b> (5) Team leader 1 person (6) Planning 1 person (7) Administrative and safety 1 person (8) Human resources 1 person (9) Finance 1 person (10) Sales 1 person (11) Train operation 1 person (12) Rolling stock 1 person (13) Facilities 1 person  <b>2. Provision of facilities for the Project implementation:</b> - Project office - Working equipment  <b>3. Expense</b> - Local cost for personnel - Cost for office rent and equipment	All related projects such as UMRT Line 2A, 2 and 3 proceeds as scheduled.  There is no big change in urban railway policy of Vietnam central government and HPC.  <b>Preconditions</b> If approved specifications, design conditions and so on of Line-2A aren't provided at the suitable timing, fundamental instructions will be implemented based on the general knowledge for operation method regarding urban railway. When requisite documents are provided, outputs of fundamental instruction should be coordinated in accordance with provided documents.  When office IT system isn't procured as scheduled and system domains to be adopted aren't clarified, alternative plans will be devised and implemented in order that requisite system domains are processed without office IT system.  When the integrated operation between HQ and OU (i.e., sharing accidents measures, managing and training human resources) is

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<p><b>6-2. Human Resources</b>          6-2-1. Prescription of organization rules regarding HR management          6-2-2. Prescription of employment rules          6-2-3. Prescription of internal rules regarding recruiting, salary and sanction          6-2-4. Prescription of rules on division of duties, office organization and official authorities          6-2-5. Devising HR-related plans including staffing plan          6-2-6. Prescription of employee welfare-related rules, including those on staff welfare and pension          6-2-7. Devising employee education plan (including the devising post-service launch education plan)          6-2-8. Development of Work Procedures without office IT system          6-2-9. HQ's work trial after establishment of O&amp;M company  <b>6-3. Finance</b>          6-3-1. Prescription of organization rules regarding finance          6-3-2. Devising an accounting system          6-3-3. Prescription of rules for budget and setting          6-3-4. Prescription of purchasing rules          6-3-5. Consideration of the measures to maintain the company's financial soundness          6-3-6. Development of Work Procedures without office IT system          6-3-7. HQ's work trial after establishment of O&amp;M company  <b>6-4. Sales</b>          6-4-1. Prescription of organization rules regarding sales and non-fare business          6-4-2. Prescription of General Transport Contract          6-4-3. Preparation of draft cash handling manual for station staff          6-4-4. Development of fare setting system and calculation of fares (including the development of fare revising system)          6-4-5. Consideration of setting fares based on the common fare system (determined for the start of Line-2A operations)          6-4-6. Devising non-fare business plans draft          6-4-7. HQ's work trial after establishment of O&amp;M company  <b>6-5. Train Operation</b>          6-5-1. Prescription of draft organization rules regarding train operation          6-5-2. Learning about the process of preliminary study regarding draft staffing requirements (including prescription of the plan to manage operational staff and to train them)          6-5-3. Learning about the basic skill/knowledge for train drivers' management</p>	<p>card          (14) Signal / telecom electricity / machinery / transformation of electricity          (15) Secretary          1 person          1 person</p> <p><b>2. Counterpart training in Japan</b>          At least 13 persons</p> <p><b>3. Equipment</b>          Items needed for project implementation</p> <p><b>4. Expense</b>          - Cost for employment of local consultants          - Other expenses:          For research, travelling, training          - TC assistants:          Japanese interpreter          English interpreter</p>	<p>- Other expenses:          For research, local travelling other than by air (Hanoi and its vicinity), other activities</p>	<p>required, the operation system and division of works are reviewed from the viewpoint of the strengthening of cooperation and operation system. If needed, the principles of work trials are revised.</p> <p>Regulator's work trial regarding the supervision of O&amp;M company can be implemented on condition that the regulator for urban railway is set up (or established) and personnel are assigned in the regulator.</p> <p>HQ's work trial after establishment of O&amp;M company can be implemented on condition that O&amp;M company is established and personnel are assigned in HQ. In addition to the conditions which are mentioned above, HQ's work trial towards the opening of Line-2A can be implemented only if facilities of Line -2A are installed, training for Line-2A personnel is completely finished and commissioning begins.</p> <p>In order that facilities of Line-2A are handed over, it is essential that the domestic systems such as safety certification and so on in Vietnam for launch of the urban railway shall be applied.</p>
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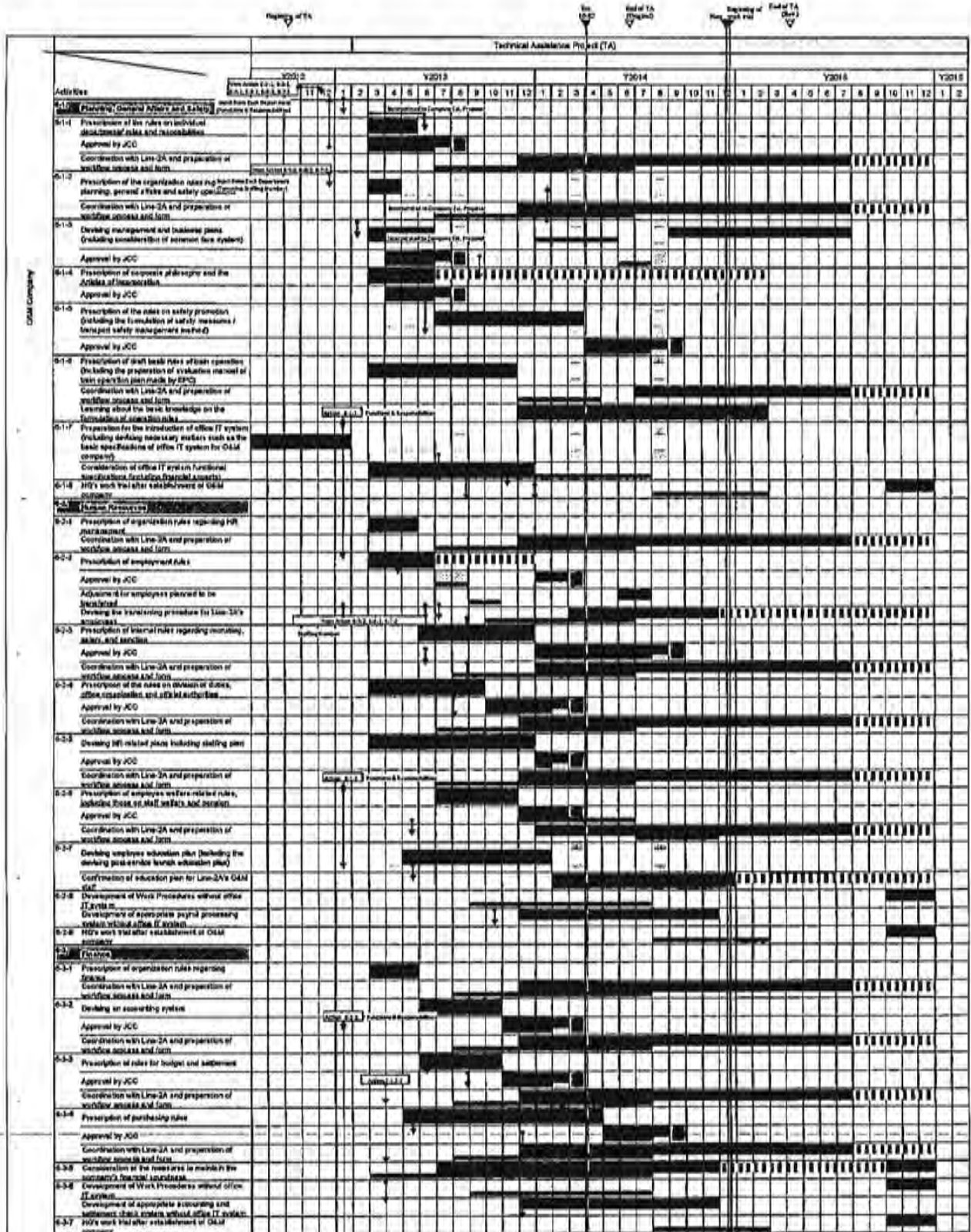
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- and operation (including prescription of training plans for crews)
- 6-5-4. Learning about a methodology to make train schedules
  - 6-5-5. Learning about a methodology to draw run curves
  - 6-5-6. Collecting train operation rules for the Line-2A (including learning about the general knowledge for urban railway regarding train operation)
- 6-6. Rolling Stock Maintenance**
- 6-6-1. Prescription of draft organization rules regarding rolling stock maintenance
  - 6-6-2. Learning about the process of preliminary study regarding draft staffing requirements and maintenance budget
  - 6-6-3. Learning about the process for implementation plan of rolling stock renewal (including the preparation of maintenance manuals and education plans)
  - 6-6-4. Learning about countermeasures against rolling stock failures (including the preparation of rolling stock operation safety manual for dealing with circumstances such as accident)
  - 6-6-5. Collecting maintenance rules for the Line-2A rolling stocks (including learning about the general knowledge for urban railway regarding rolling stock maintenance)
- 6-7. Facilities Maintenance**
- 6-7-1. Prescription of draft organization rules regarding facilities maintenance
  - 6-7-2. Learning about the process of preliminary study regarding draft staffing requirements and maintenance budget
  - 6-7-3. Learning about the process for draft implementation plan of facilities renewal (including the preparation of maintenance manuals and education plans)
  - 6-7-4. Learning about the countermeasures against facilities failure (including the preparation of facilities operation safety manual for dealing with circumstances such as accident)
  - 6-7-5. Collecting maintenance rules for the Line-2A facilities (including learning about the general knowledge for urban railway regarding facilities maintenance)

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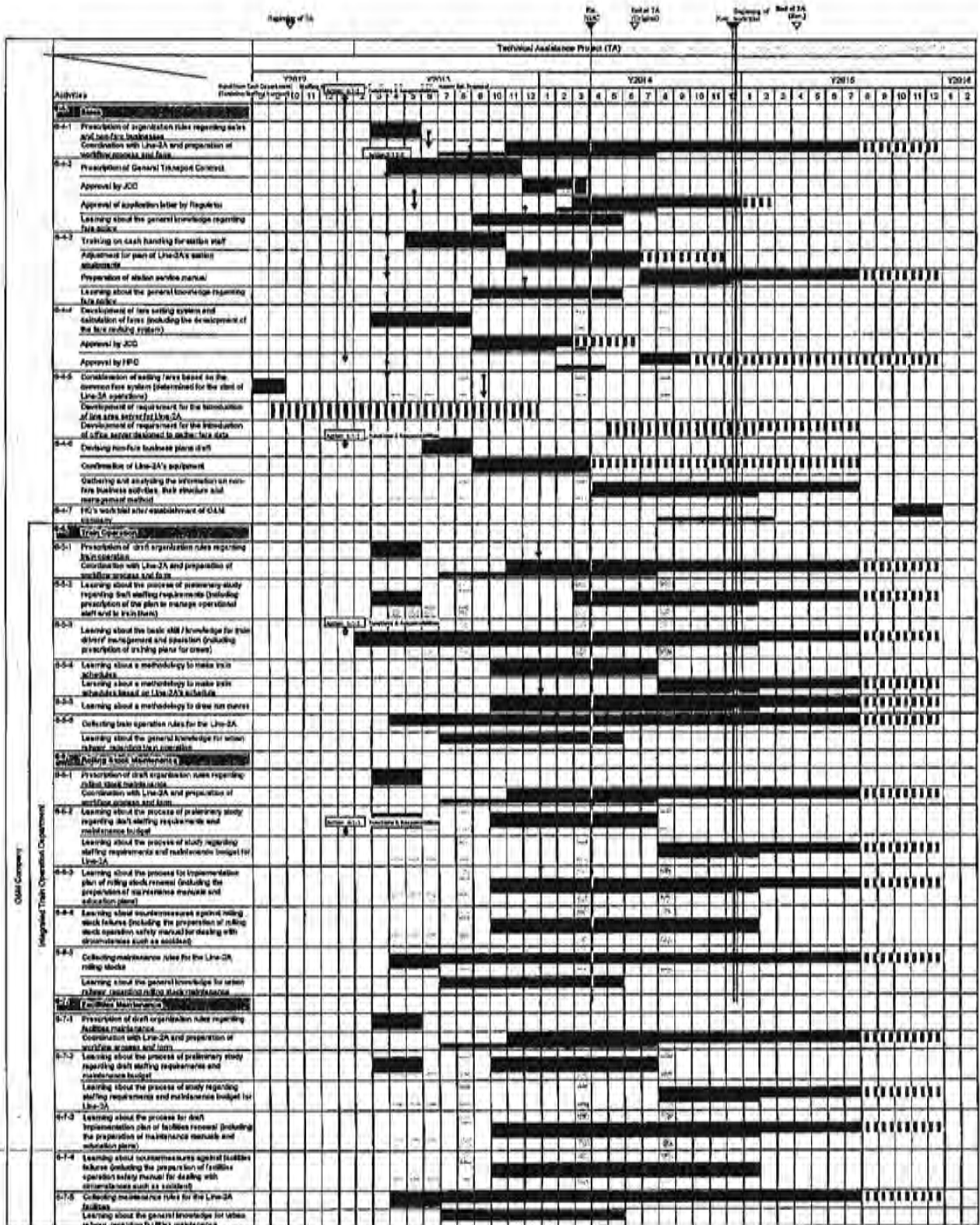






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Ref. No. 15/TB-ĐSHN

Hanoi, 3rd Feb, 2016

**NOTICE****On the Results of 8th JCC Meeting (the Final) of the Technical Assistance Project “to strengthen the capacity of Regulator and to establish operation and maintenance company for Metropolitan railway lines in Hanoi City”**

On 1 February 2016, under authorization of Mr. Nguyen Quoc Hung Vice Chairman of Hanoi People's Committee, Mr. Vu Hong Truong – Chairman cum General Director of Hanoi Metro One Member Co., Ltd, Permanent Vice Chairman of JCC chaired the 8<sup>th</sup> JCC meeting (the Final) of the Technical Assistance Project “to strengthen the capacity of Regulator and establish operation and maintenance company for Metropolitan railway lines in Hanoi City” (hereafter referred to as “TA Project”). Participants include the 1<sup>st</sup> Secretary of the Embassy of Japan, Representative of JICA Vietnam Office, JICA TA Team, HAPI, DOHA, DOT, DOJ, MRB and Hanoi Metro One Member Co., Ltd (HMC).

After listening to the reports by the representative of HMC and JICA TA Team and opinions of the participants and after asking for instructive opinions of Mr. Nguyen Quoc Hung - Vice Chairman of Hanoi City People's Committee, Chairman of JCC, the Meeting agreed as follows:

1. Agree with the contents of the report of HMC that till now the Project has completed as scheduled with high efficiency, meeting the initial targets of the TA Project.

2. Highly appreciate and thank for the assistance of JICA Tokyo, JICA Vietnam, Japanese experts (Tokyo Metro), active endeavor of the relevant departments, MRB, and HMC; Several products of the TA Project have been utilized step by step in the Company.

3. JCC is consent to the final products of the TA Project; The Project Owner, HMC, reports HPC for acceptance and acquirement of the final products of the TA Project as prescribed.

4. JCC acknowledges JICA's suggestion to develop a plan for establishment of a specialized unit under DOT for state management about urban railway, which is mutual agreement in the Joint Terminal Evaluation Report dated 4<sup>th</sup> December 2015. DOT and DOHA will cooperate to provide information for JICA Vietnam Office to monitor the establishment of this unit.

5. JCC is consent to the proposal of HMC, and recommends HPC and JICA to consider and assist another technical assistance project on training of urban railway operation management for both regulator and operator.

HMC would like to notice the results of 8th JCC Meeting (the Final) of the Technical Assistance Project “to strengthen the capacity of Regulator and to establish operation and maintenance company for Metropolitan railway lines in Hanoi City” for acknowledgement and implementation of the related agencies, departments, organizations and individuals.

**Recipients:**

- Chairman of HPC (to report);
- Vice Chairpersons of HPC (to report);
- JICA Vietnam Office (*11<sup>th</sup> CornerStone Building, 16 Phan Chu Trinh*);
- HAPI, DOT, DOHA, DOF, DOJ; JCC Members;
- MRB
- Planning and Project Dept.; General Train Operation Dept.;
- Kept in Docs. Planning and Project Dept.

**FOR JCC CHAIRMAN**

**PERMENANT VICE CHAIRMAN**

*(Signed and sealed)*

**Vu Hong Truong**

**Chairman of Board of Members Cum  
General Director of HMC**