CHAPTER 6

ROW ACQUISITION

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6.1 GENERAL ROW ACQUISITION PROCEDURE

Delay in ROW acquisition is one of the serious problems of infrastructure projects, particularly PPP projects. ROW acquisition requires numerous research works, documentations and constant dialogue with the affected people. It should be understood that ROW acquisition requires length of time, so that it should be started as early as possible with enough staff, logistic support, and timely disbursement of budget.

ROW acquisition steps are as follows and detailed procedure is discussed in the succeeding pages;

ROW ACQUISITION STEPS

STEP – 1	:	Highway Design Drawing with Delineation of ROW
STEP – 2	:	Preparation of IROW Plan
STEP – 3	:	Preparation of Parcellary Plan
STEP – 4	:	Prepare Estimate of Land Acquisition Cost and Improvement Cost
STEP – 5	:	Negotiated Sale
STEP – 6	:	Validation and Evaluation of IROW Claims
STEP – 7	:	Expropriation Proceedings, when Negotiated Sale is failed
STEP – 8	:	Transfer of Transfer Certificate of Title (TCT) to the Republic of the Philippines

Related Laws or
Department Order

STEP-1: Highway Design Drawing with Delineation of R-O-W (Plan & Profile)

- Plan and Profile (Scale: 1/1,000 ~ 1/2,000
- Road Right-of-Way (IROW) Limit Map

STEP-2: Preparation of IROW Plan (Scale 1/2,000)

Objective: As part of the Detailed Engineering Design, main objective is to delineate the centerline of the roadway so that extent of the area required to accommodate the proposed alignment can be identified. To facilitate subsequent preparation of parcellary plans, affected lots, existing structures, improvements, etc are already identified and plotted on a Settlements Map.

Documents to be Prepared (Output):

- Map showing road alignment centerline plotted in geographic/coordinate system
- Technical descriptions of monuments/reference points
- Land classification (residential, agricultural, commercial, industrial)
- Table showing:
  - Date of survey
  - Name of Owners/Claimants
  - Name/description of improvement affected; i.e., store, house, concrete fence, etc.
  - Type of Structure (light, wooden, semi-concrete, concrete)
  - Type of Plantations (mango, banana, coffee, etc.)
- Settlements Map

- Legal Framework:
  - RA No. 8974 (2000)
  - DPWH Department Order No. 5 Series of 2003;
  - DPWH Infrastructure ROW Procedural Manual, 2003

STEP-3: Preparation of Parcellary Plan (Scale 1/1,000)

Objective: To identify affected lots within the IROW and segregate these from the remaining lot area, for the purpose of registering the IROW in favor of the Republic of the Philippines.

Documents to be Prepared (Output):

- Location of the Project
- Parcellary Survey Plan
- Subdivision Plans
- Index Map of the entire project area showing the affected lots
- Land Data matrix consisting of a list of affected lots complete with lot and block numbers and the following:
  - Name of Registered Owners/Claimants
  - Total area of property
  - Area affected
  - Notation whether property is mortgaged or not or if it is under litigation or if it has incurred any encumbrances
  - If Mother Title was obtained through Commonwealth Act 141
- Lot data computation showing delineation of affected area relative to the entire property
- Design road alignment (centerline) with stationing and IROW limits
- Attachments consisting of:
  - Copies of OCT/TCT, tax declarations, and lot technical description
  - Tax clearance from landowners
  - Certificate of Tenancy (if applicable
  - Easement documents from the NWRB (if applicable)
  - Listing and maps of proclaimed protected areas from the DENR (if applicable)
  - Map showing if project is located in Network of Protected Agricultural Areas (NPAA) if applicable
- Subdivision Plan (Suitable Scale) for each affected lot (to be compiled with technical description of the lot).
- Name, license number, date and place of issue, signature, and seal of Geodetic Engineer

- Legal Framework:
  - DPWH DO. No. 34, Series of 2007
  - DPWH Department Order No. 5 Series of 2003
  - DPWH Infrastructure ROW Procedural Manual, 2003
  - DPWH Department Order No, 142 Series of 1995
  - DPWH Department Order No. 147 Series of 2001
  - DPWH Department Order No. 187 Series of 2002

STEP-4: Prepare Estimate of Land Acquisition Cost and Improvement Cost

Objective: Based on the Parcellary Survey determine ROW Acquisition budget through the preparation of Resettlement Action Plan (RAP).

Documents to be Prepared (Output):

- Land Acquisition Plan and Resettlement Action Plan (LAPRAP) including the following:
  - Number and identity of Project-Affected Persons or PAPs (Owners/Claimants)
  - Degree (marginal or severe) and scale of adverse impacts particularly in terms of loss of land and other fixed assets, as well as sources of livelihood;
  - Mitigation measures to minimize foreseeable adverse socio-economic impacts (e.g., provision of relocation for informal settlers);
  - Appropriate compensation and entitlements package for the PAPs
    - Compensation for land takes are based on prevailing BIR zonal valuation; In the absence of existing valuation of the area concerned, assessment shall be based on standards provided in Section 5 of R.A. 8974;
    - Compensation for improvements shall be based on replacement cost, as defined in Section 10 of the Implementing Rules and Regulations (IRR) of R.A. 8974
    - Other entitlements such as disturbance compensation and/or financial assistance for tenants, business establishments loosing income, renters, etc. are on a case-to-case basis, and are found in the Land Acquisition, Resettlement, Rehabilitation, and Indigenous Peoples Policy (LARRIPP) of the DPWH;
  - LAPRAP Implementation Schedule
  - Overall Estimated Resettlement Cost

- Legal Framework:
  - R.A. 7279
  - R.A. 8974
  - IRR of R.A.8974
  - DPWH Department Order No. 5 Series of 2003
  - DPWH Infrastructure ROW Procedural Manual, 2003
  - DPWH Department Order No. 327 Series of 2003
  - DPWH LARRIPP , 3rd Edition, Series of 2007

STEP-5: Negotiated Sale

Objective: To acquire ROW through Purchase

Procedures:

- Prepare Notice of Taking and Submission of Documents informing property owners about need to acquire their property to give way to a government project; The following documents must be prepared by the property owner:
  - Original Certificate of Title (OCT)/Transfer Certificate of Title (TCT) covering said lot
  - Tax Declaration of lot
  - Tax Declaration of Improvements (if any) together with a photograph of the said improvements
  - Subdivision Plan of the Lot (if applicable)
  - Tax Clearance/Statement of Tax Account
  - Owner's Residence Certificate
  - Barangay Certificate
  - Special Power of Attorney (SPA), if applicable
  - Waiver of lot owner regarding ownership of improvement (if improvement owner is different from lot owner)
  - Two (2) valid Identification Cards (ID's)
- Make first offer (based on LAPRAP) upon submittal of above documents
- Prepare and execute a Contract of Sale and Agreement to Demolish and Remove Improvements (ADRI) with property owner
- Secure a Permit to Enter from the property owner
- Prepare a Resolution (DPWH IROW Committee) making an official statement that the claim has been validated in accordance with D.O. 34 Series of 2007 (Please refer to **Step 6** for details)
- Prepare Deed of Absolute Sale (DAS) for approval (approving authority depends on amount of ROW Costs)
- Payment (100%) shall be made to the property owner upon the Transfer of Title to the Republic of the Philippines (Please refer to **Step 8**)

- Legal Framework:
  - R.A. 8974
  - IRR of R.A.8974
  - DPWH Department Order No. 5 Series of 2003
  - DPWH Infrastructure ROW Procedural Manual, 2003
  - DPWH Department Order No. 327 Series of 2003
  - DPWH LARRIPP , 3rd Edition, Series of 2007

STEP-6: Validation and Evaluation of IROW Claims

Objective: To ensure that the validation of data and information on the IROW Claims shall give DPWH officials and staff involved in the acquisition a high level of confidence to prove beyond doubt that the claims are legal to the best interest of the government

Procedures:

- Check level of confidence on the documents submitted (pre-screening of documents submitted for IROW Claims)
- Determine character of IROW Acquisition – verify impacts of the parcels of land to the Highway Rights---Highway-by-Use, Highway by prescription, easements pursuant to Water Code of the Philippines, etc.
- Subject Titles to further examination – Check if land is within decreed portions of the government properties with prescribed widths under a law or statute;
- Proceed to Title search
- Determine the conditions of the Titles and Documents
- Undertake Title examination to check if there are liens and encumbrances
- Get a Title Opinion from a lawyer with experience in the field of real estate titles (Optional)
- Field Verification
- Prepare Resolution – IROW Committee makes official statement in the form of a Resolution if above steps have been passed and that it was found out that the title is marketable and free from liens, supporting documents are valid and duly authenticated, the claimant is the refuted owner
- Resolutions executed by Regional IROW Committees shall be approved by the Regional Director concerned; Resolutions executed by the IROW Central Office Committee shall be approved by the Secretary

- Legal Framework:
  - DPWH Department Order No. 5, Series of 2003
  - DPWH Department Order No. 34 Series of 2007;

STEP-7: Expropriation Proceedings

Objective: To initiate expropriation proceedings to obtain IROW

Procedures:

- Request Office of the Solicitor General (OSG) to deputize the Provincial/City Prosecutor or DPWH Lawyer to act in behalf of the OSG in the filing of complaint to the proper court
- File case with the Regional Trial Court (RTC) of concerned City/Municipality or Province
- Obtain a Certificate of Availability of Funds (CAF) from the Comptrollership and Financial Management Service (CFMS) at the DPWH Central Office or corresponding offices at the Regional (CFMD) and District (CFMS) Offices
- Deposit 100% of value of land based on BIR zonal valuation and structures based on replacement cost to court-authorized government bank
- File Ex-Parte Motion for issuance of Writ of Possession (WOP) with the concerned RTC
- Upon issuance of WOP, take possession of the property and start implementation of the project
- Attend hearings set by the RTC
- When the decision of the RTC becomes final and executor, pay the property owner the difference between the amount already paid and the just compensation as determined by the Court (if any)

- Legal Framework:
  - R.A. 8974
  - IRR of R.A.8974
  - Rule 67 of the 1997 Rules of Civil Procedure
  - DPWH Department Order No. 5 Series of 2003
  - DPWH Infrastructure ROW Procedural Manual, 2003

STEP-8: Transfer of TCT to Republic of the Philippines

Objective: To effect the transfer of acquired IROW in the name of the Republic of the Philippines

Procedures:

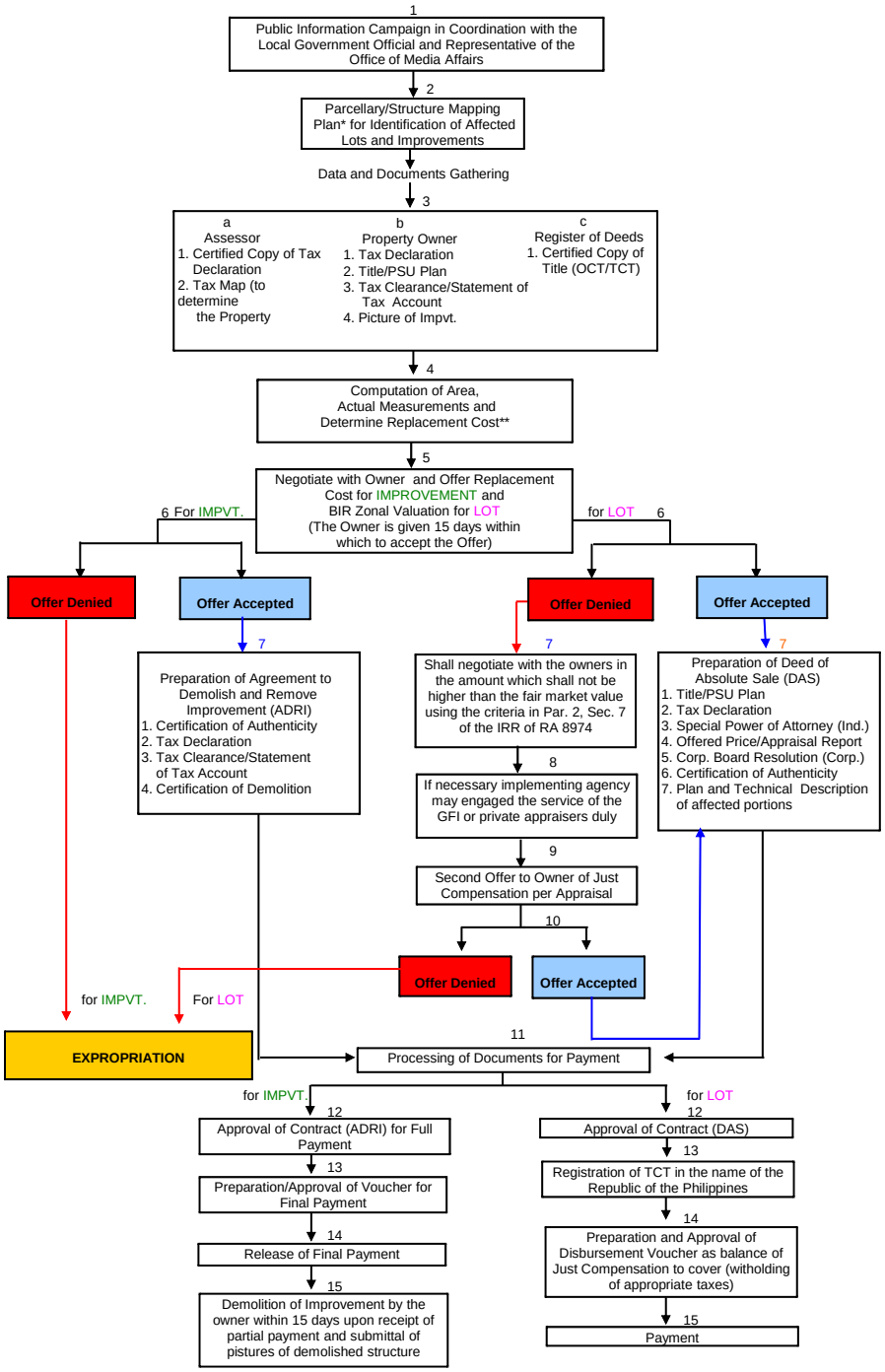
- After perfection of Absolute Deed of Sale, have it notarized;
- Pay Transfer Tax
- Pay Capital Gains Tax and Documentary Stamps to BIR
- Obtain Certificate Authorizing Registration (CAR) from concerned BIR Office
- Go to Register of Deeds and present the following documents to effect Transfer of Title in the name of the Republic of the Philippines (DPWH):
  - Approved Parcellary Survey Plan or Subdivision Plan (if needed)
  - CAR from the BIR
  - Transfer Tax Official Receipt (OR)

- Legal Framework:
  - DPWH Department Order No. 5 Series of 2003
  - DPWH Infrastructure ROW Procedural Manual, 2003

6.2 DETAILED WORK FLOW OF NEGOTIATION AND EXPROPRIATION

Figure 6.2-1 shows work flow chart for negotiation and **Figure 6.2-1** for expropriation. **Table 6.2-1** shows Procedures in the validation and revalidation of IROW claims for payment.

PMO-IROW prepared the check list for ROW acquisition, improvements and trees/agricultural crops as shown in **Tables 6.2-2** to **4**.



NOTE :
* - To be prepared by the Consultant, signed by the Geodetic Engineer and duly approved by the Authorities
** - To be prepared by the Implementing Agency
Negotiation shall be resorted to only after the land owner refused to donate his/her property to the government IROW

FIGURE 6.2-1 WORK FLOW CHART: NEGOTIATION

DPWH-PMO INFRASTRUCTURE RIGHT-OF-WAY & RESETTLEMENT WORK FLOW CHART (EXPROPRIATION)

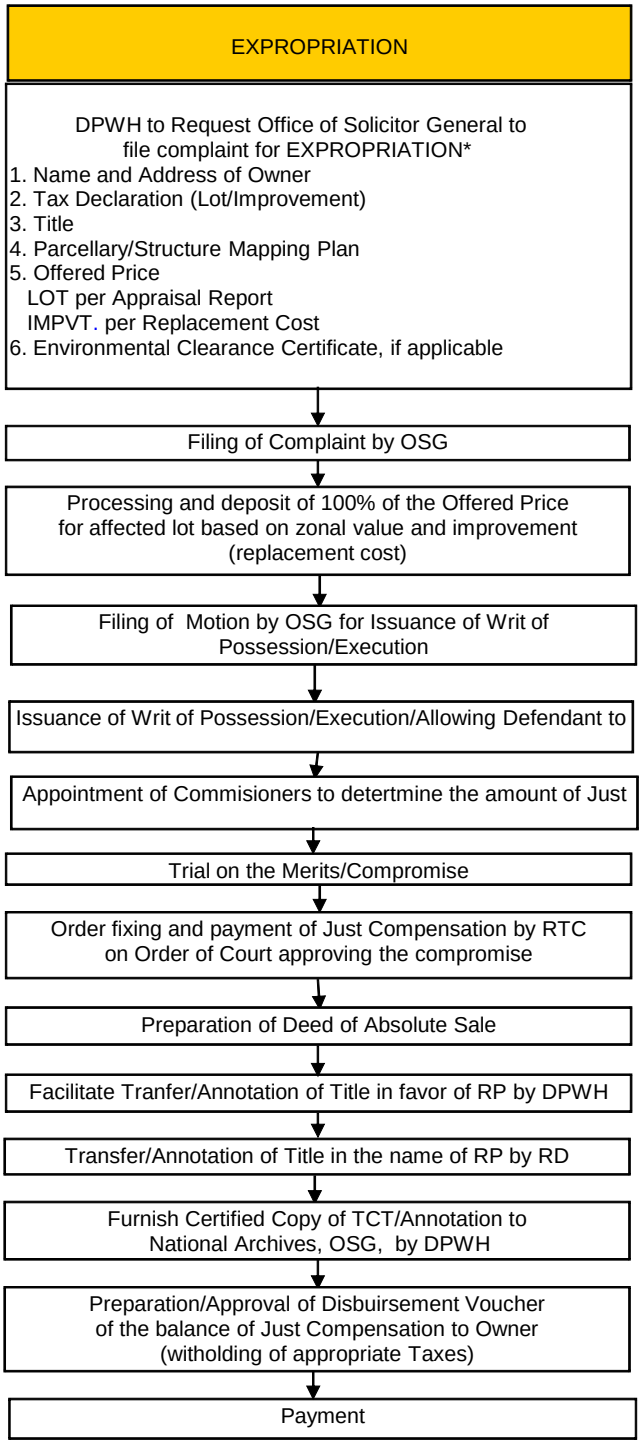


FIGURE 6.2-2 WORK FLOW CHART: EXPROPRIATION

TABLE 6.2-1 PROCEDURES IN THE VALIDATION AND REVALIDATION OF IROW CLAIMS FOR PAYMENT

Per **Department Order No. 34, s. 2007**, prescribing *Simplified Guidelines for the Validation and Evaluation of Infrastructure Right-of-Way (IROW) Claims,* **Special Order No. 80, s. 2007** was issued for the *Creation of IROW Committees & Technical Working Groups* in order to effect proper evaluation, management, and settlement of IROW claims.

I. Validation and Evaluation of IROW Claims

Validation and evaluation of IROW claims will be made by the Technical Working Group of the Regional IROW Committee concerned, as follows:

a. Check level of confidence of the quantity and quality of data and information
b. Validate claims against highway rights or decreed properties of public domain.
    1. Highway rights are decreed properties with highway widths prescribed under a statute (CA 141, 1936 [Public Land Act], EO 47 [1936], EO 194 [1939], EO 294 [1940], EO 493 [1951], Proc. 336 [1952], EO 113 [1955], PD 635 [1975], EO 621 [1980])

    2. Easements pursuant to Water Code of the Philippines
c. Determine the Conditions of the Titles and Documents
d. Field Verification

II. Determination of Time of Actual Taking of the Acquisition of IROW affected by DPWH projects.

Through verification of records, Regional and District Offices shall establish the time of actual taking of the acquisition IROW affected by DPWH projects. Once the time of taking is established , the applicable policy/procedure or laws of the valuation of the property will be used, as stated under Central IROW Committee Resolution No. 2008-001

III. Preparation of Resolution

The IROW Committee concerned shall execute the specific Resolution, applicable to a particular situation. The approved Resolution is the official statement by the Department approving or disapproving the ROW claims.

The Central IROW Committee is composed of the following:

1 Chairperson	:	Undersecretary Bashir D. Rasuman
2 Vice-Chairperson	:	Project Director Patrick B. Gatan, IROWR-PMO
3 Members	:	a) Assistant Director Gilberto S. Reyes, BOD
		b) OIC-Director Joel I. Jacob, Legal Service
		c) Project/Regional Director Concerned (Implementing Office)

The Regional IROW Committee is composed of the following:

1 Chairperson	:	Assistant Regional Director for Administration
2 Vice-Chairperson	:	Chief, Legal Office
3 Members	:	a) Chief, Planning and Design Division
		b) Chief, Comptrollership and Financial Management Division
		c) District Engineer Concerned (Implementing Office)

Scope of Coverage and Functions of the Central/Regional IROW Committee

The Central IROW Committee shall execute and recommend appropriate resolutions pertaining to complex IROW claims. Complex IROW claims are defined as those pertaining to special projects implemented by the PMOs and/or claims that are beyond the delegated authority of the Regional Directors (*above P30 Million*) to approve, including Compromise Agreements during Expropriation Proceedings, Barter or Exchange, Reconveyance or Repurchase, and Field Office Site Selection. The Regional IROW Committee shall process IROW claims emanating from the District Offices; review the validation of supporting documents undertaken by their TWGs and recommend payments within the approving authority of the Regional Director concerned after evaluation as to propriety of claims (*or up to P30 Million*) and execute and recommend resolutions applicable to particular situations.

IV. Approval of IROW Committee Resolutions

Resolutions of the Central IROW Committee shall be approved by the Secretary. While, Resolutions of the Regional IROW Committee shall be approved by the Regional Director concerned.

V. Processing and Payment of Valid Claims

The concerned Regional Office shall submit, throught he IROW-PMO, the corresponding request for funds to the Secretary, as supported by the Resolution(s) of the IROW Committee concerned for particular claim(s). All pertinent documents shall be attached to the request. The IROW-PMO will then consolidate all requests from all regions for submission to the DBM for the release of corresponding Special Allotment Release Order (SAROs).

The concerned Regional Office shall ensure that payment for lots should be effected only after the corresponding Deed of Sale had already been registered with the concerned Register of Deeds and the transfer of title is made in favor of the Republic of the Philippines.

The payment shall be made directly to the claimant(s)/owner(s). If the Deed of Sale or Deed of Conveyance was signed by his/their duly and legally constituted agent, the owner(s) should be notified in writing of the amount due him/them as payment of his/their property.

Note: Validation of IROW Claims up to Approval of IROW Committee Resolution may take up to 1 month depending on the availability of documents. Payment of outstanding claims already included in the Masterlist of Valid Claims by end of June are usually effected by the 4th quarter of the year.

TABLE 6.2-2 ROW ACQUISITION CHECKLIST

TOTAL AREA : _____ SQ. M.
AFFECTED AREA : _____ SQ. M.

RIGHT-OF-WAY CHECKLIST

NAME OF PROJECT : TARLAC-PANGASINAN-LA UNION TOLL EXPRESSWAY PROJECT

_____	1.	Obligation Request
_____	2.	Obligation Request – Documentary Stamp
_____	3.	Obligation Request – Transfer Tax
_____	4.	Obligation Request – Registration Fee
_____	5.	Memorandum for the Accountant III
_____	6.	Certificate as to Availability of Funds
_____	7.	Memorandum for MR. PATRICK B. GATAN
_____	8.	The State Auditor
_____	9.	Deed of Absolute Sale
_____	10.	Disbursement Voucher
_____	11.	Disbursement Voucher – Capital Gains Tax
_____	12.	Disbursement Voucher – Documentary Stamp
_____	13.	Disbursement Voucher – Transfer Tax
_____	14.	Disbursement Voucher – Registration Fee
_____	15.	Certification of Affected Lot
_____	16.	Parcellary Plan
_____	17.	Subdivision Plan
_____	18.	Tax Declaration No. _____
_____	19.	Transfer Certificate of Title No. _____
_____	20.	Tax Clearance
_____	21.	Permit to Enter
_____	22.	Provincial Appraisal Committee
_____	23.	Barangay Certification
_____	24.	Affidavit
_____	25.	Special Power of Attorney
_____	26.	Community Tax Certificate
_____	27.	Valid I.D.
_____	28.	Marriage Contract
_____	29.	Death Certificate
_____	30.	Tax Clearance Certificate from BIR
_____	31.	Certificate Authorizing Registration
_____	32.	Capital Gains Tax Return
_____	33.	Documentary Stamp Registration Return

PREPARED BY: CHECKED BY:

_____ _____

NOTED:

_____

TABLE 6.2-3 CHECKLIST FOR IMPROVEMENT

OWNER : _____

TARLAC-PANGASINAN-LA UNION TOLL EXPRESSWAY PROJECT

CHECKLIST FOR IMPROVEMENTS :

_____ 1. OBLIGATION SLIP
_____ 2. MEMORANDUM FOR THE OIC-BUDGET OFFICER
_____ 3. CERTIFICATE AS TO THE AVAILABILITY OF FUNDS
_____ 4. AGREEMENT TO DEMOLISH AND/OR REMOVE IMPROVEMENTS
_____ 5. THE STATE AUDITOR
_____ 6. DISBURSEMENT VOUCHER
_____ 7. DISBURSEMENT VOUCHER – CAPITAL GAIN TAX
_____ 8. OBLIGATION REQUEST FOR DOCUMENTARY STAMPS
_____ 9. DISBURSEMENT VOUCHER FOR DOCUMENTARY STAMPS
_____ 10. CERTIFICATION OF AFFECTED IMPROVEMENTS
_____ a.) that improvement is affected by a certain project
_____ b.) that improvement is within the boundaries of ROW Limit
_____ c.) there is no pending claim nor payment has already been received for the acquisition for said property
_____ d.) that requirements/supporting documents have been authenticated/ validated and found in order
_____ e) that the improvement is existent and owned by the claimant and verified correct
_____ f) the actual area of affected improvements
_____ 11. PICTURES
_____ 12. SKETCH PLAN
_____ 13. STRUCTURAL MAPPING PLAN
_____ 14. VICINITY MAP
_____ 15. REPLACEMENT COST SUMMARY AND DETAILED ESTIMATES
_____ 16. TAX DECLARATION NO. _____
_____ 17. TAX CLEARANCE
_____ 18. CAPITAL GAIN TAX RECEIPT
_____ 19. DOCUMENTARY STAMP RECEIPT
_____ 20. BARANGAY CERTIFICATION
_____ 21. AFFIDAVIT
_____ 22. VALID I.D./RESIDENCE CERTIFICATE OF CLAIMANT
_____ 23. MASTERLIST
_____ 24. CENSUS TAG
_____ 25. SPECIAL POWER OF ATTORNEY

PREPARED BY: CHECKED BY:

_____ _____

NOTED:

_____

TABLE 6.2-4 CHECKLIST FOR TREES AND AGRICULTURAL CROPS

NAME OF PROJECT : TARLAC-PANGASINAN-LA UNION TOLL EXPRESSWAY (TPLEX) PROJECT

NAME OF OWNER : JESUS ROY

ADDRESS : BARANGAY SAN FRANCISCO, VICTORIA, TARLAC

DESCRIPTION : TREES AND AGRICULTURAL CROPS

AMOUNT : Php 45,500.00

ATTACHMENTS:

☐ 1. Transmittal letter to COA
☐ 2. Disbursement Voucher
☐ 3. Obligation Slip (ObR)
☐ 4. Memorandum for the OIC Budget Officer
☐ 5. Certificate as to Availability of Funds (CAF)
☐ 6. Agreement to Remove Improvements
☐ 7. Transfer Certificate of Title (certified true copy)
☐ 8. Tax Declaration (certified true copy)
☐ 9. Approved Parcellary Plan
☐ 10. Valuation of Trees/Crops by DENR/DA
☐ 11. Mapping Plan
☐ 12. Pictures
☐ 13. Certification of affected trees/agricultural crops, authenticity of documents and of no pending claim
☐ 14. Certification of Barangay Chairman on the ownership of Trees/Crops
☐ 15. Residence Certificate
☐ 16. Identification Card
☐ 17. Others: ☐ Death Certificate ☐ Waiver ☐ SPA _____
☐ 18. Project Profile

PREPARED BY: CHECKED BY:

_____ _____

REVIEWED:

_____

CHAPTER 7

PROJECT SCREENING AND SELECTION OF PPP PROJECTS

CHAPTER 7
PROJECT SCREENING AND SELECTION OF PPP PROJECTS

7.1 OBJECTIVE OF THIS ACTIVITY

The objective of this activity is to identify, evaluate, select and recommend about three (3) projects suitable for Japan's ODA financing.

7.2 PROJECT IDENTIFICATION, SCREENING AND SELECTION PROCEDURE

Project identification, screening and selection procedure is shown in **Figure 7.2-1**.

- Identified projects (nationwide) - - - - - 58 projects
- Pre-screening - - - - - - - - - - - - - - - - 43 projects were screened out and 15 projects were remained which are the same projects selected by HSH Master Plan Study.
- First Screening - - - - - - - - - - - - - - - 10 projects were selected for the pre-business case study.
- Second Screening - - - - - - - - - - - - - - Finally, 3 projects were recommended as the priority projects for possible ODA financing.

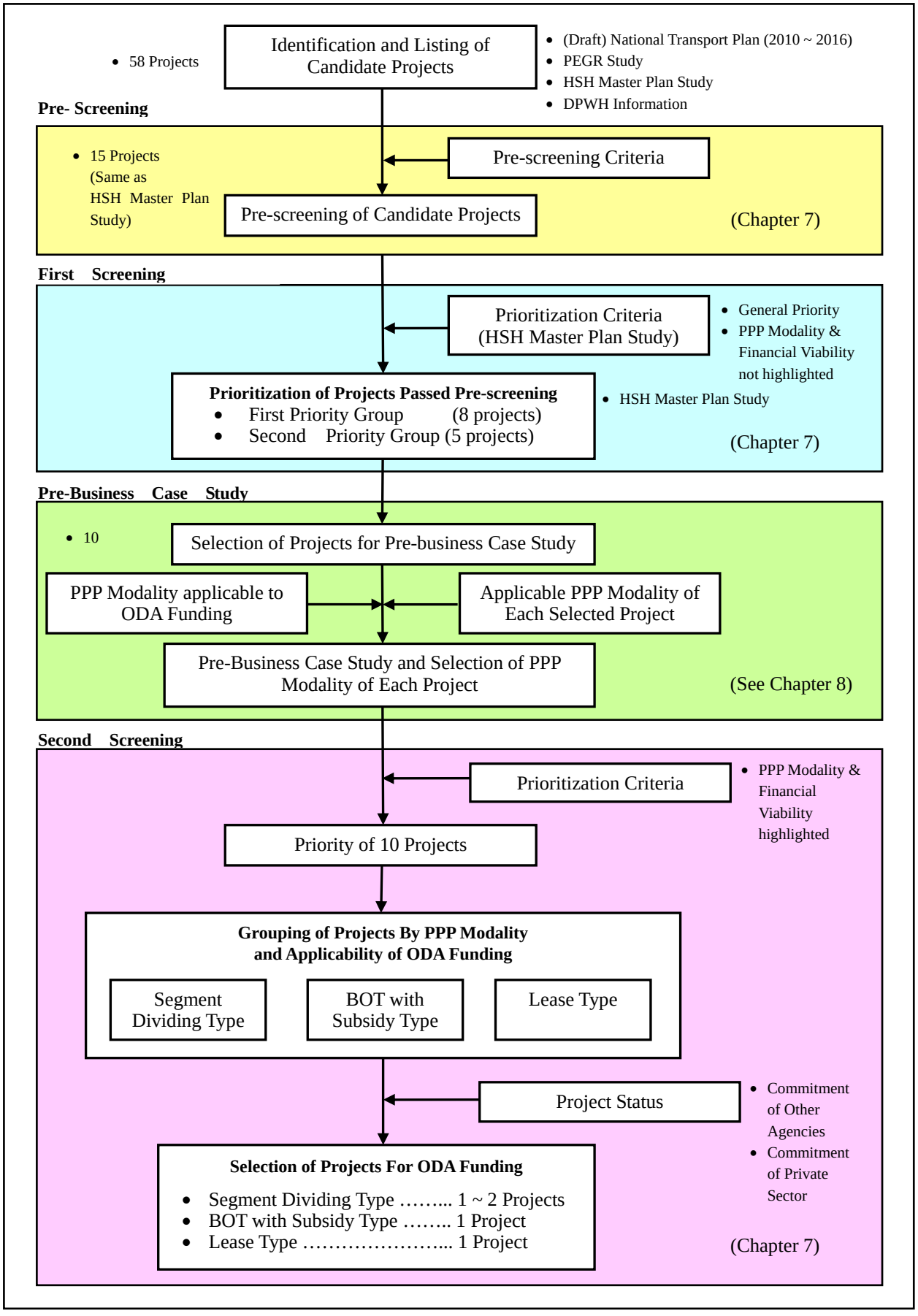


FIGURE 7.2-1 PROJECTS SCREENING AND SELECTION PROCEDURE

7.3 IDENTIFICATION AND LISTING CANDIDATE PROJECTS

Candidate projects were identified from the following studies and plans;

(a) Draft National Transport Plan (2010 – 2016), PEGR, AusAID (hereinafter referred to as "NTP")

(b) Strengthening the Public-Private Partnership (PPP) Program in the National Road Sector through Capacity-Building of DPWH, NEDA, PEGR, AusAID (hereinafter referred to as "PEGR Study")

(c) Comprehensive and Integrated Infrastructure Program, 2009, NEDA (hereinafter referred to as "CIIP")

(d) Medium-Term Public Investment Program (2005 – 2010), DPWH (hereinafter referred to as "MTPIP")

(e) The Study of Master Plan on High Standard Highway Network Development in the Republic of the Philippines – JICA assisted (hereinafter referred to as "HSH Master Plan")

(f) Information from DPWH officials

A total of 58 projects which includes existing and on-going expressway projects were identified as shown in **Table 7.3-1**.

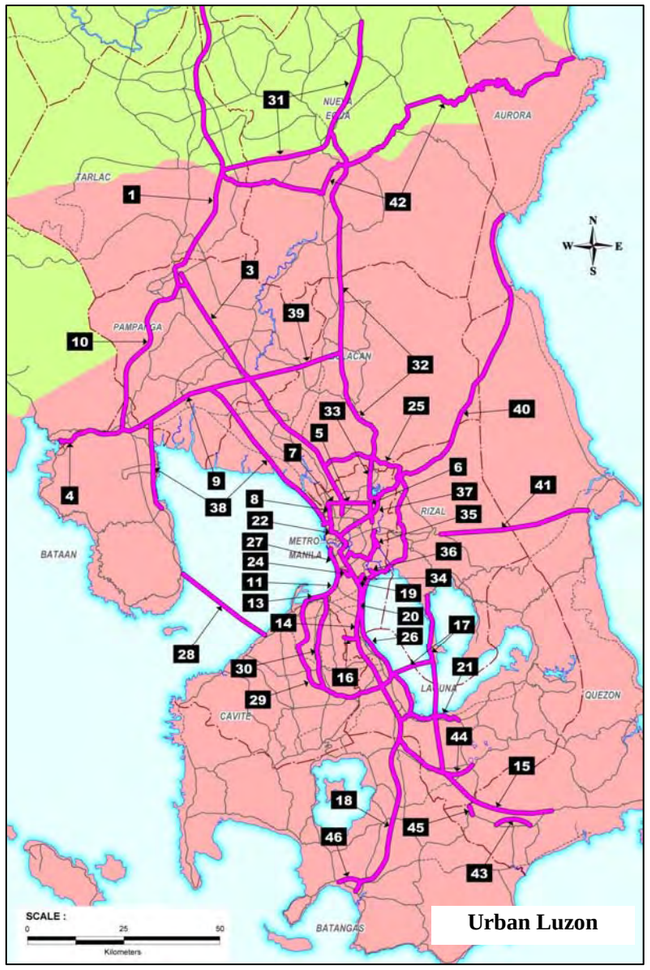


TABLE 7.3-1 IDENTIFIED CANDIDATE PROJECTS

No.	Project Name	NTP	PEGR	HSH
NORTH LUZON SUPER REGION				
1	Tarlac-Pangasinan-La Union Expressway(TPLEx)	*	*	*
2	San Fernando City Bypass Road(La Union)	*		
URBAN LUZON SUPER REGION				
3	North Luzon Expressway (NLEx) Phase 1 (Section 1,2 and 3)			*
4	North Luzon Expressway (NLEx) Phase 1 (Section 7)			*
5	North Luzon Expressway (NLEx) Phase 2 (Section 8.1)	*	*	*
6	North Luzon Expressway (NLEx) Phase 2 (Section 8.2)	*	*	*
7	North Luzon Expressway (NLEx) Phase 2 (Section 9)	*		*
8	North Luzon Expressway (NLEx) Phase 2 (Section 10)			*
9	North Luzon Expressway (NLEx) Phase 3 (Section 4,5 and 6)			*
10	Subic-Clark-Tarlac Expressway(SCTEx)			*
11	Manila Cavite Toll Expressway Phase 1			*
12	Manila Cavite Toll Expressway Phase 2			*
13	Manila Cavite Toll Expressway Phase 3		*	*
14	South Luzon Expressway (SLEx) Phase 1	*		*
15	South Luzon Expressway (SLEx) Phase 2 to Lucena		*	*
16	Daan Hari-SLEx Link	*		*
17	Laguna de Bay Crossing Road		*	*
18	Southern Tagalog Arterial Road(STAR)			*
19	Metro Manila Skyway Phase 1			*
20	Metro Manila Skyway Phase 2	*	*	*
21	Calamba-Los Banos Toll Expressway		*	*
22	NLEx-SLEx Link Expressway			*

No.	Project Name	NTP	PEGR	HSH
URBAN LUZON SUPER REGION				
23	NAIA Expressway Phase1			
24	NAIA Expressway Phase2		*	
25	C-6 Expressway		*	
26	C-6 Extension Expressway			
27	Manila Bay Expressway		*	
28	Manila Bay Crossing Road			
29	CALA Expressway	*	*	
30	North-South Expressway (CALA)	*	*	
31	Central Luzon Expressway (CLEx)	*1)		
32	NLEx-East		*2)	
33	La Mesa Parkway			
34	C-5/FII/Skyway Connector Road			
35	Pasig Marikina Expressway		*3)	
36	Global City Link			
37	R-7 Expressway			
38	Manila Bataan Coastal Road			
39	East West Connection Expressway			
40	Quezon City-Dingalan Road			
41	Marikina-Infanta Road			
42	Tarlac-Nueva Eciji-Aurora-Dingalan Port Road			
43	Candelaria Bypass Road(Quezon)	*		
44	Alaminos-San Pablo City Bypass Road along Mahalika Higl	*	*	
45	Tiaong Bypass	*		
46	Batangas-Bauan Ring Road	*	*	

No.	Project Name	NTP	PEGR	HSH
CENTRAL PHILIPPINES SUPER REGION				
47	Hillside Bypass in Metro Cebu			*
48	Widening of Mactan Bridge or new bridge in Metro Cebu			*
49	Cebu-Bohol Bridge		*	
50	Iloilo-Guimaras Bridge		*	
51	Palo East and Wst Bypass Road,Leyte	*	*	
52	Bacolod City-Granada Section, Negros Occidnetal	*		
53	Dumaguete City Diversion Road, Negros Oriental	*		
MINDANAO SUPER REGION				
54	Panguil Bay Bridge	*		
55	Samal Island Bridge		*	
56	Ozamis City Coastal Bypass Road, Misamis Occidental	*	*	
57	Davao City Coastal Road			*
58	Zamboanga City Bypass Road Zamboanga Del Sur	*	*	

Source: JICA Study Team

Note 1) Cabanatuan Bypass and San Jose Bypass (part of CLEx)
2) NLEE-C6 to San Jose, Nueva Ecija(a part of NLEx East)
3) Pasig Expressway (part of Pasig Marikina Expressway)

NTP: Draft National Transport Plan,2010-2016 (14 Dec. 2009).

PEGR:Strengthing the Public-Private Partnership (PPP) Program in the National Road Sector through Capacity-Building of DPWH, NEDA.

HSH:The Study of Master Plan on High Stadard Highway (HSH) Network Development in the Republic of the Philippines.

7.4 PRE-SCREENING OF CANDIDATE PROJECTS

(1) Pre-screening Criteria

Those projects which fall under the following criteria were screened out.

PRE-SCREENING CRITERIA

(0) Under Operation or On-going Project
(1) Low Traffic (Less than 3,000 vehicles per day)
(2) There are 3 or more projects in the same direction and it has almost same purpose in catering traffic in the same direction and considered to be quite expensive due to required long bridge/viaduct.
(3) DPWH encountered ROW acquisition problem.
(4) Project requires a long tunnel or an under-sea tunnel over 10 km and the construction cost is quite high.
(5) Other reasons

(2) Pre-screening Results

Pre-screening results are shown in **Table 7.4-1**.

Criteria	No. of Projects Screened Out
Under criteria (0)	16 projects
Under criteria (1)	6 projects
Under criteria (2)	4 projects
Under criteria (3)	3 projects
Under criteria (4)	2 projects
Under criteria (5)	12 projects
Total	43 projects

43 projects were screened out, and 15 projects were left for further study.

TABLE 7.4-1 PRE-SCREENING RESULTS

No.	Project	Length	Status	Pre Screen Criteria						Remarks
				0	1	2	3	4	5	
NORTH LUZON SUPER REGION										
1	Tarlac-Pangasinan-La Union Expressway(TPLEx)	88.0	On-going	✔						
2	San Fernando City Bypass Road(La Union)	4.8	Proposed for PPP		✔					Less than 3000veh/day
URBAN LUZON SUPER REGION										
3	North Luzon Expressway (NLEx) Phase 1 (Section 1,2 and 3)	82.6	Operation	✔						
4	North Luzon Expressway (NLEx) Phase 1 (Section 7)	8.5	Operation	✔						
5	North Luzon Expressway (NLEx) Phase 2 (Section 8.1)	2.3	On-going	✔						
6	North Luzon Expressway (NLEx) Phase 2 (Section 8.2)	10.2	Committed	✔						
7	North Luzon Expressway (NLEx) Phase 2 (Section 9)	4.1	On-going	✔						D/D Completed
8	North Luzon Expressway (NLEx) Phase 2 (Section 10)	5.6	On-going	✔						Under D/D
9	North Luzon Expressway (NLEx) Phase 3 (Section 4,5 and 6)	58.5							✔	Beyond 2030(HSH Study)
10	Subic-Clark-Tarlac Expressway(SCTEx)	93.0	Operation	✔						
11	Manila Cavite Toll Expressway Phase 1	6.8	Operation	✔						
12	Manila Cavite Toll Expressway Phase 2	7.5	D/D Completed				✔			ROW problem
13	Manila Cavite Toll Expressway Phase 3	11.2	On-going	✔						
14	South Luzon Expressway (SLEx) Phase 1	28.5	Operation	✔						
15	South Luzon Expressway (SLEx) Phase 2 to Lucena	47.8								
16	Daan Hari-SLEx Link	4.0	On-going	✔						
17	Laguna de Bay Crossing Road	46.2				✔				Conflicts with SLEx,Skyway, CALA exp.,Laguna de Bay exp.
18	Southern Tagalog Arterial Road(STAR)	4.2	Operation	✔						
19	Metro Manila Skyway Phase 1		Operation	✔						
20	Metro Manila Skyway Phase 2	6.9	On-going	✔						
21	Calamba-Los Banos Toll Expressway	15.5								REGR Business Case Study
22	NLEx-SLEx Link Expressway	13.4								METI Study, Unsolicited proposal
23	NAIA Expressway Phase1	4.0	On-going	✔						
24	NAIA Expressway Phase2	4.9								METI Study
25	C-6 Expressway	64.8								Including NLEx-MRT7 Terminal Link
26	Laguna de Bay Expressway	43.6								
27	Manila Bay Expressway	8.0								
28	Manila Bay Crossing Road	30.0						✔		More than 10km crossing the sea.
29	CALA Expressway	41.8								
30	North-South Expressway (CALA)	27.3					✔			ROW Problem
31	Central Luzon Expressway (CLEx)	63.9								(San Jose Bypass)
32	NLEx-East	92.1								Integrated with Cabanatuan Bypass,2nd Pan Philippine Highway and La Mesa Parkway
33	La Mesa Parkway	10.9								
34	C-5/FII/Skyway Connector Road	3.0								
35	Pasig Marikina Expressway	15.7								
36	Global City Link	1.7								
37	R-7 Expressway	16.1								
38	Manila Bataan Coastal Road	70.3							✔	Beyond 2030(HSH Study)
39	East West Connection Expressway	26.6							✔	Beyond 2030(HSH Study)
40	Quezon City-Dingalan Road				✔					Less than 3000 vehicles/day
41	Marikina-Infanta Road				✔					Less than 3000 vehicles/day
42	Tarlac-Nueva Eciji-Aurora-Dingalan Port Road								✔	Improved as national road
43	Candelaria Bypass Road(Quezon)	8.5	Proposed for BOT			✔				If SLEx-ext will be constructed, these bypass will not be necessary so much.
44	Alaminos-San Pablo City Bypass Road along Mahalika Highway		Proposed for BOT			✔				
45	Tiaong Bypass	3.8	Proposed for BOT			✔				
46	Batangas-Bauan Ring Road		Proposed for BOT						✔	To be implemented using local fund
CENTRAL PHILIPPINES SUPER REGION										
47	Hillside Bypass in Metro Cebu								✔	Quite difficult to construct as toll exp. due to topographic condition
48	Widening of Mactan Bridge or new bridge in Metro Cebu								✔	Quit difficult to collect toll for Mactan Bridge in Cebu, because there was strong objection to toll at 2nd Mactan bridge.
49	Cebu-Bohol Bridge	35.0						✔		
50	Iloilo-Guimaras Bridge (Suspension Bridge)	3.0			✔					Low traffic demand & High Cost
51	Palo East and Wst Bypass Road,Leyte	1.5	Proposed for BOT						✔	Small scale
52	Bacolod City-Granada Section, Negros Occidnetal	11.0	Proposed for BOT						✔	Urban street
53	Dumaguete City Diversion Road, Negros Oriental	17.8	Proposed for BOT						✔	Access to abutting area required
MINDANAO SUPER REGION										
54	Panguil Bay Bridge	2.4	Proposed for BOT		✔					260m Bridge,2100m Approach
55	Samal Island Bridge				✔					Low traffic demand
56	Ozamis City Coastal Bypass Road, Misamis Occidental		Proposed for BOT						✔	TO be implemented using local fund
57	Davao City Coastal Road	10.0					✔			ROW Problem, Digos to Tagum Express Sys
58	Zamboanga City Bypass Road Zamboanga Del Sur	32.0	Proposed for BOT						✔	To be implemented using local fund
	Total			6	6	4	3	2	12	

Legend:

: Project Selected

: Project Screened out

0. Under Operation or On-going Project

1. Low Traffic (Less than 3,000 vehicles per day)

2. There are 3or more projects in the same direction and it has almost same purpose in catering traffic in the same direction and considered to be quite expensive due to required long bridge/ viaduct.

3. DPWH encountered ROW acquisition problem

4. Project requires a long tunnel or an under-sea tunnel over 10km and the construction cost is quite high.

5. Other Reasons: see remarks

SOURCE: JICA STUDY TEAM

Among 15 projects, following projects were integrated;

- C-6 Expressway (No. 25) and Global City Link (No. 36) were integrated into one project and called as C-6 Expressway, since Global City Link is a short branch of C-6 Expressway.

- NLEx East (No. 32) and La Mesa Parkway (No. 33) were integrated into one project and called as NLEx-East/La Mesa Parkway, since NLEx-East is an extension of La Mesa Parkway.

As a result, 13 projects were remained. These 13 projects are exactly the same as these projects recommended by "HSH Master Plan Study".

7.5 FIRST SCREENING

After pre-screening, following 13 projects were left for the first screening:

- NLEx-SLEx Link Expressway (N-L Exp.)
- NAIA Expressway (Phase II) (NAIA Exp.)
- C-6 Expressway with Global City Link (C-6 Exp.)
- C-6 Extension
- Manila Bay Expressway
- CALA Expressway (CALA)
- Central Luzon Expressway (CLEx)
- Calamba-Los Baños Expressway
- South Luzon Expressway Extension (SLEx Extension)
- North Luzon Expressway East (NLEx East)/La Mesa Parkway
- C-5/FTI/Skyway Connector Road
- Pasig-Marikina Expressway
- R-7 Expressway (R-7)

Above projects were prioritized under "HSH Master Plan" study, of which prioritization was adopted by this Study and approved by DPWH. Following contents were extracted from "HSH Master Plan" study report.

7.5.1 Prioritization Method Adopted by HSH Master Plan Study

Multi-criteria analysis method similar to those being used by DPWH was adopted. Through discussion with the TWG members, eight (8) evaluation items were selected as follows;

EVALUATION ITEMS

1. Functional Importance of a Link in HSH Network and Improvement of Inter-modal Linkage
2. Urgency based on Contribution to Traffic Decongestion
3. Project Readiness
4. Contribution to National/Regional Socio-Economic Development
5. Initial Investment Fund Requirement
6. Environmental and Social Impact
7. Impact of a Project on Viability of Existing Toll Expressway
8. Economic and Financial Viability

Each item was further divided into sub-items and weight of each item and sub-item was discussed at TWG Meeting. Major considerations giving priority (or weight) to each sub-item are shown in **Table 7.5.1-1**, and the prioritization criteria adopted for the Study is shown in **Table 7.5.1-2.** Evaluation method of each sub-item is set forth hereunder;

(1) Functional Importance of a Link in HSH Network and Improvement of Inter-modal Linkage

Functionally important link in HSH network or a link belongs to higher hierarchy in HSH network has higher priority.

Functional importance is defined as follows;

- Type-1: A link which forms a backbone transport axis for national integration and decentralization policy or for urban development.
- Type-2: A link which connects 2 or more HSH-1 to improve flexibility for road users in route selection.
- Type-3: A link which branches off from the backbone transport axis.
- Type-4: A link which functions individually.

TABLE 7.5.1-1 MAJOR CONSIDERATIONS IN GIVING WEIGHT TO ITEMS

Item	Weight	Sub-Item	Sub-Weight
1. Functional Importance of a link in HSH Network and Improvement of Inter-modal Linkage	**17**	1.1 Functional Importance • This is to evaluate conformity with National Policy of Decentralization; therefore, second highest weight was given.	**15.0**
		1.2 Improvement of Intermodal Linkage • This is to evaluate improvement of logistic system. Additional weight to above.	**2.0**
2. Urgency based on contribution to traffic decongestion	**17**	2.1 Number of traffic attracted to a link. (pcu/day) • This is to evaluate contribution to traffic decongestion which is one of the HSH-1 development policy, thus given high weight.	**7.0**
		2.2 Reduction of travel time (pcu-hour/ day). • This is to evaluate contribution to delivery of people and goods faster and on time which is the major function of HSH-1, thus given high weight.	**10.0**
3. Project Readiness	**15**	• This item clearly shows the DPWH's and the Private Sector's implementation priority, thus given second highest weight	**15.0**
4. Contribution to National/Regional Socio-Economic Development	**10**	4.1 Contribution to National/Regional Economic Development • This is to evaluate contribution to economic development. Sub-item 8.1 does not quantify this benefit.	**5.0**
		4.2 Contribution to Social Development: Contribution to Job Creation • This is to evaluate contribution to social development in terms of job creation which is not quantified in Sub-item 8.1.	**5.0**
5. Initial Investment Fund Requirement	**10**	5.1 Construction Cost • This is to evaluate Government's or Private Sector's fund preparation difficulty.	**6.0**
		5.2 ROW Acquisition and Resettlement Cost • This is to evaluate Government's fund preparation difficulty.	**4.0**
6. Environmental and Social Impact	**8**	6.1 Natural Impact • During F/S or D/D, this impact can be mitigated by selecting appropriate route, thus given low weight.	**3.0**
		6.2 Social Impact (No. of Structure Affected) • Relocation of PAPs is one of the bottlenecks in implementation though during F/S and D/D, this impact can be mitigated.	**5.0**
7. Impact of a project on viability of Existing Toll Expressway	**3**	7.1 Impact on Traffic Volume of Existing Expressway • This is to evaluate if revenue of existing toll road is affected or not.	**3.0**
8. Economic and Financial Viability	**20**	8.1 Economic Viability (Is the Project economically justifiable?) • This is DPWH's top concern, thus given highest weight.	**16.0**
		8.2 Financial Viability (Is the Chance of Private Sector Participation high?) • This is to evaluate chances of private sector's participation and possibility to reduce Government's financial burden.	**4.0**
Total	**100**		**100**

Source: HSH Master Plan Study

TABLE 7.5.1-2 PRIORITIZATION CRITERIA FOR FIRST SCREENING

Item	Weight	Sub-Item	Sub-Weight
1. Functional Importance of a link in HSH Network and Improvement of Inter-modal Linkage	**17**	1.1 Functional Importance	**15.0**
		• A link which forms a Backbone transport axis for national integration or for urban development.	15.0
		• A link which connects 2 or more HSHs to improve flexibility for road users in route selection.	14.0
		• A link which branches off from the backbone transport axis.	10.0
		• A link which functions individually.	8.0
		1.2 Improvement of Intermodal Linkage	**2.0**
		• A link which provides a direct access to an international port or air port or rail terminal.	2.0
		• A link which provides an indirect access to an international port or air port or rail terminal.	1.0
2. Urgency based on contribution to traffic decongestion	**17**	2.1 Number of traffic attracted to a link. (pcu/day)	**7.0**
		• High over 60,000	7.0
		• Medium 20,000 – 60,000	5.0
		• Low Less than 20,000	3.0
		2.2 Reduction of travel time (pcu-hour/ day).	**10.0**
		• High over 4,000	10.0
		• Medium 1,000 – 4,000	7.0
		• Low Less than 1,000	4.0
3. Project Readiness	**15**	3.1 Detailed design on-going or completed.	15.0
		3.2 Detailed Feasibility Study completed / ongoing / committed.	14.0
		3.3 Pre-Feasibility Study completed / ongoing	8.0
		3.4 Conceptual Stage	5.0
4. Contribution to National/Regional Socio-Economic Development	**10**	4.1 Contribution to National/Regional Economic Development	**5.0**
		• High	5.0
		• Medium	4.0
		• Low	3.0
		4.2 Contribution to Social Development: Contribution to Job Creation	**5.0**
		• High over 0.5	5.0
		• Medium 0.2 – 0.5	4.0
		• Low Less than 0.2	3.0
5. Initial Investment Fund Requirement	**10**	5.1 Construction Cost	**6.0**
		• Low Less than 10 B. P.	6.0
		• Medium 10 – 30 B. P.	4.0
		• High Over 30 B. P.	2.0
		5.2 ROW Acquisition and Resettlement Cost	**4.0**
		• Low Less than 0.1 B. P.	4.0
		• Medium 0.1 – 1.0 B. P.	2.5
		• High Over 1.0	1.0
6. Environmental and Social Impact	**8**	6.1 Natural Impact	**3.0**
		• Does not passes through environmentally critical area	3.0
		• Passes through environmentally critical area	1.0
		6.2 Social Impact (No. of Structure Affected)	**5.0**
		• Low Less than 400	5.0
		• Medium 400 – 800	3.0
		• High Over 800	1.0
7. Impact of a project on viability of Existing Toll Expressway	**3**	7.1 Impact on Traffic Volume of Existing Expressway	**3.0**
		• Increase Traffic Volume of Existing Toll Expressway (Positive)	3.0
		• Almost No Impact	2.0
		• Decrease Traffic Volume of Existing Toll Expressway (Negative)	1.0
8. Economic and Financial Viability	**20**	8.1 Economic Viability (Is the Project economically justifiable?)	**16.0**
		• High Over 25%	16.0
		• Medium 15 – 25%	14.0
		• Low Less than 15%	5.0
		8.2 Financial Viability (Is the Chance of Private Sector Participation high?)	**4.0**
		• High Over 10%	4.0
		• Medium 5 – 10%	2.5
		• Low Less than 5%	1.0
Total	**100**		**100**

Source: HSH Master Plan Study

Transport linkage between HSH-1 and port/airport/rail terminal should be improved, so that goods and people transshipment from one mode to another becomes efficient, and overall transport efficiency is improved.

Weight given is as follows;

	Weight	Sub-weight
Functional Importance of a Link in HSH Network and Improvement of Inter-modal Linkage	17.0	
Sub-Item : Functional Importance of a link in HSH Network		15.0
• Type -1		(15.0)
• Type -2		(14.0)
• Type -3		(10.0)
• Type -4		(8.0)
Sub-Item : Improvement of Inter-modal Linkage	2.0	
• A link which provides a direct access to an international port/airport or rail terminal		(2.0)
• A link which provides an indirect access to an international port/airport or a rail terminal		(1.0)

(2) Urgency based on Contribution to Traffic Decongestion

One of the most important objectives of HSH-1 network development is to reduce traffic congestion, particularly in Metro Manila and its suburbs.

Contribution of a link to traffic decongestion is directly related “urgency”. Contribution to traffic decongestion is evaluated by two items.

- Number of traffic attracted to a link (pcu/day):

  When traffic is attracted on to a HSH-1 link, equivalent number of traffic is reduced from other roads, thus contributing to decongestion of traffic on other roads.

- Reduction of travel time (pcu-hour/day)

  Effect of constructing a new link is well expressed by reduction of travel time. When faster travel is assured by a new link, it definitely reduces travel time of a trip.

Weight is given as follows;

		Weight	Sub-weight
Item :	Urgency based on contribution to traffic decongestion	17	
Sub-item (1):	Number of traffic attracted to a link (pcu/day)		7.0
	● High : Over 60,000		(7.0)
	(Equivalent to reduction of 6-lane at-grade road)		
	● Medium : 20,000 – 60,000		(5.0)
	(Equivalent to reduction of 4-lane at-grade road)		
	● Low : Less than 20,000		(3.0)
	(Equivalent to reduction of 2-lane at-grade road)		
(Note:	traffic attracted ranges from 4,100 to 90,900 pcu/day)		
Sub-item (2):	Reduction of travel time (pcu-hour/day)		10.0
	● High : Over 4,000		(10.0)
	● Medium : 1,000 – 4,000		(7.0)
	● Low : Less than 1,000		(4.0)
(Note:	travel time reduction ranges from 106 to 4,969 pcu-hour/day)		

(3) Project Readiness

Project readiness shows the DPWH's and the private sector's implementation priority. A project of which preparation is progressed, it should be implemented ahead of other projects.

Weight is given as follows;

		Weight	Sub-weight
Item :	Project Readiness	15.0	
Sub-item:	● Detailed design on-going or completed		15.0
	● Detailed feasibility study completed/on-going/committed		14.0
	● Pre-feasibility study completed/on-going		8.0
	● Conceptual stage		5.0

(4) Contribution to National/Regional Socio-economic Development

HSH-1 surely contributes to both economic and social development. Three sub-items are developed as follows;

- **Contribution to National/Regional economic development**

  This sub-item is difficult to evaluate quantitatively, thus evaluated by land ares traversed as follows;

High Impact

- Contribute to support a secondary industry and provide access to economic zones and international logistics basis.
- Contribute to support a tourism industry and provide access to tourism spots.

Medium Impact

- Contribute to support a primary industry and provide access between agricultural/fishery lands and consumption areas.

- Contribute to support a tertiary industry and provide access to business and commercial areas.

Low Impact

- A link traversing a lake shore.
- A link to provide only a limited small land area

- **Contribution to social development**

  All projects are proposed to be a toll road with participation of private investors, so operation and maintenance period will continue at least for 30 years. During O & M period, jobs are created and contribute to poverty alleviation, which is considered to be medium and long term impact. Under this item, medium and long term impact is evaluated.

Weight is given as follows;

		Weight	Sub-weight
Item :	Contribution to National/Regional Socio-Economic Development	10.0	
Sub-item :			
-	Contribution to National/Regional Economic Development		5.0
	• High		(5.0)
	• Medium		(4.0)
	• Low		(3.0)
-	Contribution to Social Development		5.0
	• High O & M: Over 0.5 Billion Pesos/Year		(5.0)
	• Medium O & M: 0.2-0.5 Billion Pesos/Year		(4.0)
	• Low O & M: Less than 0.2 Billion Pesos/Year		(3.0)

(Note: O & M cost ranges from 0.04 to 1.09 Billion Pesos)

(5) Initial Investment Fund Requirement

When construction cost and ROW/Resettlement cost becomes higher, it become more difficult to prepare fund. Initial investment requirement is evaluated and weight is given as follows;

				Weight	Sub-weight
Item :	Initial Investment Fund Requirement			10.0	
Sub-item :	Construction Cost				6.0
	● Low	:	Less than 10 Billion Pesos		(6.0)
	● Medium	:	10 – 30 Billion Pesos		(4.0)
	● High	:	Over 30 Billion Pesos		(2.0)
	(Note: Construction cost ranges from 5.32 to 44.69 Billion Pesos)				
	ROW Acquisition and Resettlement Cost				4.0
	● Low	:	Less than 0.1 Billion Pesos		(4.0)
	● Medium	:	0.1 – 1.0 Billion Pesos		(2.5)
	● High	:	Over 1.0 Billion Pesos		(1.0)
	(Note: Cost ranges from 0.10 to 5.35Billion Pesos)				

(6) Environmental Impact

Two sub-items are developed and weight is given as follows;

				Weight	Sub-weight
Item :	Environmental Impact			8.0	
Sub-item :	Natural Impact				3.0
	- Those not pass through environmentally critical area				(3.0)
	- Passes through environmentally critical area				(1.0)
	Social Impact (Number of Structures affected)				5.0
	● Low	:	Less than 400		(5.0)
	● Medium	:	400 – 800		(3.0)
	● High	:	Over 800		(1.0)
	(Note: No. of Structures affected ranges from 10 to 1,200)				

(7) Impact of a Project on Viability of Existing Toll Expressway

When a project is implemented along the same corridor of an existing toll road, traffic volume on an existing road may be reduced, thus revenue is reduced and profitability of an existing toll road is negatively affected. In some other cases, a certain new project may increase traffic of an existing toll road, thus profitability of an existing road is positively affected. Such inter-dependence of a new project and existing toll roads are evaluated. Weight is given as follows;

	Weight	Sub-weight
Item : Impact of a Project on Viability of Existing Toll Expressway	3.0	
Sub-item : • Increase of traffic volume of existing toll expressway		3.0
• Almost no impact		2.0

(8) Economic and Financial Viability

Economic viability is a key indicator to judge if a project can be implemented or not. When economic viability is judged not feasible, the project should be cancelled or deferred.

If financial viability is high, chances of private sector participation is high, thus the Government's expenditure can be reduced and it will less impact on the Government financial condition.

Weight is given as follows;

			Weight	Sub-weight
Item : Economic and Financial Viability			20.0	
Sub-Item : Economic Viability				16.0
-Economic viability is high	:	EIRR over 25%		(16.0)
-Economic viability is medium	:	15 – 25%		(14.0)
-Economic viability is low	:	Less than 15%		(5.0)

Note:
- 15% is an opportunity cost adopted by the Government, thus a Project with EIRR less than 15% has a very low implementation priority.
- EIRR ranges from 5.8 to 49.9%

			Weight	Sub-weight
Sub-Item : Financial Viability				4.0
-Financial viability is high	:	FIRR over 10%		(4.0)
-Financial viability is medium	:	5 – 10%		(2.5)
-Financial viability is low	:	Less than 5%		(1.0)

(Note: FIRR ranges from Negative to 13.6%)

7.5.2 Priority of Projects

(1) Basic Information to Evaluate Priority

Basic information to evaluate priority of projects are summarized hereunder.

- **Features of HSH-1 Project**

  Functional category of each project, objectives of the project, objectives of the project, initial investment requirement, O & M cost, land acquisition and resettlement, economic viability, financial viability, etc., are summarized in **Table 7.5.2-1**.

- **Impact of a New Expressway on Traffic Volume of Existing Expressway**

  Table 7.5.2-2 shows an impact of 9 new expressways on traffic volume of existing expressways.

TABLE 7.5.2-1 FEATURES OF HSH-1 PROJECTS

Project No.	(1) Project Name	(2) Functional Category	(3) Objectives of the Project	(4) Road Length (km)	(5) Type of Road Structures	(6) No. of Lanes	Initial Investment (B. Pesos) (2010 Cost)			(9) O & M Cost B. P. per Year (2010 Cost in 2015)	(10) Land Acquisition		Traffic Impact (in 2015)		(13) Economic Viability (EIRR in %)	(14) Financial Viability (FIRR in %)
							(7) Construction	(8) ROW Acquisition	TOTAL		Land Area to be Acquired (Ha.)	Approx. No. of Structure Affected	(11) No. of Traffic Volume (pcu/day)	(12) Travel Time Reduction (pcu-hr/ km/day)		
1	NLEx-SLEx Link Expressway	Type-1	• To complete North-South Industrial Development Beltway Transport Axis. • To decongest Metro Manila traffic.	13.4	Elevated	4	29.12	1.00	30.12	0.22	1.5	410 (270) (a)	90,900	4,969	19.4	8.1
2	NAIA Expressway (Phase 2)	Type-2	• To provide access to 3 NAIA terminals. • To connect Skyway with Manila-Cavite Coastal Expressway	4.9	Elevated	4	11.06	0.71	11.77	0.08	1.2	200	49,100	2,549	16.7	7.9
3/14	C-6 Expressway and Global City Link	Type-1	• To distribute traffic from expressways from North and South. • To guide sound urbanization of east Metro Manila	66.5	At-grade + Elevated	4~6	44.08	5.35	49.43	0.95	416	1,200	50,500 ~ 68,500	2,407	24.7	3.9
4	C-6 Extension	Type-2	• To decongest traffic on SLEx. • Combined structure for flood control and traffic facility.	43.6	At-grade	4	15.37	1.53	16.90	0.46	41	1,100	34,700 ~ 35,000	1,638	42.6	9.8
5	Manila Bay Expressway	Type-2	• To decongest Metro Manila traffic, particularly Roxas Blvd. and C-2. • To provide access to Manila Ports.	8.0	Under pass and under-sea tunnel	4	44.69	0.29	44.98	0.18	0.9	10	64,600	4,454	5.8	Negative
6	CALA Expressway	Type-2	• To decongest Cavite roads traffic particularly Aguinaldo Highway.	41.8	At-grade	6	15.81	1.41	17.22	0.41	255	240	58,400 ~ 80,400	2,282	49.9	13.6
7	Central Luzon Expressway	Type-2	• To provide access to economic zones • To connect SCTEx and NLEx-East. • To decongest Pan-Philippine Highway traffic.	63.9	At-grade	4	24.26	1.44	25.70	0.66	365	101	11,200 ~ 22,800	564	15.6	Negative
8	Calamba-Los Banos Expressway	Type-3	• To provide access to tourism destination. • To decongest national roads.	15.5	At-grade	4	5.05	0.85	5.90	0.15	64	130	55,300	2,240	42.7	7.3
9	SLEx Extension (to Lucena City)	Type-1	• To form South Luzon Development Axis. • To decongest Pan Philippine Highway traffic.	47.8	At-grade	4	13.96	0.38	14.35	0.49	240	200	39,000	1,546	35.6	6.9
10	NLEx East	Type-1	• To form North-East Luzon Development Axis. • To decongest Pan-Philippine Highway traffic.	92.1	At-grade	4	28.59	1.10	29.69	1.09	470	910	11,200 ~ 12,000	739	23.3	4.0
11	La Mesa Parkway	Type-1	• To form North-East Luzon Development Axis.	10.9	At-grade	4	3.94	0.09	4.03	0.14	1.3	40	59,600			
12	C-5/FTI/Skyway Connector Road	Type-2	• To develop FTI area. • Skyway and C-5 are connected.	3.0	Elevated	2	5.32	0.10	5.42	0.04	0.5	40	52,900	4,060	26.0	4.9
13	Pasig-Marikina Expressway	Type-4	• To decongest C-4 and C-5 traffic.	15.7	Elevated	4	34.65	1.00	35.65	0.26	19	730	79,500	3,283	11.5	5.4
15	R-7 Expressway	Type-4	• To decongest R-7.	16.1	Elevated/ Under pass	4	23.98	1.00	24.98	0.29	0.8	30	83,400	4,033	23.4	7.5

Note: (2) Functional Category

Type-1 : A link which forms a backbone transport axis for national integration or for urban development.

Type-2 : A link which connects 2 or more HSHs to improve flexibility for road users in route selection.

Type-3 : A link which branches off from the backbone transport axis.

Type-4 : A link which functions individually.

(7), (8), (9) : Cost in 2010 prices

(11), (12), (13), (14) : All projects were assumed operational in 2015 for the purpose of prioritization.

(a) : When PNR continue and complete resettlement within its ROW.

Source: HSH Master Plan Study

TABLE 7.5.2-2 (1/2) TRAFFIC IMPACT OF NEW EXPRESSWAY TO EXISTING EXPRESSWAY: 100 PCU/DAY

Proposed Project	Existing Expressway							Total
	NLEx	Seg 9.10	SCTEx	SLEx	Skyway	STAR	Manila-Caivte	
1. North-South Link Expressway	5	**60**	0	-15	**90**	0	-13	127
2. NAIA Expressway-2	0	0	0	0	**96**	0	**233**	329
3. C6 Expressway	**-101**	**-87**	0	-9	**-190**	0	33	-354
4. C-6 Extension	0	0	0	**-278**	5	-5	0	-278
5. Manila Bay Expressway	0	5	0	-34	**-99**	0	**200**	72
6. CALA Expressway	0	4	0	**-236**	-70	9	**313**	20
7. Central Luzon Expressway	0	0	40	0	0	0	0	40
8. Calamba-Los Banos Toll Expressway	0	0	0	10	0	-10	0	0
9. SLEx Extension	0	0	0	55	0	-64	0	-9
10. North Luzon East and 11. La Mesa Parkway	**-260**	-86	0	0	-10	0	0	-356
12. C-5/FTI/Skyway Connector Road	0	-3	0	24	61	0	1	83
13. Pasig Marikina Expressway	0	-11	0	-14	-14	0	-4	-43
15. R-7 Expressway	5	-23	0	0	0	0	0	-18

Source: HSH Master Plan Study

TABLE 7.5.2-2 (2/2) TRAFFIC IMPACT OF NEW EXPRESSWAY TO EXISTING EXPRESSWAY: IN %

Proposed Project	Existing Expressway							Total
	NLEx	Seg 9.10	SCTEx	SLEx	Skyway	STAR	Manila-Caivte	
1. North-South Link Expressway	0%	**70%**	0%	-1%	6%	0%	-1%	2%
2. NAIA Expressway-2	0%	0%	0%	0%	6%	0%	**22%**	4%
3. C6 Expressway	-6%	-10%	0%	-1%	-13%	0%	3%	-5%
4. C-6 Extension	0%	0%	0%	-17%	0%	-1%	0%	-4%
5. Manila Bay Expressway	0%	1%	0%	-2%	-7%	0%	**19%**	1%
6. CALA Expressway	0%	0%	0%	-14%	-5%	2%	30%	0%
7. Central Luzon Expressway	0%	0%	18%	0%	0%	0%	0%	1%
8. Calamba-Los Banos Toll Expressway	0%	0%	0%	1%	0%	-2%	0%	0%
9. SLEx Extension	0%	0%	0%	3%	0%	**-11%**	0%	0%
10. North Luzon East and 11. La Mesa Parkway	-14%	-10%	0%	0%	-1%	0%	0%	-5%
12. C-5/FTI/Skyway Connector Road	0%	0%	0%	1%	**4%**	0%	0%	1%
13. Pasig Marikina Expressway	0%	-1%	0%	-1%	-1%	0%	0%	-1%
15. R-7 Expressway	0%	-3%	0%	0%	0%	0%	0%	0%

Source: HSH Master Plan Study

7.5.3 Evaluation of Project Priority

In accordance with the prioritization criteria, all projects were evaluated their priority. A result of priority evaluation is shown in **Table 7.5.3-1**. Projects were grouped into two (2), first and second priority groups.

First Priority Group: Project of which total score is more than 70 points, except R-7 Expressway. Along R-7 corridor, there is another proposal to introduce BRT system, thus, how to develop this corridor should be more carefully studied.

Second Priority Group: Project of which total score is less than 70 points.

PRIORITY RANKING AND PRIORITY GROUP

Priority Rank	Name of Project	Length (km)	Priority Group
1	NLEx-SLEx Link Expressway	13.4	First Priority Group
2	CALA Expressway	41.8	
3	C-5/FTI/Skyway Connector Road	3.0	
4	NAIA Expressway (Phase II)	4.9	
4	C-6 Expressway (Global City Link)	66.5	
4	CLEx	63.9	
7	SLEx Extension (to Lucena City)	47.8	
8	Calamba-Los Baños Expressway	15.5	
	Sub-total	256.8	
9	R-7 Expressway	16.1	Second Priority Group
10	NLEx East/La Mesa Parkway	103.0	
11	C-6 Extension	43.6	
12	Manila Bay Expressway	8.0	
13	Pasig-Marikina Expressway	15.7	
	Sub-Total	319.5	
	Manila-Bataan Coastal Road	70.3	Beyond Year 2030
	NLEx (Phase III)	36.2	
	East-West Connection Expressway	26.6	
	Sub-total		
	133.1		

Source: HSH Master Plan Study

Note: Although priority of C-6 Extension is not so high from the viewpoint of transport requirement, it will be the high priority project from the viewpoint of flood control of the area passed by the project.

TABLE 7.5.3-1 PRIORITY OF PROJECT

Item	Weight	Sub-Item	Sub-Weight	Project Number												
				1	2	3/14	4	5	6	7	8	9	10/11	12	13	15
				N-S Link	NAIA	C-6/Global City	C-6 Extension	Manila Bay	CALA	CLEx	Calamba-Los Baños	SLEx Extension	NLEx East/ La Mesa	C-5/FTI/ Skyway	Pasig-Marikina	R-7
1. Functional Importance of a link in HSH Network and Improvement of Inter-modal Linkage	**17**	1.1 Functional Importance	**15.0**	15.0	14.0	15.0	14.0	14.0	14.0	14.0	10.0	15.0	15.0	14.0	8.0	8.0
		1.2 Improvement of Intermodal Linkage	**2.0**	2.0	2.0	2.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2. Urgency based on contribution to traffic decongestion	**17**	2.1 Number of traffic attracted to a link. (pcu/day)	**7.0**	7.0	5.0	7.0	5.0	7.0	7.0	5.0	5.0	5.0	5.0	5.0	7.0	7.0
		2.2 Reduction of travel time (pcu-hour/km/day).	**10.0**	10.0	7.0	7.0	7.0	10.0	7.0	4.0	7.0	7.0	4.0	10.0	7.0	10.0
3. Project Readiness	**15**	Project Readiness	**15.0**	14.0	8.0	14.0	4.0	4.0	14.0	14.0	8.0	8.0	8.0	15.0	4.0	4.0
4. Contribution to National/Regional Socio-Economic Development	**10**	4.1 Contribution to National/Regional Economic Development	**5.0**	5.0	5.0	5.0	3.0	4.0	5.0	4.0	5.0	5.0	5.0	3.0	4.0	4.0
		4.2 Contribution to Social Development: Contribution to Job Creation	**5.0**	4.0	3.0	5.0	4.0	3.0	4.0	5.0	3.0	4.0	5.0	3.0	4.0	4.0
5. Initial Investment Fund	**10**	5.1 Construction Cost	**6.0**	4.0	4.0	2.0	4.0	2.0	4.0	4.0	6.0	4.0	2.0	6.0	2.0	4.0
		5.2 ROW Acquisition and Resettlement Cost	**4.0**	2.5	2.5	1.0	1.0	2.5	1.0	1.0	2.5	2.5	1.0	4.0	2.5	2.5
6. Environmental and Social Impact	**8**	6.1 Natural Impact	**3.0**	3.0	3.0	3.0	1.0	1.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0
		6.2 Social Impact (No. of Structures Affected)	**5.0**	3.0	5.0	1.0	1.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	3.0	5.0
7. Impact of a project on viability of Existing Toll Expressway	**3**	7.1 Impact on Traffic Volume of Existing Expressway	**3.0**	3.0	3.0	1.0	1.0	3.0	3.0	3.0	3.0	2.0	1.0	1.0	2.0	2.0
8. Economic and Financial Viability	**20**	8.1 Economic Viability (Is the Project economically justifiable?)	**16.0**	14.0	14.0	14.0	16.0	5.0	16.0	14.0	14.0	14.0	14.0	16.0	5.0	14.0
		8.2 Financial Viability (Is the Chance of Private Sector Participation high?)	**4.0**	2.5	2.5	1.0	2.5	1.0	4.0	1.0	1.0	1.0	1.0	1.0	2.5	2.5
Total	**100**		**100**	**89.0**	**78.0**	**78.0**	**64.5**	**63.5**	**88.0**	**78.0**	**71.5**	**76.5**	**66.0**	**87.0**	**55.0**	**71.0**
Ranking				***1***	***4***	***4***	***11***	***12***	***2***	***4***	***8***	***7***	***10***	***3***	***13***	***9***

Source: HSH Master Plan Study

7.5.4 Selection of Projects for Second Screening

Based on the prioritization of HSH Master Plan Study, **top 10 projects** were selected for the second screening as follows:

SELECTED PROJECTS FOR SECOND SCREENING

- NLEx-SLEx Link Expressway
- CALA Expressway
- C-5/FTI-Skyway Connector Road
- NAIA Expressway (Phase II)
- C-6 Expressway/Global City Link
- CLEx
- SLEx Extension (to Lucena City)
- Calamba-Los Baños Expressway
- R-7 Expressway
- NLEx East/La Mesa Parkway

7.6 PRELIMINARY STUDY AND OUTLINE OF SELECTED 10 PROJECTS

7.6.1 Alignment of Each Project

An alignment of each project was selected based on the previous studies and the study of the previous studies and the study of the JICA Study Team. All alignments are still preliminary and the detailed study is necessary in the succeeding stage of each project, i.e. the detailed feasibility study stage.

NLEx-SLEx Link Expressway: An alignment following existing PNR ROW and President Sergio Osmeña Sr. Road (formerly South Super Highway) was selected.

NAIA Expressway Phase II: An alignment follows Andrews Avenue, Airport Road, Parañaque River, and NAIA Road.

C-6 Expressway/Global City Link: An alignment recommended by "Feasibility study on Metro Manila C-6 Expressway", JETRO/METI, Japan (2008) was adopted. The JICA Study Team selected alignment of Global City Link based on the satellite image map.

CALA Expressway: An alignment of Manila side section was studied by PMO-BOT in consultation with concerned LGUs, which was adopted by the Study. An alignment of Laguna side was studied by JICA-assisted "Feasibility Study and Implementation Support on CALA East-West National Road Project" (2006), which was adopted by the Study.

C-5/FTI/Skyway Connector Road: The detailed design of this project is on-going, thus an alignment selected by the detailed design was adopted.

CLEx: An alignment selected by the "Feasibility Study for the Proposed Central Luzon Expressway (CLEx)" DPWH (2010), was adopted.

SLEx Extension (to Lucena City): An alignment studied by PNCC was adopted.

Calamba-Los Baños Expressway: An alignment recommended by "Business Case: Calamba-Los Baños Bypass Road, Laguna" PEGR (2008), was adopted.

R-7 Expressway: An alignment following Quezon Avenue and Don Mariano Marcos Avenue was adopted.

NLEx-East & La Mesa Parkway: An alignment of NLEx-East was selected based on 1/50,000 topographic map by the JICA Study Team. An alignment of La Mesa Parkway was selected following MWSS ROW.

7.6.2 Project Cost Estimate

1) Initial Project Cost Estimate

Construction Cost: Cost estimate of previous studies was referenced. Major unit costs are shown in **Table 7.6.2-1.**

TABLE 7.6.2-1 MAJOR UNIT COSTS ADOPTED

Cost in 2010 prices

Item	Unit	Unit Cost (Million Pesos)
1. Elevated Expressway (4-lane)		
1.1 2nd level over a road (PC Girder)	Per km	1,256
1.2 2nd level over a railway (PC Girder)	Per km	1,261
1.3 3rd level over a road (PC Girder)	Per km	1,991
1.4 3rd level over a railway (PC Girder)	Per km	1,995
1.5 3rd level over a road (Steel Box Girder)	Per km	2,873
1.6 3rd level over a railway (Steel Box Girder)	Per km	2,873
1.7 4th level over a road (Steel Box Girder and Steel Pier)	Per km	3,689
1.8 4th level over a railway (Steel Box Girder and Steel Pier)	Per km	3,648
1.9 On-ramp or Off-ramp	Each	110
1.10 Interchange (3-leg I.C.)	Each	1,500
1.11 Toll Barrier (2nd level)	Each	1,500
1.12 Lighting, Sign Board, Pavement Marking, Etc.	Per km	35
1.13 Underground Utility Relocation		
(1) Along a road	Per km	30
(2) Along a railway	Per km	10
1.14 Improvement of Road under an Expressway	Per km	40
1.15 Railway Trucks Re-alignment	Per km	20
2. At-grade Expressway with Cut/Fill		
2.1 4-lane (Urbanized Area, Flat to Rolling Terrain)	Per km	350 ~ 500
2.2 4-lane (Rural, Flat Terrain)	Per km	350 ~ 400
2.3 4-lane (Rural Area, Rolling Terrain)	Per km	300 ~ 350
2.4 4-lane (Rural Area, Mountainous Terrain)	Per km	450 ~ 600
2.5 6-lane (Semi-urban or Rural Area, Flat Terrain)	Per km	400 ~ 550
2.6 6-lane (Semi-urban or Rural Area, Rolling Terrain)	Per km	350 ~ 400
2.7 6-lane (Semi-urban or Rural Area, Mountainous Terrain)	Per km	500 ~ 650
2.8 Interchange	Each	500 ~ 1,500
2.9 Toll Barrier	Each	40 ~ 50

Engineering Service Cost

Engineering service cost is consisted of 1) detailed engineering design and 2) construction supervision. The engineering cost was estimated based on certain ration of its construction cost. The ratios were assumed in consideration of the project type as shown in **Table 7.6.2-2.**

TABLE 7.6.2-2 RATIO OF ENGINEERING SERVICE COST TO ITS CONSTRUCTION COST

Project Type	Detailed Engineering Design	Construction Supervision	Total of Engineering Service Cost
Shorter Road Length and High Construction Cost/ km	1.2%	1.8%	3%
Longer Road Length and Medium Construction Cost / km	3.0%	5.0%	8%
Longer Road Length and Low Construction Cost /km	4.0%	8.0%	12%

Project Administration Cost

Project Administration Cost was estimated based on the type of its construction as same as the Engineering Service Cost mentioned above. Value of the ratio is shown in **Table 7.6.2-3** based on past experience.

TABLE 7.6.2-3 RATIO OF PROJECT IMPLEMENTATION COST TO ITS CONSTRUCTION COST

Project Type	Project Administration Cost
Shorter Road Length and High Construction Cost/ km	0.5 %
Longer Road Length and Medium Construction Cost / km	3.0 %
Longer Road Length and Low Construction Cost /km	3.5 %

R.O.W. Cost

R.O.W Cost is consisted of land acquisition cost and compensation cost.

- **Land Acquisition Cost;** The land area to be acquired for the each project was estimated by multiplying the width of R.O.W by the road length where to be acquired. The width of R.O.W is basically assumed as below based on typical cross section.

At grad road section: W = 40.0m (urban) - 60 m (rural)
Viaduct Section: W = 20.5m (standard) - 35 m (ramp section)

Unit cost of land acquisition was estimated as shown in **Table 7.6.2-4** in consideration of current zonal valuation.

TABLE 7.6.2-4 UNIT COST OF LAND ACQUISITION

No.	Type of Land	Unit Price (Php/m2)
1	Agricultural Area	200
2	Residential Area at out of Metro Manila	300
3	Residential Area in Metro Manila	4,000~8,000
4	Commercial Area	10,000~30,000

- **Compensation Cost;** Compensation cost for the affected buildings was estimated by multiplying floor area (m^2) by unit cost (Php/m^2) for each affected buildings. The unit cost of floor area is shown in **Table 7.6.2-5**.

TABLE 7.6.2-5 UNIT COST OF COMPENSATION FOR BUILDINGS

NO.	STRUCTURE DESCRIPTION	ESTIMATED COST RANGE (PhP / m^2)
1	Light Materials	2,500.00 to 4,000.00
2	Wooden with light materials	3,500.00 to 4,500.00
3	Wooden & light materials with concrete floor slab	4,000.00 to 5,000.00
4	Wooden	7,500.00 to 8,500.00
5	1 storey Semi-concrete with light materials	7,000.00 to 8,500.00
6	2 storey Semi-concrete with light materials	8,500.00 to 9,000.00
7	3 storey Semi-concrete with light materials	9,000.00 to 10,000.00
8	Semi-Concrete	10,500.00 to 12,000.00
9	1 Storey Concrete with light materials	9,500.00 to 10,500.00
10	2 storey Concrete with light materials	10,600.00 to 11,000.00
11	3 storey Concrete with light materials	11,000.00 to 12,000.00
12	1 storey Concrete	11,500.00 to 12,000.00
13	2 storey Concrete	12,500.00 to 14,500.00
14	3 storey Concrete	15,000.00 to 17,500.00
15	4 storeys & up Concrete	18,000.00 to 20,000.00
16	Factories & Warehouses	24,000.00 to 28,000.00
17	Gas Service Stations/Automotive Shops	25,000.00 to 30,000.00
18	Covered Basketball Courts/Garage-type Shops	19,000.00 to 21,000.00

2) Operation and Maintenance (O & M) Cost

O & M Cost

In estimating O & M cost, data of MNTC for NLEx were referenced.

TABLE 7.6.2-6 ANNUAL O & M COST OF MNTC: NORTH LUZON EXPRESSWAY

Unit: Million Pesos

	O & M Cost	O & M Cost Per Lane-Km	O & M Cost For 4-lane
2008	1,376	2.69	10.76
2009	1,339	2.62	10.48
Average	1,358	2.66	10.64

Note: Total lane-km is 511
Source: MNTC and JICA Study Team

Since NLEx is a heavily traffic expressway, O & M cost is a type of facility. Maintenance cost of elevated structure is much less than those at-grade.

O & M cost per year was estimated by type of structure and by location as follows;

TABLE 7.6.2-7 ESTIMATED O & M COST PER YEAR FOR 4-LANE

Type of Structure	Location	O & M Cost per Km/Year (Unit: Million Pesos)
Elevated	Urban	5.5 – 6.8
At-grade	Urban	4.5 – 6.0
At-grade	Rural	3.5 – 4.0

Source: JICA Study Team

Periodic Maintenance Cost

It was assumed that periodic maintenance cost will be required at every 10 years after the start of operation. Periodic maintenance cost was estimated by type of structure of an expressway as follows;

TABLE 7.6.2-8 PERIODIC MAINTENANCE COST

Type of Structure	Maintenance Cost (4-lane)	
	% to Construction Cost	Cost Per Km (in Million Pesos)
Elevated	1 ~ 2%	15 – 23
At-grade	5 ~ 8%	17 - 25

Source: JICA Study Team

7.6.3 Traffic Demand Forecast and Revenue Estimate

1) Traffic Demand Forecast

Present and Future Traffic Demand

The Study of Masterplan on high Standard Highway Network Development (HSH Masterplan Study), 2010 developed the following traffic data;

- 2009 Traffic OD Matrices by Vehicle Type
- 2020 Traffic OD Matrices by Vehicle Type
- 2030 Traffic OD Matrices by Vehicle Type
- Road Network for Traffic Assignment

Above data were utilized by this Study.

Toll Rate Setting

HSH Master Plan Study tested various toll rates and findings were as follows;

a) Flat Toll Rate for Intra-Urban Expressway

Toll rate which gives maximum toll revenue was 200 pesos which is higher by about 2 times than the present toll rate of Metro Manila Skyway. Therefore, toll rate of the present level was adopted.

b) Distance Related Toll Rate for Inter-Urban Expressway

Toll rates of 1.0 peso/km to 8 peso/km were tested to find out a toll rate which gives a maximum toll revenue. Toll rate of 8.0 peso/km gave maximum toll revenue which is much higher than the present toll rate. Therefore, toll rate of the present level was adopted.

TABLE 7.6.3-1 TOLL RATE ADOPTED

	Cars	Buses/Trucks
Intra-Urban Expressway (Flat Toll Rate)	100 pesos	200 pesos
Inter-Urban Expressway (Distance Related Toll Rate)	2.0 pesos/km	4.0 pesos/km

2) Toll Revenue Estimate

Traffic assignment was undertaken for each project to estimate traffic volume and toll revenue. Road network for traffic assignment was assumed as follows;

(Existing Roads + On-going Roads) + Subject Road Project

7.6.4 Economic Analysis and Evaluation

Economic analysis was made based on the following assumptions;

1) Benefit estimated period: 20 years
2) Benefit calculated
   - VOC Savings (see **Table 7.6.4-1**)
   - Travel Time Cost Savings (see **Table 7.6.4-2**)

TABLE 7.6.4-1 UNIT VOC BY FOUR (4) VEHICLE TYPES IN 2009

(Pesos per veh-km)

Speed (km/hour)	1. Passenger Car	2. Jeepny	3. Large Bus	4. Truck
20	13.12	9.36	23.72	34.41
30	11.84	8.29	21.07	30.85
40	10.56	7.23	18.41	27.29
50	9.28	6.16	15.76	23.73
60	9.11	6.10	15.78	23.52
70	8.94	6.04	15.81	23.32
80	8.77	5.98	15.83	23.11
90	8.86	6.17	15.87	23.30
100	8.94	6.37	15.91	23.49
110	9.03	6.55	15.91	23.49
120	9.11	6.74	15.91	23.49

Source: DPWH, JICA Study Team

TABLE 7.6.4-2 UNIT TRAVEL TIME COST BY PCU IN 2009

Peso/hour/PCU

Vehicle Type	2009
Public	433.6
Private	205.9
All Passenger Car	290.4

Source: JICA Study Team

3) Discount Rate: 15%

Results of economic evaluation are presented in **Annex 7.6-1.**

7.6.5 Outline of Each Project

1) NLEx – SLEx Link Expressway

Project Description

The project aims to close the gap and complete the north-south Luzon industrial beltway transport axis by connecting NLEx and SLEx. The project will contribute to decongest Metro Manila traffic, particularly EDSA and provide a 24-hour access to Manila ports by providing faster, safer and comfortable means of transport facility. It starts at Caloocan City and ends at Makati City. It is an elevated expressway over PNR right-of-way.

L = 13.4 km
No. of Lanes = 4-lane

NLEx-SLEx LINK EXPRESSWAY

Estimated Average Traffic Volume and Toll Revenue

Year	Estimated Traffic Volume (pcu/day)	Toll Revenue (Million Pesos/day)
2015	88,700	6.92
2020	103,800	8.98
2030	118,100	19.76

Initial Project Cost

Unit: Million Pesos at 2010 Prices

Segment	Construction Cost	Engineering Cost	Admin. Cost	ROW Cost	Total
Government Segment (8.6 km)	17,560	530	90	580	18,760
Private Segment (4.8 km)	11,560	350	60	420	12,390
Total (13.4 km)	29,120	870	150	1,000	31,140

O & M Cost

Unit: Million Pesos at 2010 Prices

Routine Maintenance Cost per Year	15
Operation Cost per Year	73
Periodic Maintenance Cost at every 10 years	291

Economic Evaluation

EIRR	29.1%
NPV	10,830 Million Pesos
B/C	2.02

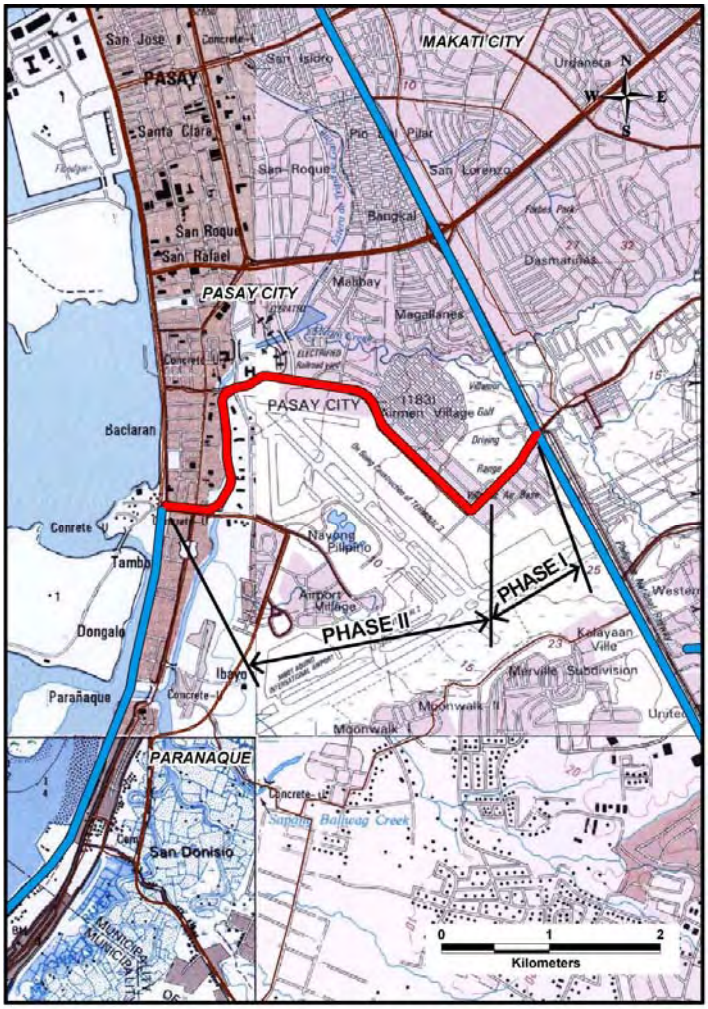
2) NAIA Expressway - Phase II

Project Description

The project will link Skyway and Manila-Cavite Coastal Expressway. It will provide vital access to NAIA Terminals 1, 2, & 3. Economic zones in Cavite Province will benefit for easier and faster transportation of their products to NAIA as well as to Manila Port through this link and NLEx-SLEx Link Expressway.

L = 4.9 km.
No. of Lanes = 4-lane

Note: Phase I completed.



NAIA EXPRESSWAY - Phase II

Estimated Average Traffic Volume and Toll Revenue

Year	Estimated Traffic Volume (pcu/day)	Toll Revenue (Million Pesos/day)
2015	66,200	2.44
2020	78,700	3.67
2030	97,400	8.93

Initial Project Cost

Unit: Million Pesos at 2010 Prices

Construction Cost	Engineering Cost	Admin. Cost	ROW Cost	Total
11,060	330	60	710	12,160

O & M Cost

Unit: Million Pesos at 2010 Prices

Routine Maintenance Cost per Year	6
Operation Cost per Year	28
Periodic Maintenance Cost at every 10 years	111

Economic Evaluation

EIRR	18%
NPV	817 Million Pesos
B/C	1.19

3) C-6 Expressway + Global City Link

Project Description

C-6 Expressway will function as a distributor of traffic coming from expressways in the north and south to appropriate location of Metro Manila. It will also contribute to sound urban development of Rizal and Bulacan Provinces. It starts from NLEx at Bocaue/Marilao boundary and traverses Sta. Maria, San Jose del Monte, Rodriguez, San Mateo, Antipolo, Taytay and Taguig and connected with Skyway at Bicutan. A Global City Link is a branch of C-6 Expressway and provide a vital access to mega commercial and business center of Global City.

a) North Section: L = 16.5 km.
b) East Section: L = 25.5 km.
c) South East & Global City Link: L = 24.5 km.
d) Total: L = 66.5 km.

No. of Lanes = 4-lane

C-6 EXPRESSWAY / GLOBAL CITY LINK

Estimated Average Traffic Volume and Toll Revenue

Year	Estimated Traffic Volume (pcu/day)		Toll Revenue (Million Pesos/day)	
	(d)	(c)	(d)	(c)
2015	66,200	74,200	10.27	4.27
2020	77,600	79,500	15.16	5.72
2030	88,900	84,600	28.50	9.98

Initial Project Cost

Unit: Million Pesos at 2010 Prices

	Construction Cost	Engineering Cost	Admin. Cost	ROW Cost	Total
(d)	44,080	3,550	1,290	5,350	54,270
(c)	21,300	1,740	640	2,630	26,310

O & M Cost

Unit: Million Pesos at 2010 Prices

	Section	
	(d)	(c)
Routine Maintenance Cost per Year	159	45
Operation Cost per Year	229	99
Periodic Maintenance Cost at every 10 years	1,489	350

Economic Evaluation

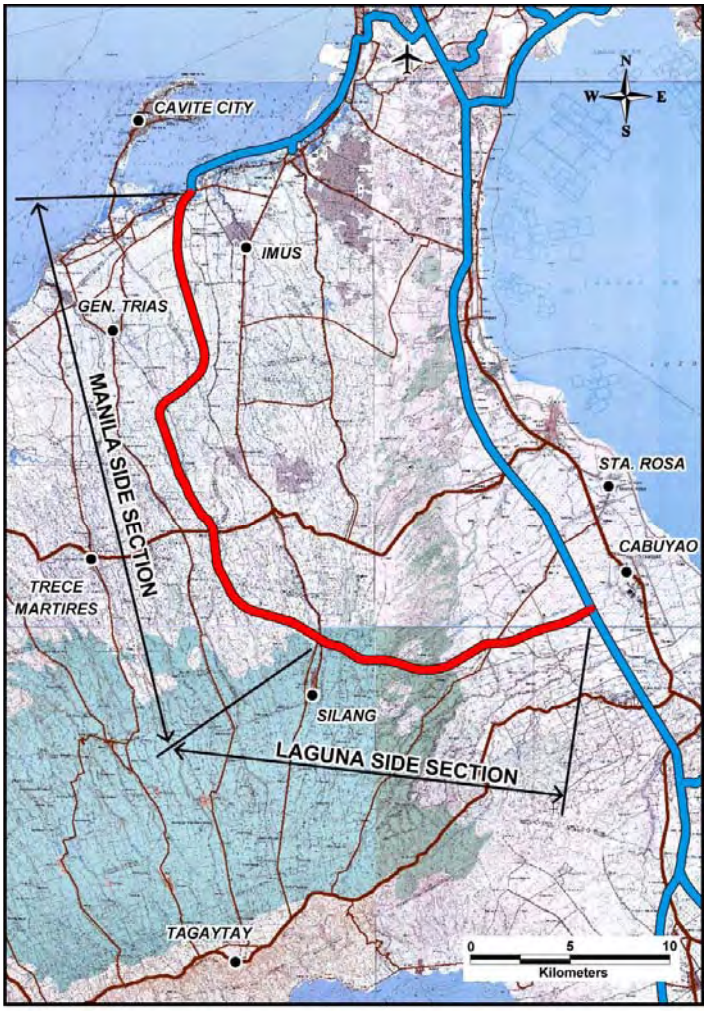
	Section	
	(d)	(c)
EIRR	32.7%	34.2%
NPV	28,747 M P	15,163 M P
B/C	2.43	2.58

4) CALA Expressway

Project Description

The project will provide vital access between various economic zones in Cavite Province and NAIA, Metro Manila Ports, Batangas Port and contributes for economic development and decongest traffic of Cavite roads, particularly Aguinaldo Highway. This is the extension of on-going Manila-Cavite Coastal Expressway Extension and ends at Silang, Cavite Province. It is an at-grade expressway.

Manila Side Section: L = 27.5 km.
Laguna Side Section: L = 14.3 km.
Total: L = 41.8 km.
No. of Lanes = 6-lane



CALA EXPRESSWAY

Estimated Average Traffic Volume and Toll Revenue

Year	Estimated Traffic Volume (pcu/day)	Toll Revenue (Million Pesos/day)
2015	59,700	5.90
2020	79,400	9.97
2030	100,200	20.32

Initial Project Cost

Unit: Million Pesos at 2010 Prices

Segment	Construction Cost	Engineering Cost	Admin. Cost	ROW Cost	Total
Manila Side Section	9,380	1,130	330	960	11,790
Laguna Side Section	6,430	770	230	450	7,880
Total	15,810	1,900	550	1,410	19,670

O & M Cost

Unit: Million Pesos at 2010 Prices

Routine Maintenance Cost per Year	98
Operation Cost per Year	111
Periodic Maintenance Cost at every 10 years	791

Economic Evaluation

EIRR	36.7%
NPV	13,704 Million Pesos
B/C	2.86

5) C-5/FTI/Skyway Connector Road

Project Description

The project will provide direct access to Food Terminal Inc (FTI) from both Skyway and C-5, thus FTI will be revitalized. At present, activities in FTI are depressed due to poor access. Once accessibility is provided, FTI can be developed as one of the advanced commercial and residential centers.

L = 3.0 km.
Total Length = 6.8 km (including ramps)
No. of Lanes = 2-lane to 4-lane

C-5/FTI/SKYWAY CONNECTOR ROAD

Estimated Average Traffic Volume and Toll Revenue

Year	Estimated Traffic Volume (pcu/day)	Toll Revenue (Million Pesos/day)
2015	39,900	0.81
2020	45,000	1.24
2030	47,400	2.31

Initial Project Cost

Unit: Million Pesos at 2010 Prices

Construction Cost	Engineering Cost	Admin. Cost	ROW Cost	Total
5,320	160	30	100	5,610

O & M Cost

Unit: Million Pesos at 2010 Prices

Routine Maintenance Cost per Year	5
Operation Cost per Year	13
Periodic Maintenance Cost at every 10 years	53

Economic Evaluation

EIRR	25.4%
NPV	1,387 Million Pesos
B/C	1.73

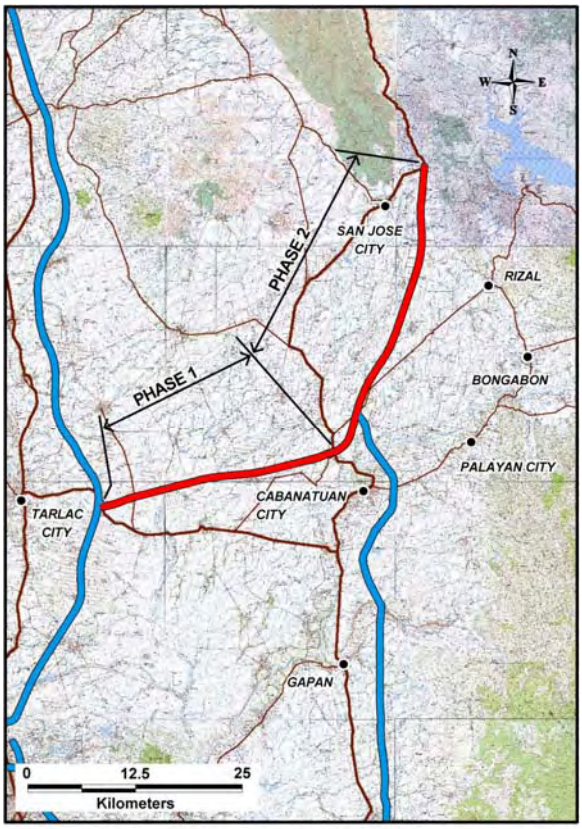
6) Central Luzon Expressway (CLEx)

Project Description

The project is to support development of regional urban centers and the Pacific Ocean Coastal areas in order to decrease overconcentration of socio-economic activities in Metro Manila. It will also decongest traffic at Daang Maharlika. In the long run, the project will distribute traffic on NLEx and NLEx-East when the latter is completed.

Phase I: Tarlac City to Cabanatuan City, L = 28.2 km.
Phase II: Cabanatuan City to San Jose City, L = 35.7 km.
Total: L = 63.9 km.

No. of Lanes = To be studied for 2-lane and 4-lane



CENTRAL LUZON EXPRESSWAY

Estimated Average Traffic Volume and Toll Revenue

Year	Estimated Traffic Volume (pcu/day)			Toll Revenue (Million Pesos/day)		
	Phase I + II (2-lane)	Phase I (2-lane)	Phase I (4-lane)	Phase I + II (2-lane)	Phase I (2-lane)	Phase I (4-lane)
2015	14,100	19,300	21,230	2.18	1.34	1.47
2020	15,100	21,300	23,430	2.94	1.86	2.05
2030	16,900	24,800	27,280	5.37	3.54	3.89

Initial Project Cost

Unit: Million Pesos at 2010 Prices

	Construction Cost	Engineering Cost	Admin. Cost	ROW Cost	Total
Phase I + II (2-lane)	15,770	2,910	620	1,440	20,740
Phase I (2-lane)	7,050	850	380	650	8,930
Phase I (4-lane)	10,850	1,300	380	650	13,180

O & M Cost

Unit: Million Pesos at 2010 Prices

	Phase I + II	Phase I (2-lane)	Phase I (4-lane)
Routine Maintenance Cost per Year	126	56	67
Operation Cost per Year	79	35	42
Periodic Maintenance Cost at every 10 years	789	353	424

Economic Evaluation

	Phase I + II	Phase I (2-lane)	Phase I (4-lane)
EIRR	16.0%	18.1%	11.2%
NPV	405 M. Pesos	595 M. Pesos	-1,003 M. Pesos
B/C	1.06	1.19	0.79

7) SLEx Extension

Project Description

The project is an extension of the existing SLEx from Sto. Tomas, Batangas Province to Lucena City, Quezon Province as well as Region V. it will contribute to socio-economic development of areas traversed and Region V. It will also decongest traffic at Daang Maharlika.

L = 47.8km.
No. of Lanes = 2-lane

SLEX EXTENSION

Estimated Average Traffic Volume and Toll Revenue

Year	Estimated Traffic Volume (pcu/day)	Toll Revenue (Million Pesos/day)
2015	20,200	2.39
2020	21,400	3.44
2030	23,900	7.12

Initial Project Cost

Unit: Million Pesos at 2010 Prices

Construction Cost	Engineering Cost	Admin. Cost	ROW Cost	Total
9, 070	1,680	280	380	11,410

O & M Cost

Unit: Million Pesos at 2010 Prices

Routine Maintenance Cost per Year	73
Operation Cost per Year	45
Periodic Maintenance Cost at every 10 years	454

Economic Evaluation

EIRR	29.7%
NPV	3,808 Million Pesos
B/C	1.98

8) Calamba – Los Baños Expressway

Project Description

The project vitally supports tourism development of Los Baños and its nearby tourism spots. It will also contribute to decongestion of national road. It will branches off from SLEx at Calamba and passes through Los Baños City and ends at Bay. It is proposed to be a combined structure of a flood control dike along Laguna de Bay and a Highway, thus two (2) purposes will be achieved.

L = 15.5 km.
No. of Lanes = 4-lane

CALAMBA-LOS BANOS TOLL EXPRESSWAY

Estimated Average Traffic Volume and Toll Revenue

Year	Estimated Traffic Volume (pcu/day)	Toll Revenue (Million Pesos/day)
2015	36,400	0.83
2020	40,200	1.38
2030	51,900	3.24

Initial Project Cost

Unit: Million Pesos at 2010 Prices

Construction Cost	Engineering Cost	Admin. Cost	ROW Cost	Total
5, 050	400	150	850	6,450

O & M Cost

Unit: Million Pesos at 2010 Prices

Routine Maintenance Cost per Year	25
Operation Cost per Year	40
Periodic Maintenance Cost at every 10 years	252

Economic Evaluation

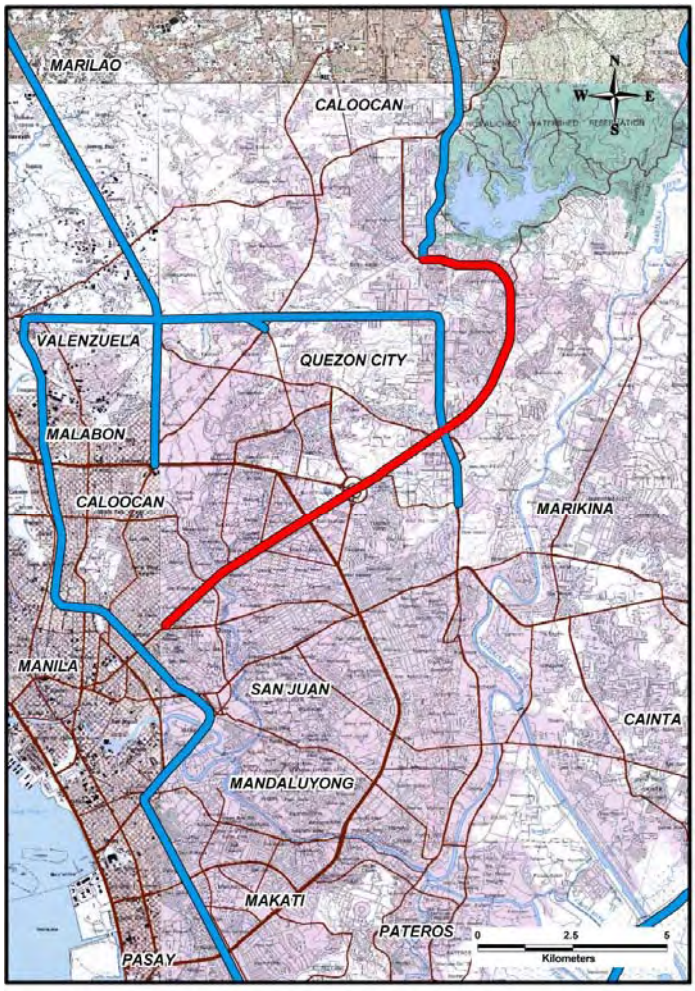
EIRR	20.4%
NPV	937 Million Pesos
B/C	1.38

9) R-7 Expressway

Project Description

The project will be constructed over one of the most heavily congested corridors in Metro Manila, namely Quezon Avenue and Don Mariano Marcos Avenue. It will connect Quezon City and Manila City with high speed transport facility, thus decongest traffic of at-grade road. It will be partially elevated and partially underground expressway

L = 16.1 km.
No. of Lanes = 4-lane



R-7 EXPRESSWAY

Estimated Average Traffic Volume and Toll Revenue

Year	Estimated Traffic Volume (pcu/day)	Toll Revenue (Million Pesos/day)
2015	82,100	6.64
2020	84,200	8.10
2030	88,300	14.82

Initial Project Cost

Unit: Million Pesos at 2010 Prices

Construction Cost	Engineering Cost	Admin. Cost	ROW Cost	Total
23, 980	720	120	1,000	25,820

O & M Cost

Unit: Million Pesos at 2010 Prices

Routine Maintenance Cost per Year	19
Operation Cost per Year	72
Periodic Maintenance Cost at every 10 years	240

Economic Evaluation

EIRR	25.5%
NPV	6,625 Million Pesos
B/C	1.75

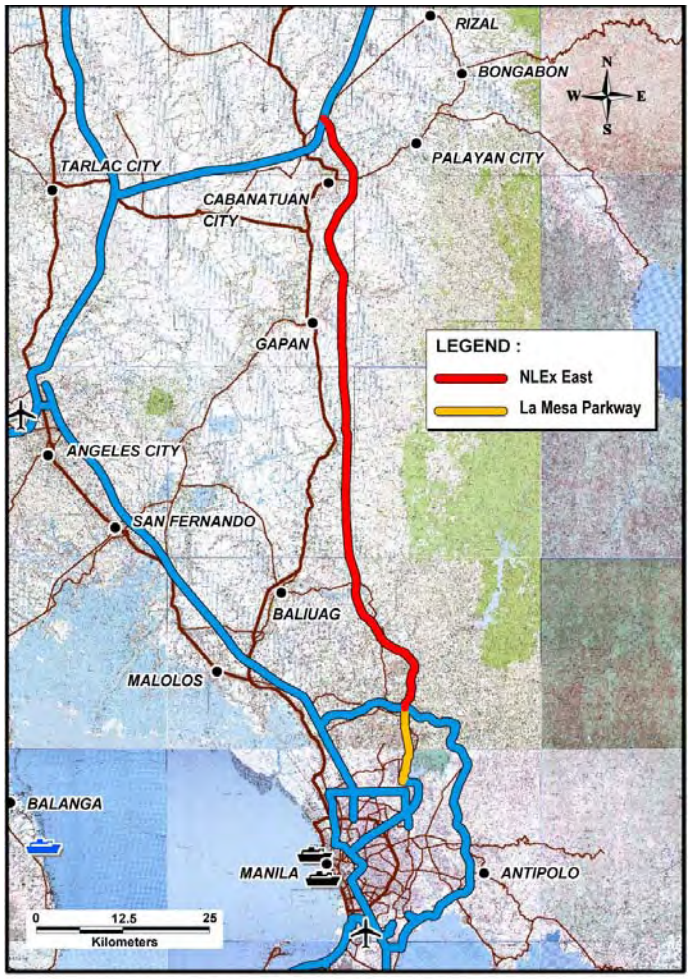
10) NLEx East & La Mesa Parkway

Project Description

The project will form an important transport axis in the eastern area of Region III. It will serve for the growing areas of Bulacan and Nueva Ecija Provinces. The project starts at Don Mariano Marcos Avenue in Quezon City, traverses almost parallel to Daang Maharlika, serving for areas of San Miguel, Gapan and Cabanatuan City. It will decongest traffic at Daang Maharlika.

La Mesa Parkway: L = 10.9 km.
NLEx East: Total L = 92.1 km.
Phase I, L = 30.1 km.
No. of Lanes = 4-lane

La Mesa Parkway and Phase I of NLEx East (Total L = 41.0 km) was studied.



NLEX EAST and LA MESA PARKWAY

Estimated Average Traffic Volume and Toll Revenue

Year	Estimated Traffic Volume (pcu/day)	Toll Revenue (Million Pesos/day)
2015	17,100	1.59
2020	23,300	2.84
2030	31,900	6.37

Initial Project Cost

Unit: Million Pesos at 2010 Prices

Construction Cost	Engineering Cost	Admin. Cost	ROW Cost	Total
13,420	1,450	450	450	15,770

O & M Cost

Unit: Million Pesos at 2010 Prices

Routine Maintenance Cost per Year	88
Operation Cost per Year	107
Periodic Maintenance Cost at every 10 years	671

Economic Evaluation

EIRR	21.3%
NPV	2,273 Million Pesos
B/C	1.39

7.7 PRE-BUSINESS CASE STUDY OF SELECTED 10 PROJECTS

Pre-business case study is presented in Section 8.4 of Chapter 8.

7.8 SECOND SCREENING

7.8.1 Objectives of the Second Screening

Objectives of the second screening is as follows;

OBJECTIVES OF SECOND SCREENING

OBJECTIVE

- To select and recommend about 3 PPP projects for possible ODA financing.

PRIORITIZATION FOCUS

- Thus, prioritization of projects under the second screening will focus on;
  - Projects which attract a private sector under a certain PPP modality profitability of projects should be focused.
  - ODA can be applicable to PPP modality selected for a project.

Selection of an appropriate PPP modality for each project is discussed in Section 8.4 of Chapter8. Applicability of Japan's ODA to each type of PPP modality is discussed in Chapter 9.

7.8.2 Prioritization Criteria for Second Screening

(1) Prioritization Criteria for PPP Projects of Previous Study

Table 7.8.2-1 shows the criteria used by the PEGR Study.

TABLE 7.8.2-1 MULTI CRITERIA FOR PRIORITIZATION OF PPP PROJECTS BY PEGR STUDY

	Criteria/Assessment Max. Score=15, Min. = 0	**Higher Score** Score: 10 to 15	**Moderate Score** Score: 5 to 9	**Lower Score** Score: 0 to 4	**Proposed Weight**	**Adjusted to 100**
1	Financial Feasibility/ Fiscal Support	Viable:>20%; and No fiscal support	Marginal 14-20%; and Limited fiscal support	Not viable <14%; High fiscal support	14	9.4
2	Readiness and Risk	Few major issues/ risks and Project 'Ready'	Identified risks but largely can be mitigated and can be made 'Ready'	Many risks, few can be mitigated sufficiently and project not ready	15	10.0
3	Socio Economic Benefits (including employment and poverty alleviation) For all Projects EIRR should be more than 15%	Major Macro Impact	Moderate Macro Impact	Minor Macro Impact	10	6.7
4	Regional Development/ National Integration Contribution to GDP	Impact on Low GRDP provinces and/or High Poverty alleviation focus	Impact on Low-Medium GRDP provinces and/or medium poverty alleviation focus	Impact on High GRDP provinces and/or Low Poverty alleviation focus	5	3.3
5	Sector Network Role and Importance in Sector Plan	Forms integral part and already included	Part of Sector Plan	Ad hoc project-but not in conflict with sector plan	12	8.0
6	National Security/ National Integration	Strengthens National security/ integration	Medium Impact	Low Impact	0	0
7	Land Acquisition	All/Most land acquired (Say 85-100%)	Some land acquired (25%-85%)	None or little land acquired (<25%)	11	7.3
8	Environmental Impacts	Few Issue/Low impact	Some Issues/Mid impact	Many Issues/Severe impact	10	6.7
9	Involuntary Resettlement	a. Few affected	b. Mid. affected	c. Many affected	11	7.3
10	Impact on Export Earnings	Major overseas trade and/or tourism impact:	Limited o'seas trade or tourism impact	Little o'seas Trade or tourism impact	5	3.3
11	Safety	High Safety Focus	Moderate Safety Focus	Low Safety Focus	12	8.0
12	Project Type/Cost	Primary Infrastructure; >$100m.	Medium scale Infrastructure; $100m-$50m	Operational/ Maintenance <$50m	15	10.0
13	a) Demand Growth % or b) Traffic Volume	a. >15% pa b. High	a.15%-5% pa b. Average	<5% pa Low	15	10.0
14	Capacity Expansion	High Expansion	Medium Expansion	Low Expansion	12	8.0
15	Meets Other Specific Needs; Industry/ Agriculture/Mineral Resources, etc.	Allows Specific Major need to be met	Medium	Low	3	2.0
				Total	150	100

Source: PEGR Study

(2) Prioritization Criteria of PPP Projects Under This Study

With reference to prioritization criteria of PEGR Study and with due discussion with the Technical Working Group, the prioritization criteria of PPP projects under this Study was established.

Three (3) major priority evaluation categories were established as follows;

PRIORITY EVALUATION CATEGORY

Category	Weight
• Necessity & Urgency	40
• Profitability	30
• Implementability	30
Total	100

Evaluation items for each category and weight to given each evaluation item was established as shown in **Table 7.8.2-2**.

a) Necessity & Urgency of Project: 40 points

a-1) <u>Economic Viability: 15 points</u>

Economic viability is a key indicator to judge if a project should be implemented or not. The Government is adopting 15% as an opportunity cost, thus when a project has less than 15% of EIRR, the project should be cancelled or deferred.

In view of above, EIRR was given the highest points and this item was evaluated as follows:

EIRR over 25%	- - - - - - - - - - - - - - - -	15 points
15% ~ 25%	- - - - - - - - - - - - - - - -	12 points
Less than 15%	- - - - - - - - - - - - - - - -	5 points

a-2) <u>Functional Importance of the Highway: 6 points</u>

A highway with higher functional hierarchy in the highway network should be developed, if other conditions permit. Projects were classified into the following categories;

Functional Classification			Weight
T – 1:	Backbone Road	- - - - - - - - - - - - -	6.0
T – 2:	Distributor Road	- - - - - - - - - - - - -	4.0
T – 3:	Branch of Backbone Road	- - - - - - - - - - - - -	2.0
T – 4:	Independent Road	- - - - - - - - - - - - -	1.0

TABLE 7.8.2-2 PROJECT PRIORITIZATION CRITERIA FOR 2ND SCREENING

Category	Evaluation Item	Wt.	Evaluation Indicator	Evaluation Details
Necessity & Urgency of Project	• Economic Viability	**15**	• EIRR (%)	EIRR Over 25% = 15 15~25% = 12 Less than 15% = 5
	• Functional Importance of the Highway	**6**	• Functional Classification	Backbone Road = 6.0 Distributor Road = 4.0 Branch of Backbone Road = 2.0 Independent Road = 1.0
	• Contribution to National/Regional Economic Development	**2**	• Major Existing and Potential industries along the corridor	Agro-fishery Industry = 1.0 Manufacturing Industry = 1.0 Business/Commercial Industry = 1.0 Tourism Industry = 1.0 (Two or more industries = add weights, Max = 2.0 points)
	• Contribution to National/Regional Social Development	**3**	• Contribution to poverty alleviation	Serving for the areas (including hinter-lands) currently depressed/underdeveloped. Poverty incidence over 30% = 3.0 Poverty incidence between 20-30% = 2.0 Poverty incidence less than 20% =1.0
	• Urgency Based on Contribution to Traffic Decongestion	**6**	• Represented by Reduction of Travel Time in pcu-hour/day	Over 4,000 pcu-hour/day = 6.0 1,000 ~ 4,000 pcu-hour/day = 4.0 Less than 1,000 pcu-hour/day = 2.0
	• DPWH Priority/ Project Readiness	**8**	• Current Project Status	D/D On-going/Completed = 8.0 F/S Completed/On-going/Committed = 7.0 Pre-F/S Completed/On-going/Committed = 5.0 Conceptual Stage = 2.0
[40]				
Profitability	• SPC's Profitability	**10**	• IRR for SPC	Over 20% = 10.0 15% ~ 20% = 9.0 13% ~ 15% = 8.0 Less than 13% = 4.0
	• Equity Investor's Profitability	**3**	• Equity-IRR	Over 20% = 3.0 15% ~ 20% = 2.0 13% ~ 15% = 1.0 Less than 13% = 0
	• Relief of Government's Financial Burden	**10**	• Amount of Cost Saved by the Government	Over 50% = 10.0 40% ~ 50% = 8.0 30% ~ 40% = 6.0 Less than 30% = 4.0
	• Potential Project Cost Risk (cost increase by 10%)	**3**	• SPC-IRR	Over 20% = 3.0 15% ~ 20% = 2.0 13% ~ 15% = 1.0 Less than 13% = 0
	• Potential Revenue Risk (revenue decrease by 10%)	**4**	• SPC-IRR	Over 20% = 4.0 15% ~ 20% = 3.0 13% ~ 15% = 1.0 Less than 13% = 0
[30]				
Implementability	• ROW Acquisition Difficulty	**10**	• Land Area to be Acquired by Land Use	<u>Urban Land</u> Less than 5.0 ha = 10.0 5.0 ~ 10.0 ha = 7.0 10.0 ~ 20.0 ha = 4.0 Over 20 ha = 2.0 <u>Rural Land</u> Less than 50.0 ha = 10.0 50 ~ 100.0 ha = 7.0 100.0 ~ 200.0 ha = 4.0 Over 200.0 ha = 2.0
	• Social Impact	**10**	• No. of Structures Affected	Less than 200 = 10.0 200 ~ 400 = 7.0 400 ~ 800 = 4.0 Over 800 = 2.0
	• Natural Environment	**5**	• Pass near environmentally critical area	• Does not pass near environmentally critical area = 5.0 • Passes near environmentally critical area = 2.0
	• Construction Difficulty	**5**	• Location of Project Site, Working Space During Construction and Type of Work Required	Rural/ at-grade = 5.0 Urban/ at-grade = 2.0 Urban/ Elevated = 1.0
[30]				
Total [100]		**100**		

Source: JICA Study Team

a-3) Contribution to National/Regional Economic Development: 2 points

This item was evaluated by the major existing and potential industries along the corridor.

• Agro-fishery Industry	1.0 point
• Manufacturing Industry	1.0 point
• Business/Commercial Industry	1.0 point
• Tourism Industry	1.0 point

When two or more industries are existing or will be expected, 2.0 points were given.

a-4) Contribution to National/Regional Social Development: 3 points

This item was evaluated by project's contribution to poverty alleviation. When a project serves for the depressed areas/underdeveloped areas including hinter lands which was judged by "Poverty Incidence" (2006), it was given higher points.

Over 30%	3.0 points
Between 20 – 30%	2.0 points
Less than 20%	1.0 points

Poverty Incidence of area in 2006 was as follows;

Area	Poverty Incidence (%)	
NCR	9.2 to 11.0, Average	10.4
CAR	11.1 to 63.1, Average	34.5
Region I	21.2 to 35.0, Average	32.7
Region II	16.7 to 30.7, Average	25.5
Region III	10.5 to 37.7, Average	20.7
Region IV-A	8.9 to 47.7, Average	20.9
Region V	46.2 to 59.5, Average	51.1

a-5) Urgency Based on Contribution to Traffic Decongestion: 6.0 points

This item was represented by an indicator of "Reduction of Travel Time" in pcu-hour/day. When high travel time reduction due to a project, it contributes to traffic congestion.

Travel Time Reduction in PCU-hour/day	Weight
Over 4,000	6.0
1,000 – 4,000	4.0
Less than 1,000	2.0

a-6) DPWH Priority/Project Readiness: 8.0 points

Project readiness shows DPWH's implementation priority. A project of which preparation is progressed; it should be implemented ahead of other projects with no preparation.

Project Readiness	Weight
Detailed Design on-going/completed	8.0 points
F/S Completed/on-going/committed	6.0 points
Pre-F/S Completed/on-going/committed	4.0 points
Conceptual Stage	2.0 points

b) Profitability: 30 points

b-1) SPC's Profitability: 10 points

Private investors are only interested when IRR for SPC is higher than the weighted average of capital cost (WACC). WACC under this study was set at 11.5%. When IRR for SPC is higher than the 11.5%, private investors will be encouraged to participate in the project. Therefore, this indicator is one of the key factors to be evaluated in the prioritization evaluation. Private investors also consider some revenue, construction cost, and other risks which will reduce IRR for SPC. Thus, 13% of IRR for SPC was set to be the border line under this study.

IRR for SPC	Weight
Over 20%	10 points
15 – 20%	9 points
13 – 15%	8 points
Less than 13%	4 points

b-2) Equity Investor's Profitability: 3 points

Equity investors usually require 15 to 20% return or dividend. In general, when IRR for SPC is high, Equity IRR is also high, thus 3 points were given to this indicator in order to avoid over-evaluation of profitability in the prioritization evaluation.

Equity IRR	Weight
Over 20%	3 points
15 – 20%	2 points
13 – 15%	1 points
Less than 13%	0 points

b-3) Relief of Government's Financial Burden: 10 points

One of the objectives of PPP projects is to reduce the Government's financial burden. In order to attract the Private Sector to public infrastructure projects, various Governments' financial supports are planned in the Pre-Business Case Study. To increase the Private Investor's profitability and the Government financial support (GFS) are somewhat in the-++ relation of tradeoff. In order to increase the private sector's profitability, the Government needs to increase GFS which less achieves the Government's objective of reducing the Government's financial burden. Under PPP projects, both items, namely the private sector's profitability and reduction of Government's cost was computed as follows;

(Reduction of Government Cost) = (Cost when all done by the Government) –
(Government Cost under proposed PPP Modality)

Costs were discounted at the rate of 15% per annum to get present value.

Relief of Government's Financial Burden	Weight
Over 50%	10.0
40 – 50%	8.0
30 – 40%	6.0
Less than 30%	4.0

b-4) Potential Project Cost Risk : 3 points

One of the major potential risks is an increase in project cost, particularly construction cost. In the pre-business case study, impact on IRR for SPC was tested when construction cost is increased by 10%.

Potential Project Cost Risk (IRR for SPC when the Construction Cost Increased by 10%)		Weight
IRR for SPC	Over 20%	3.0
	15 – 20%	2.0
	13 – 15%	1.0
	Less than 13%	0

b-5) Potential Revenue Risk : 4 points

Another major risk is revenue reduction during O & M period. In the pre-business case study, impact on IRR for SPC was tested when revenue is reduced by 10%.

Potential Revenue Risk (IRR for SPC when revenue decreased by 10%)		Weight
IRR for SPC	Over 20%	4.0
	15 – 20%	3.0
	13 – 15%	1.0
	Less than 13%	0

c) Implementability : 30 points

c-1) ROW Acquisition Difficulty : 10 points

One of the major bottlenecks in the implementation of infrastructure project is ROW acquisition. This item was evaluated by the land area to be acquired.

Land acquisition in urban area is more difficult than rural area due to more claimants as lands are subdivided into small lots, shops/factories/offices involved, high land value, etc.

Land Area to be Acquired		Weight
Urban Area		
	Less than 5.0 ha.	10.0
	5.0 ~ 10 ha.	7.0
	10.0 ~ 20.0 ha.	4.0
	Over 20.0 ha.	2.0
Rural Area		
	Less than 200 ha.	10.0
	200 ~ 400 ha.	7.0
	400 ~ 800 ha.	4.0
	Over 800 ha.	2.0

c-2) Social Impact : 10 points

Relocation of project affected persons (PAPs) is another bottleneck in the implementation of infrastructure projects.

At this stage of the project preparation, it is difficult to estimate number of PAPs, thus, number of affected structures was estimated based on the available satellite photos, thus, number of affected structures was used as an index to evaluate this item.

No. of Affected Structures	Weight
Less than 200	10.0
200 ~ 400	7.0
400 ~ 800	4.0
Over 800	2.0

c-3) Natural Environment : 5 points

Road alignment planned in this stage is still tentative. During the feasibility study, an alignment study should be undertaken and select the most optimum alignment.

This item was evaluated whether an alignment passes near an environmentally critical area or not.

Natural Environment	Weight
• The project does not pass near an environmentally critical area	5.0
• The project passes near an environmentally critical area	2.0

c-4) Construction Difficulty : 5 points

When a project is located in the urban area and existing road/rail ROW is used, construction work becomes more difficult than those located in the rural area, since construction work must be executed within the limited construction space and also avoiding existing traffic to be hampered.

Type of work required such as construction of elevated structure or construction of at-grade road also affect constructability.

Location of Project / Type of Work Required	Weight
Rural Area / At-grade road	5.0
Urban Area / At-grade road	2.0
Urban Area / Elevated road	1.0

7.8.3 Data Necessary to Evaluate Project Priority in the Second Screening

Data necessary to evaluate project priority in the second screening are summarized in Section 7.6.5 of Chapter 7 and Section 8.4 Pre-Business Case Study of Chapter 8.

7.8.4 Project Priority in the Second Screening

In accordance with the prioritization criteria and data necessary to evaluate priority, 10 projects were evaluated their priority as shown in **Table 7.8.4-1** and summarized in **Table 7.8.4-2.**

TABLE 7.8.4-1 EVALUATION OF PRIORITY : SECOND SCREENING

			Weight	1.NS-Link		2.NAIA Phase2		3.C-6 (SE section)		4.CALA Expressway		5.CLEx Phase-1		6.Calamba Los Banos		7.SLEx ext.		8.NLEx-East+ La Mesa Prkwy		9.FTI Connector		10.R-7 Exp	
				Indicator	Point	Indicator	Point	Indicator	Point	Indicator	Point	Indicator	Point	Indicator	Point	Indicator	Point	Indicator	Point	Indicator	Point	Indicator	Point
Neccesity &Urgenct	1	EIRR(%)	15.0	29.1%	**15.0**	18.0%	**12.0**	34.2%	**15.0**	36.7%	**15.0**	18.1%	**12.0**	20.4%	**12.0**	29.7%	**15.0**	21.3%	**12.0**	25.4%	**15.0**	25.5%	**15.0**
	2	Road Function Type	6.0	T-1	**6.0**	T-2	**4.0**	T-1	**6.0**	T-2	**4.0**	T-2	**4.0**	T-3	**2.0**	T-1	**6.0**	T-1	**6.0**	T-3	**2.0**	T-4	**1.0**
	3	National/ Regional Economic Development	2.0		**2.0**		**2.0**		**1.0**		**2.0**		**1.0**		**2.0**		**1.0**		**1.0**		**1.0**		**1.0**
	4	National/ Regional Social Development	3.0		**1.0**		**1.0**		**1.0**		**1.0**		**3.0**		**1.0**		**3.0**		**2.0**		**1.0**		**1.0**
	5	Urgency Based on Contribution to Decongestion(PCU/hr/day)	6.0	4,969	**6.0**	2,549	**4.0**	4,681	**6.0**	1,549	**4.0**	564	**2.0**	940	**2.0**	806	**2.0**	617	**2.0**	4,060	**6.0**	3,923	**4.0**
	6	DPWH Priority/Project Readiness	8.0	F/S	**7.0**	PreF/S	**5.0**	F/S	**7.0**	F/S	**7.0**	F/S	**7.0**	PreF/S	**5.0**	PreF/S	**5.0**	PreF/S	**5.0**	D/D	**8.0**	Concept	**2.0**
Profitability	7	SPC IRR (%)	10.0	17.0%	**9.0**	16.8%	**9.0**	15.1%	**9.0**	19.1%	**9.0**	23.4%	**10.0**	11.7%	**4.0**	14.6%	**8.0**	11.7%	**4.0**	11.6%	**4.0**	14.8%	**8.0**
	8	Equity IRR (%)	3.0	20.4%	**3.0**	19.8%	**2.0**	17.3%	**2.0**	24.6%	**3.0**	23.4%	**3.0**	11.8%	**0.0**	16.3%	**2.0**	11.6%	**0.0**	11.5%	**0.0**	16.8%	**2.0**
	9	Amount of Reduction of Government Burden	10.0	40.3%	**8.0**	48.4%	**8.0**	32.9%	**6.0**	58.7%	**10.0**	12.4%	**4.0**	48.4%	**8.0**	53.6%	**10.0**	38.1%	**6.0**	51.1%	**10.0**	50.0%	**10.0**
	10	Project Cost Risk,IRR(%)	3.0	16.0%	**2.0**	15.8%	**2.0**	14.1%	**1.0**	18.0%	**2.0**	18.5%	**2.0**	10.9%	**0.0**	13.7%	**1.0**	10.8%	**0.0**	10.8%	**0.0**	13.9%	**1.0**
	11	Revenue Risk,IRR(%)	4.0	15.8%	**3.0**	15.7%	**3.0**	13.8%	**1.0**	17.7%	**3.0**	14.5%	**1.0**	10.5%	**0.0**	13.3%	**1.0**	9.9%	**0.0**	10.6%	**0.0**	13.7%	**1.0**
Implementability	12	ROW Acquisition(ha)	10.0	1.5	**10.0**	1.2	**10.0**	162.0	**2.0**	255.0	**2.0**	162.0	**4.0**	64.0	**7.0**	240.0	**2.0**	308.2	**2.0**	0.5	**10.0**	0.8	**10.0**
	13	Social Impact(no. structure)	10.0	410	**4.0**	200	**7.0**	430	**4.0**	240	**7.0**	100	**10.0**	130	**10.0**	200	**7.0**	640	**4.0**	40	**10.0**	30	**10.0**
	14	Natural Impact	5.0	Not impact	**5.0**	Not impact	**5.0**	Lagna de Bay	**2.0**	Not impact	**5.0**	Not impact	**5.0**	Lagna de Bay	**2.0**	Not impact	**5.0**	Not impact	**5.0**	Not impact	**5.0**	Not impact	**5.0**
	15	Construction Difficulty	5.0	Urb_El	**1.0**	Urb_El	**1.0**	Urb_at	**2.0**	Rur_at	**5.0**	Rur_at	**5.0**	Rur_at	**5.0**	Rur_at	**5.0**	Rur_at	**5.0**	Urb_El	**1.0**	Urb_El	**1.0**
Total			**100.0**		**82.0**		**75.0**		**65.0**		**79.0**		**73.0**		**60.0**		**73.0**		**54.0**		**73.0**		**72.0**
Ranking				**1st**		**3rd**		**8th**		**2nd**		**4th**		**9th**		**4th**		**10th**		**4th**		**7th**	

Source: JICA Study Team

TABLE 7.8.4-2 PRIORITY OF PROJECT IN THE SECOND SCREENING

Priority Order	Points Obtained	Project Name	Type of PPP	Remarks
1	82.0	NLEx – SLEx Link Expressway	Type-3 + Type-5 for GRP Segment	• MNTC submitted an unsolicited proposal in April, 2010. • DPWH accepted subject to submission of some more information. • Under evaluation by DPWH.
2	79.0	CALA Expressway	Type-3 + Type-5 for GRP Segment	• World Bank provides technical assistance for F/S and tendering for Manila side segment. • F/S of southern segment was done by JICA in 2006.
3	75.0	NAIA Expressway (Phase-2)	Type-2	• Pre-F/S undertaken by AREA/METI, Japan in 2010.
4	73.0	CLEx Phase-1 (2-lane)	Type-5	• F/S completed in 2010 by DPWH utilizing Yen Loan.
4	73.0	SLEx Extension (to Lucena City)	Type-3 + Type-5 for GRP Segment	• SLTC announced to start Detailed Design.
4	73.0	C-5 / FTI / Skyway Connector Road	Type-2	• Detailed Design on-going by DPWH. • The Government is trying to sell property of Food Terminal Inc. (FTI).
7	72.0	R-7 Expressway	Type-2	• Needs more comprehensive study including introduction of BRT system and urban rail system.
8	65.0	C-6 Expressway, South-East Section	Type-3 + Type-5 for GRP Segment	• North section will be constructed by MRT-7 consortium. • KOICA will undertake the remaining section from August, 2010.
9	60.0	Calamba – Los Baños Expressway	Type-5	• PEGR undertook business case study in 2008. • Needs coordination with a plan to construct flood control dike. Expressway and dike can be a combined structure.
10	54.0	NLEx East + La Mesa Parkway	Type-3	• La Mesa Parkway - Unsolicited proposal submitted to MWSS by AUSPhil Tollways Corp. (ATC) in 2001. - Original proponent status given to ATC in 2007.

7.8.5 Selection of Projects for ODA Funding

There are two (2) kinds of selection methods as follows:

Case-1 : Select projects in accordance with the priority.
Case-2 : Select one priority project from each type of PPP modality.

1) Case-1 : Select Projects in accordance with the Priority.

Top four (4) priority projects are listed in **Table 7.8.5-1** with their surrounding conditions.

TABLE 7.8.5-1 SELECTION OF PROJECTS UNDER CASE-1

Project Name	Score	Rank	Recommendation	Remarks
• NLEx-SLEx Link Expressway	82.0	1	△	• Should wait for DPWH evaluation of unsolicited proposal • If unsolicited proposal is approved, ODA fund cannot be used due to Philippine BOT Law
• CALA Expressway	79.0	2	⓪ (Recommended)	• Coordination with WB needed • Financing south section is possible
• NAIA Expressway (Phase-2)	75.0	3	⓪ (Recommended)	• ODA financing can be used for Government Support Fund
• CLEx, Phase I (2-lane)	73.0	4	⓪ (Recommended)	• ODA financing can be used for design/construction by GRP
• SLEx Extension (to Lucena City)	73.0	4	△	• Should wait SLTC's action for Detailed Design
• C-5/FTI/Skyway Connector Road	73.0	4	△	• Better wait for further situation development • If the Government can sell FTI property to the private sector, proposed alignment may not suit to the private sector's plan.

2) Case-2 : Select One Priority Project From Each Type of PPP Modality

Priority of projects by each type of PPP modality and recommendation is as follows:

TYPE-2: BOT WITH GOVERNMENT SUBSIDY/ GOVERNMENT SUPPORT FUND

Project Name	Score	Rank	Recommendation	Remarks
• NAIA Expressway (Phase-2)	75.0	3	⓪ (Recommended)	• See **Table 7.8.4-2**
• C-5/FTI/Skyway Connector Road	73.0	4	△	• See **Table 7.8.4-2**
• R-7 Expressway	72.0	7	△	• See **Table 7.8.4-2**

TYPE-3: SEGMENT DIVIDING SCHEME

Project Name	Score	Rank	Recommendation	Remarks
• NLEx-SLEx Link Expressway	82.0	1	△	• See **Table 7.8.4-2**
• CALA Expressway	79.0	2	◎ (Recommended)	• See **Table 7.8.4-2**
• SLEx Extension (to Lucena City)	73.0	4	△	• See **Table 7.8.4-2**
• C-6 Expressway (South-East Section)	65.0	8	△	• See **Table 7.8.4-2**
• NLEx East/La Mesa Parkway	54.0	10	△	• See **Table 7.8.4-2**

TYPE-5: LEASE SCHEME

Project Name	Score	Rank	Recommendation	Remarks
• CLEx Phase 1 (2-lane)	73.0	4	◎ (Recommended)	• See **Table 7.8.4-2**
• Calamba-Los Baños Expressway	60.0	9	△	• See **Table 7.8.4-2**

Recommendations are summarized hereunder and both Case-1 and Case-2 show that the same projects are recommended.

RECOMMENDED PROJECTS FOR POSSIBLE ODA FUNDING

PPP Modality	Recommended Project
Type-2 : BOT with Government subsidy/ Government Support Fund	• NAIA Expressway (Phase II)
Type-3 : Segment Dividing Scheme	• CALA Expressway
Type-5 : Lease Scheme	• CLEx Phase-1 (2-lane)

CHAPTER 8

PPP MODALITY AND ITS APPLICATION

CHAPTER 8
PPP MODALITY AND ITS APPLICATION

8.1 DEFINITION AND OBJECTIVES OF PPP

8.1.1 Definition of PPP

Definition of PPP was cited from "The Public-Private Partnership Handbook" (2008, ADB) as follows:

DEFINITION OF PPP

The term "Public-Private Partnership (PPP)" describes a range of possible relationship among public and private entities in the context of infrastructure and other services.

8.1.2 Objectives of PPP

Objectives of PPP are as follows:

OBJECTIVES OF PPP

1) Mobilization of Private Capital

- To deliver required public services to people as early as possible by mobilizing private capital, and to reduce the public sector's financial burden.
- The end of the private sector in entering into a PPP is to seek compensation for its services through fees for service rendered, resulting in an appropriate return on capital.

2) Tool for Greater Efficiency

- The public sector has rather few incentives for efficiency structures into its organization and process and is rather poorly positioned to efficiently build and operate infrastructure.
- The private sector, however, enters into an investment with the clear goals of maximizing profits by increased efficiency in investment and operations with full utilization of the private sector's know-how and skills.

8.1.3 PPP Modalities

There are many PPP modalities. Image of PPP structure is shown in **Figure 8.1.3-1.**

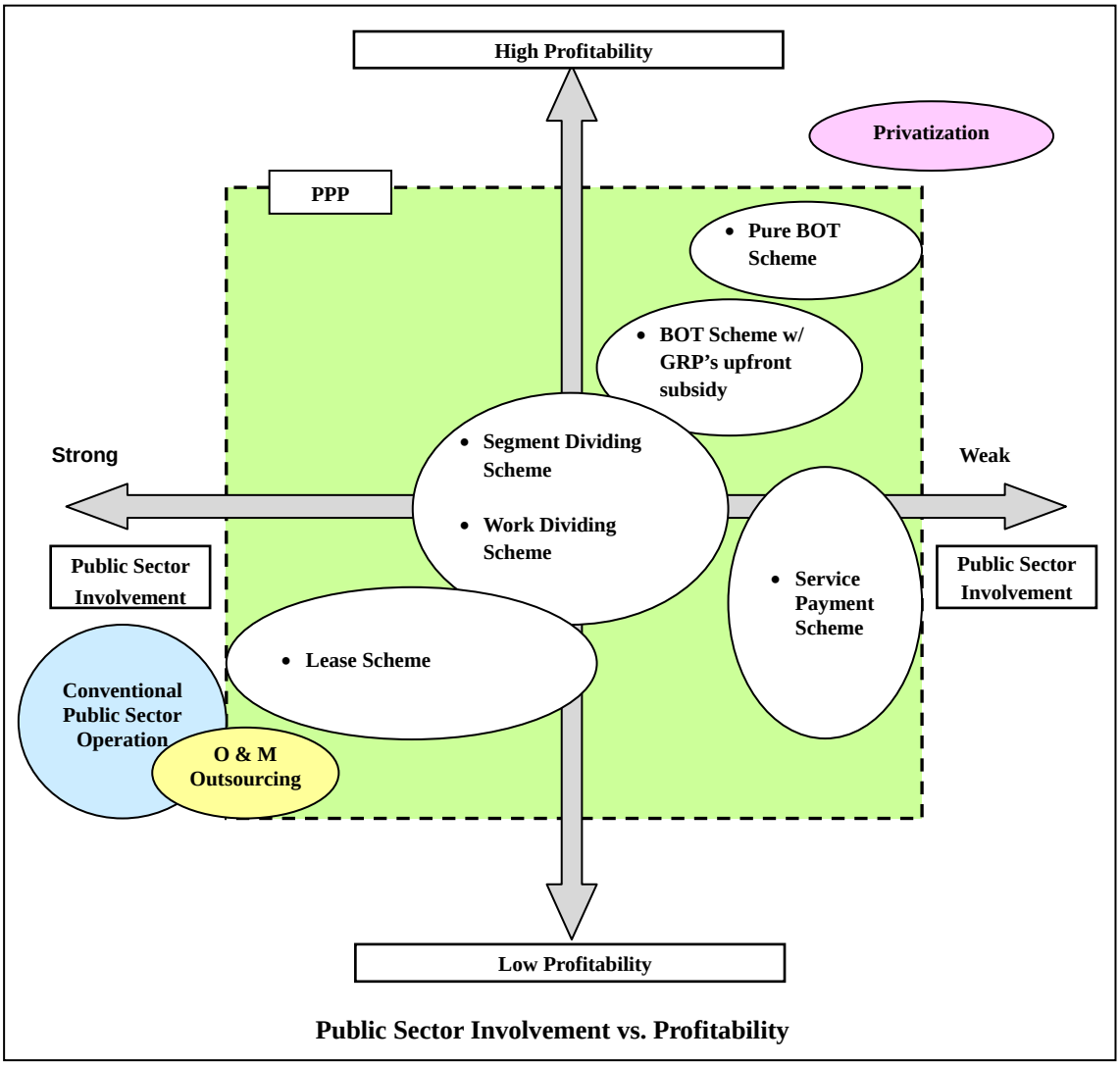


FIGURE 8.1.3-1 IMAGE OF PPP STRUCTURE

8.2 PPP MODALITIES

8.2.1 Basic Types of PPP Modality

There are many types of modality. In this report, various types of PPP modality were classified into five (5) basic types as shown in **Table 8.1.1-1.**

TABLE 8.2.1-1 BASIC TYPES OF PPP MODALITY

	Responsibility		Examples in the Philippines
	GRP	Private Sector	
Type-1: Pure BOT Type	• ROW Acquisition	• Design, construction and O & M • Financing of above. • Investments will be recovered by toll revenue • Revenue Risk (Note-1)	• Rehabilitation/ Widening of: - NLEx - SLEx - Manila-Cavite Expressway • Construction of : - Skyway I & II - Manila-Cavite Expressway Extension
Type-2: BOT Type with GRP Subsidy/ Financial Support	• ROW Acquisition • GRP provides up-front subsidy (max. is 50% of project cost), or government financial support (GFS)	• Design, Construction and O & M. • Financing of above with GRP subsidy or GFS. • Investment will be recovered by toll revenue. • Revenue Risk (Note-1)	• TPLEx
Type-3: Segment Dividing Type (Project is divided into GRP Segment and Private Segment)	• ROW Acquisition of both segments • Design and construction of GRP segment. • GRP segment will be leased to the private sector at the lease fee of 0-100% of GRP Expenditure.	• Design and Construction of the Private Segment. • O & M of both segments. • Financing of above. • Investments will be recovered by toll revenue of both segments. • Private sector pays lease fee to GRP. • Revenue Risk (Note-1)	• STAR
Type-4: Service Payment Type	• ROW Acquisition • During O & M period, GRP will pay to the private sector service fee for the private sector to recover its investments. • Toll revenue usually turned over to GRP. If toll revenue is not enough to pay service fee, GRP adds subsidy. • Revenue Risk	• Design, Construction and O & M. • Financing of above. • Receive service fee annually to recover investments.	• MRT-3 (O & M by GRP)
Type-5: Lease Type	• ROW Acquisition • Design and Construction	• O & M • The private sector leases the facility from GRP. • Lease fee ranges from 0-100% of GRP expenditure. • Revenue Risk (Note -1)	• Original NLEx and SLEx • SCTEx

Note-1: Revenue risk can be shared with GRP by adopting minimum revenue guarantee, etc.
Source: JICA Study Team

8.2.2 Variation of Basic Types of PPP Modality

Variations of basic types of PPP modality are shown in **Table 8.2.2-1.** Please be noted that there are also combinations of basic types and variation of basic types.

TABLE 8.2.2-1 VARIATION OF BASIC TYPES OF PPP MODALITY

<table>
<tr><th>PPP Modality</th><th>Variation of Basic Types of PPP Modality</th></tr>
<tr><td>Type-1:
Pure BOT Type</td><td>
• Build-Operate-and-Transfer (BOT)
• Build-and-Transfer (BT) ⟶ Type-4 in this study
• Build-Own-and-Operate (BOO)
• Build-Lease-and Transfer (BLT) ⟶ Type-4 in this study
• Build-Transfer-and Operate (BTO) ⟶ Type-4 in this study
• Contract-Add-and-Operate (CAO)
• Develop-Operate-and-Transfer (DOT)
• Rehabilitate-Operate-and-Transfer (ROT)
• Rehabilitate-Own-and-Operate (ROO)
Note: Build, Develop, Rehabilitate → by the Private
Operate → by the Private
Contract – Add → to the Private
Lease → lease to the Public
Source: RA 7718
</td></tr>
<tr><td>Type-2:
BOT Type with GRP Subsidy/Financial Support</td><td>
• In case of Two Step Loan (TSL), if foreign exchange risk is shouldered by GRP, it will be subsidy.
• Revenue Guarantee Scheme by GRP is classified as Type-4. If revenue is not enough to pay service fee, GRP has to use subsidy.
</td></tr>
<tr><td>Type-3:
Segment Dividing Type</td><td>
• Similar one is Work Dividing Type.
<u>Example</u>
Case-1: Elevated Expressway
• Construction of foundation and substructure by GRP
• Construction of superstructure & others by Private Sector.
Case-2: Railway Project
• All civil work by GRP.
• All others (rolling stocks, depot, etc.) by Private Sector.
</td></tr>
<tr><td>Type-4:
Service Payment Type</td><td>
• Various majors such as Revenue Risk Guarantee (RRG) and Viability Gap Financing (VGF) can be applied to Type-1, Type-2, and Type-3. These are classified under Type-4 in this study.
<table>
<tr><th>Type</th><th>Outlines</th><th>Examples</th></tr>
<tr><td>Fixed revenue guarantee</td><td>The government guarantees the agreed fixed revenue as availability fee, provided that agreed service level is attained.</td><td>A13 Road in England</td></tr>
<tr><td>Banding</td><td>Toll fee to be adjusted depending on actual traffics.</td><td>DBFO Road in the UK (early phase)</td></tr>
<tr><td>Cap and floor</td><td>The public collects the amount above the agreed upper limit or compensates the amount below the agreed lower limit of toll revenue.</td><td>Sydney Harbour Tunnel in Australia</td></tr>
<tr><td>Variable term of contract period</td><td>Closing the contract when the investor acquires the agreed benefit.</td><td>Sky bridge in the UK</td></tr>
</table>
Note: DBFO = Design, Build, Finance and Operate
</td></tr>
<tr><td>Type-5:
Lease Type</td><td>
• Extreme case of this type is outsourcing of O & M work to the private sector.
</td></tr>
</table>

8.3 APPLICABLE CONDITIONS OF BASIC TYPES OF PPP MODALITY

8.3.1 Applicability of Basic Types of PPP Modality from the Viewpoint of Profitability

There are various tollway development projects ranging from highly profitable one to very low profitable one, if a project is planned to be implemented solely by the private sector. However, even very low profitable projects can be converted to a profitable project with the reasonable government financial supports. Therefore, various types of PPP modalities should be studied and the most appropriate type should be selected, even for the very low profitable projects.

In the Philippines, highly profitable tollway projects have already been implemented by BOT Scheme and those highly profitable projects are becoming less and less in number, thus the Public-Private Partnership is becoming more important than before.

This Study undertook numerous cases of financial analysis for projects with various ranges of profitability which are presented in Section 8.5 “Pre-business Case Study”. Results of financial analysis were summarized in this section and applicability of basic types of PPP modality from the viewpoints of profitability was roughly established.

Following terminologies are briefly explained hereunder (detailed explanation is presented in Section 8.5);

Project FIRR: Investment return when all costs are financed by the private sector (no government financial support is considered).

IRR for SPC (Special Purpose Company): Investment return from the viewpoint of SPC (only costs financed by SPC are considered. Cost financed by the Government is excluded).

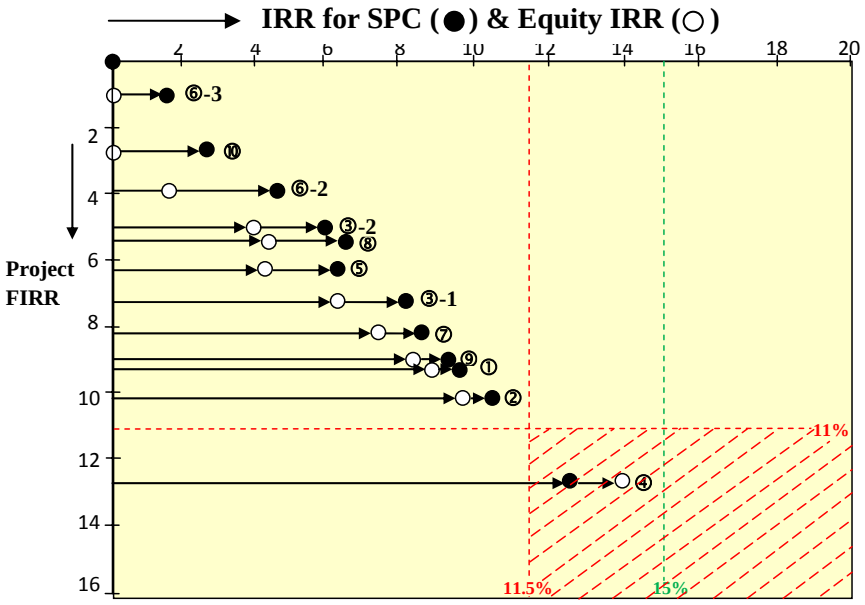
WACC: Weighted Average of Capital Cost. When Loan and Equity share is 70:30, and loan interest rate is 10% per annum and expected dividend to equity investment is 15%, WACC is 11.5%. (This Study adopted WACC as 11.5%).

NPER (Net Public Expenditure Reduction): This is an indicator to check if net public expenditure (expenditure minus income (toll revenue) under conventional type of implementation or everything is done by the Government) is higher than that under a PPP modality (or the Government’s net expenditure under the conventional type of implementation can be saved by a PPP modality).

Results of financial analysis by type of PPP modality is graphically shown hereunder.

1) PROJECT FIRR vs. IRR for SPC and Equity IRR

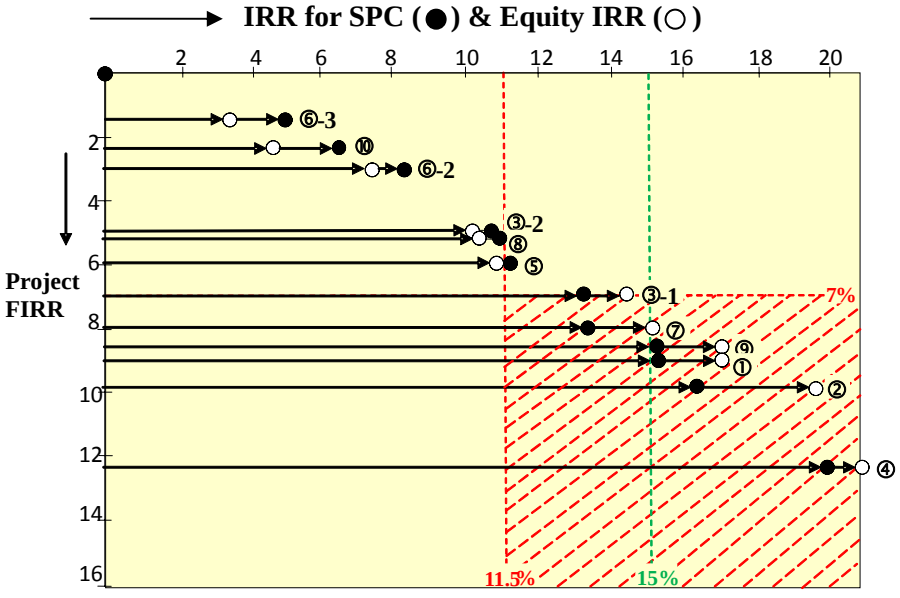
Type-1: Pure BOT



Source: JICA Study Team

- This type is applicable when the Project FIRR is close to or over WACC.
- When the Project IRR is less than WACC, the project needs the Government's financial support.

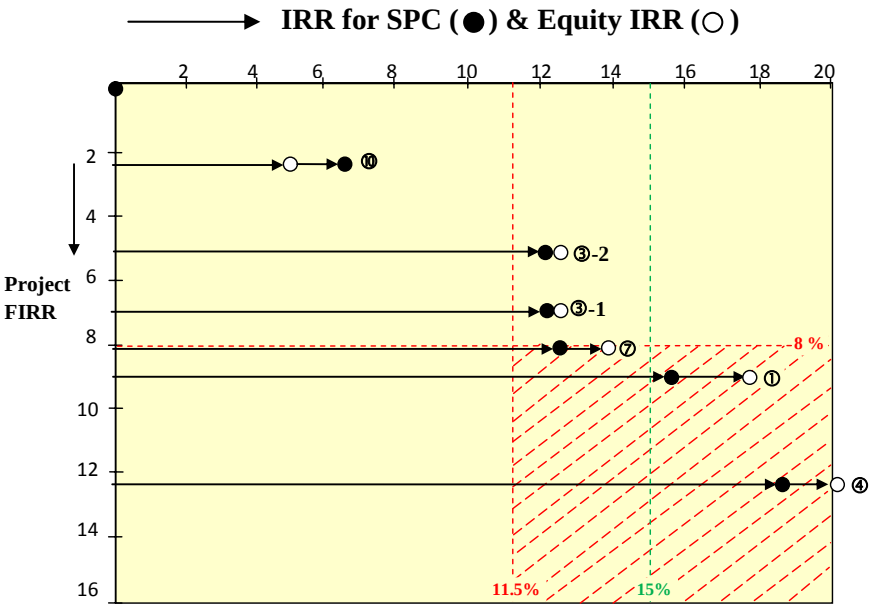
Type-2: BOT with GRP subsidy



Source: JICA Study Team

- When the subsidy equivalent to 50% of construction cost is provided, a project with Project FIRR of about 7% or over becomes financially viable.
- For a project with Project FIRR is about 10% or more, the subsidy should be reduced.

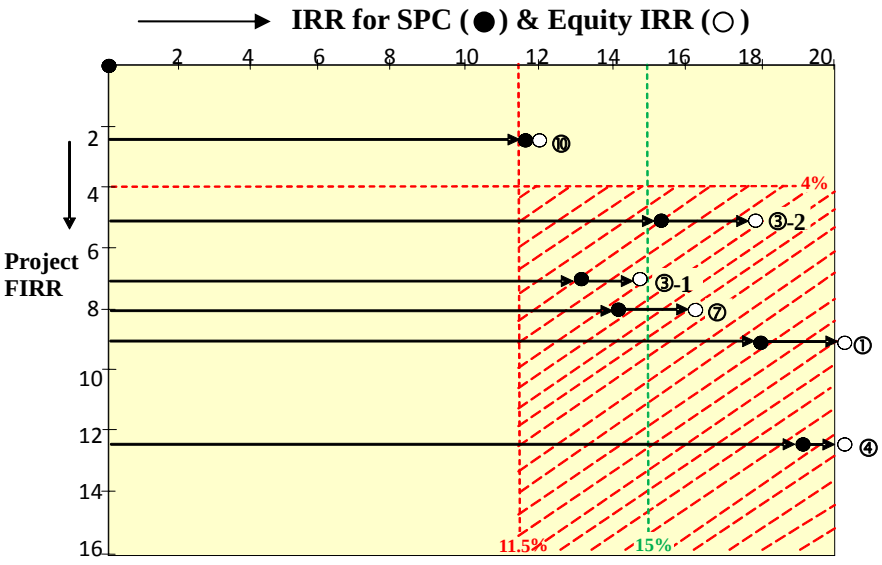
Type-3: Segment Dividing (GRP Segment Lease Fee = 100%)



Source: JICA Study Team

- When a segment division is 50 (public): 50 (private), a project with Project FIRR of about 8% or more becomes financially feasible, even though lease fee of the GRP segment is set at 100%.

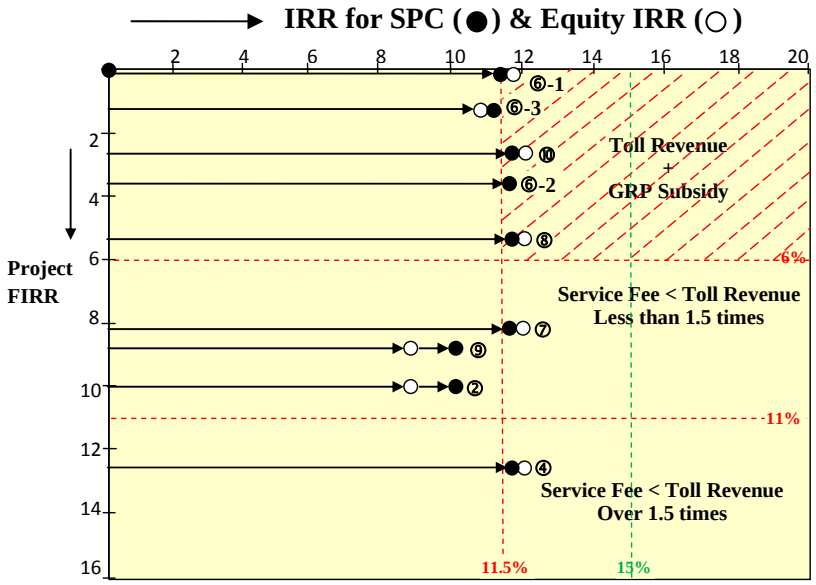
Type-3: Segment Dividing (GRP Segment Lease Fee = 0%)



Source: JICA Study Team

- When a segment division is 50(public): 50 (Private) and lease fee of GRP segment is set at 0%, a project with the Project FIRR of about 4% becomes financially feasible.

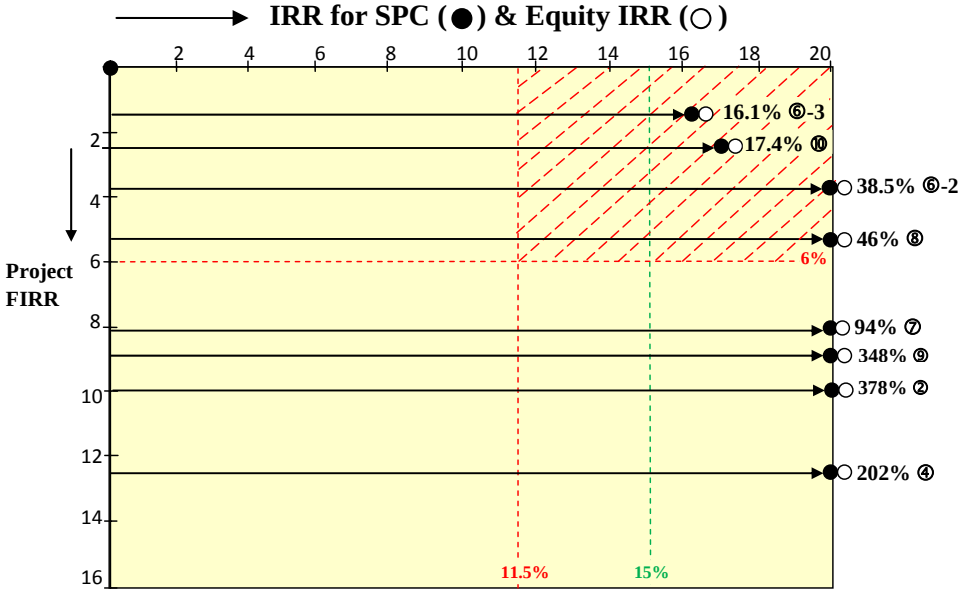
Type-4: Service Payment (No government subsidy)



Source: JICA Study Team

- This type can be applicable to a project with low Project FIRR.
- Toll revenue will not be sufficient to pay service fee and subsidy will be required for a project with Project FIRR of 0% to about 6%.
- Toll revenue will be much higher than service fee which means the Government will have profit, when the Project FIRR of a project is over about 11%.

Type-5: Lease Type

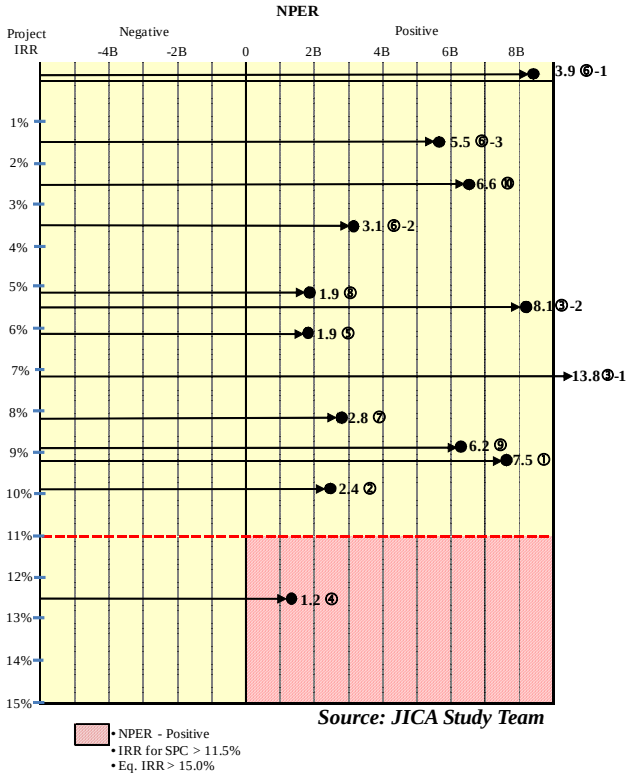


Source: JICA Study Team

- This type can be applicable to a project with low Project FIRR.
- When this type is applied to a project with Project FIRR is over about 6%, investment return of the private sector becomes very high, therefore, toll rate needs to be lowered or other type with higher participation of private sector should be studied.

2) PROJECT FIRR vs. NPER

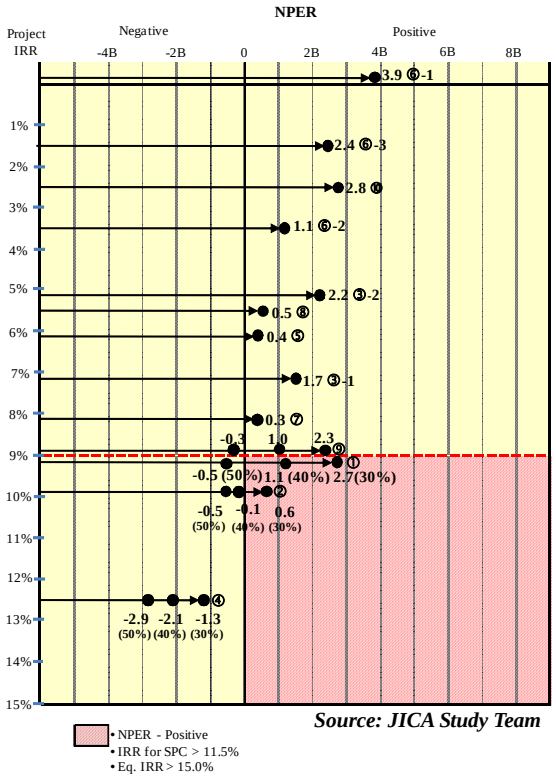
PPP Modality: Type-1 Pure BOT



Source: JICA Study Team

- Under this type, all projects of NPER become positive.
- When IRR of SPC and Equity IRR are satisfied, this type should be considered as a priority type of PPP modality.

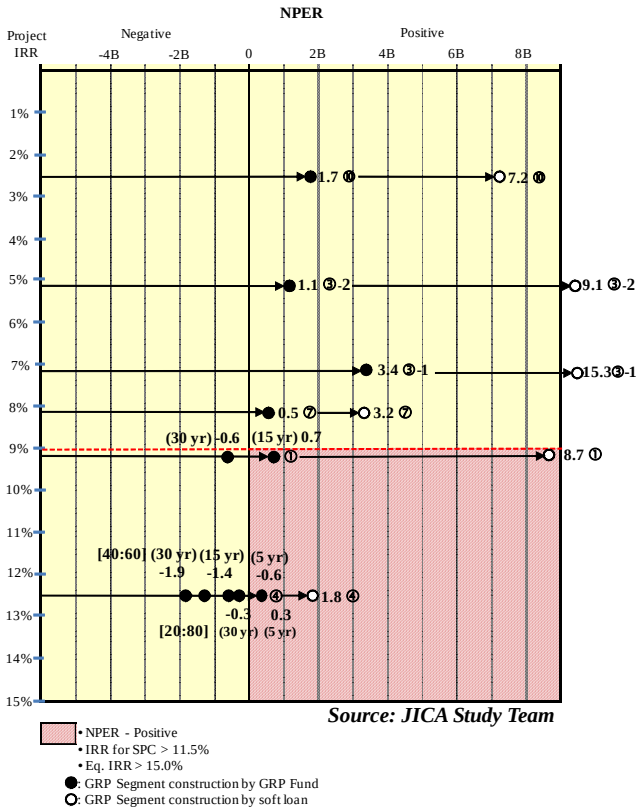
PPP Modality: Type - 2 BOT with Subsidy



Source: JICA Study Team

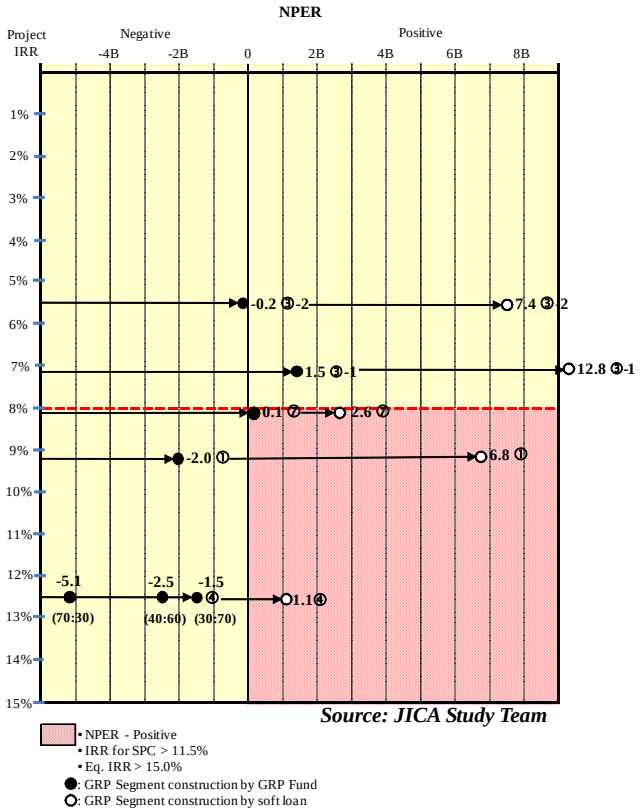
- When the Project FIRR is high (say about 9% or over), NPER becomes negative even a subsidy is reduced to 30% of the construction cost. Amount of a subsidy should be carefully determined.
- On the other hand, a project with lower Project FIRR satisfies NPER requirement, however, these cannot satisfy the private investor's return.

PPP Modality: Type - 3 Segment Dividing (Lease Fee 100%)



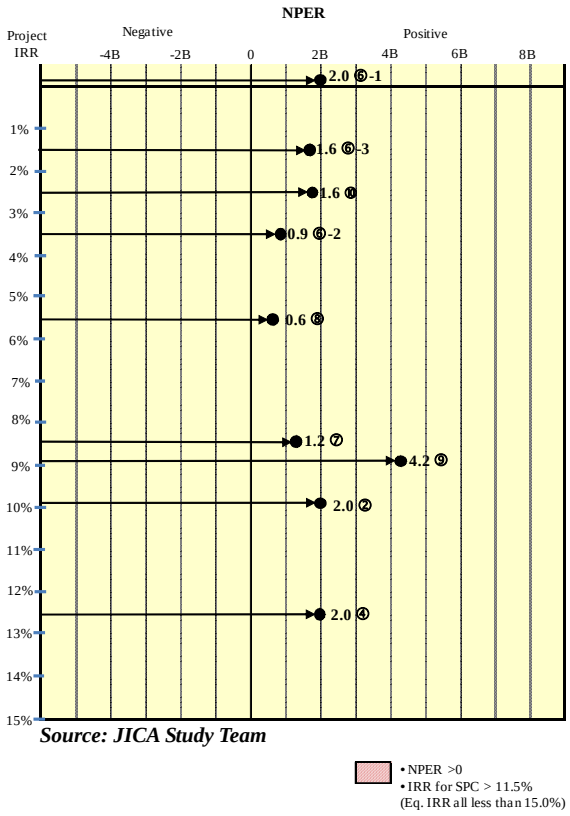
- A project with high Project FIRR tends to dissatisfy NPER. This implies the following:
  - Segment division needs to be carefully studied. Private segment should be increased as much as possible, provided that return of the private investment is assured.
  - Period of lease fee should also be studied and may be shorter than 30 years.

PPP Modality: Type - 3 Segment Dividing (Lease Fee 0%)



- When a lease fee is set to be 0%, NPER of most projects become negative.
- Provided that return of the private investment is assured, lease fee should be collected.

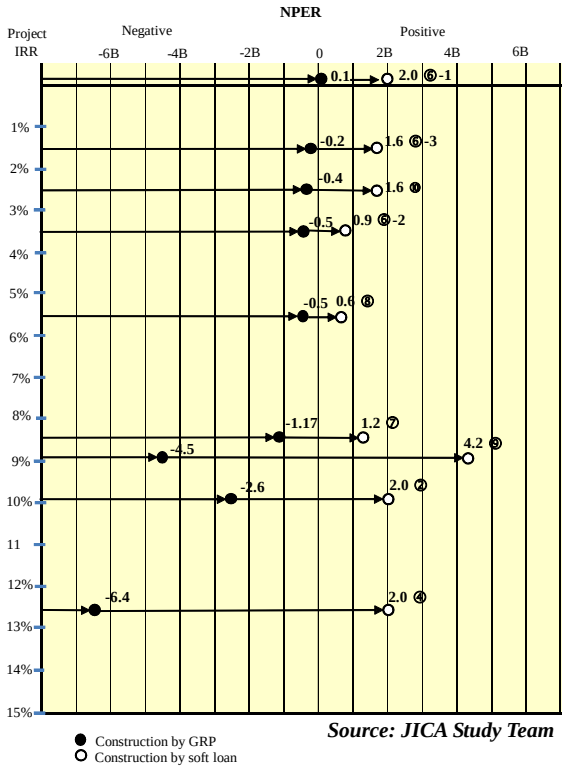
PPP Modality: Type - 4 Service Payment



Source: JICA Study Team

- NPER of most projects under this type becomes positive.

PPP Modality: Type - 5 Lease Type

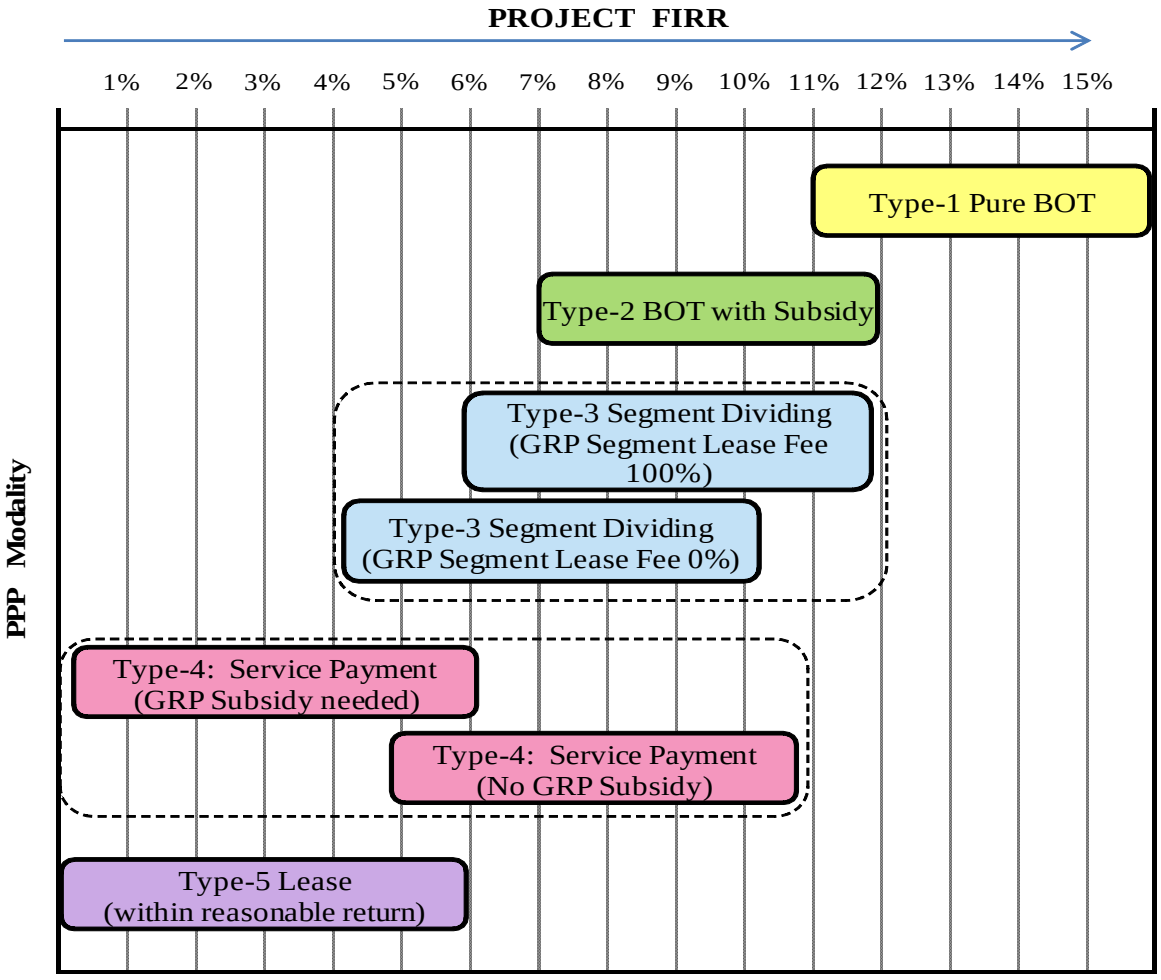


Source: JICA Study Team

- NPER of most projects becomes negative.
- To reduce GRP expenditure, soft loan needs to be utilized by the Government for the design and construction.

8.3.2 General Indication of Applicability of PPP Modality

Based on the results of Section 8.3.2, the general indication of applicability of PPP modality in relation to Project FIRR is summarized in **Figure 8.3.3-1.**



Source: JICA Study Team

FIGURE 8.3.2-1 GENERAL INDICATION OF APPLICABILITY OF PPP MODALITY

Type-1 Pure BOT : When a Project FIRR is over 11% (or close to WACC), this type should be studied.

Type-2 BOT with Subsidy : When a Project FIRR is about 7% to 12% , this type should be studied for various amount of subsidy.

Type-3 Segment Dividing (GRP Segment Lease Fee: 100%) : When a Project FIRR is about 6% to 12%, this type should be studied.

Type-3 Segment Dividing (GRP Segment Lease Fee: 0%) : When a Project FIRR is about 4% to 10%, this should be studied. If IRR for SPC and Equity IRR becomes quite high (say about 22%), various lease fee should be studied.

Type-4 Service Payment with GRP Subsidy : This type should be studied for low Project FIRR (0 to 6%), provided that GRP subsidy is within the reasonable range.

Type-4 Service Payment without GRP Subsidy : This type should be studied when Project FIRR is about 5 to 9%. IRR for SPC and Equity IRR should be within the reasonable range (say about 22%). When this type is applied to projects with Project IRR of about 11% or more, toll revenue becomes much higher than the service fee, which means the Government gets high profit. Thus, a project which can expect high revenue should not be applied to this and revenue risk may be shouldered by the private sector, which means Type-1 or Type-2 should be considered.

Type-5 Lease : This type should be studied for low Project FIRR (0 to about 6%). When this type is applied to project IRR of over about 6%, IRR for SPC and Equity IRR becomes quite high (unreasonably high return to the private sector), thus, other types with higher participation of the private sector should be studied, or toll rates should be set low.

8.3.3 Applicable Conditions of Each Type of PPP Modality

Applicable conditions of each type of PPP modality is summarized in **Table 8.3.4-1.**

TABLE 8.3.3-1 APPLICABLE CONDITION OF EACH TYPE OF PPP MODALITY

PPP Type		Applicable Conditions
Type-1: Pure BOT Scheme		• Applicable to project of which Project FIRR is over 11% or close to WACC.
Type-2: BOT Scheme with Up-front Subsidy		• Applicable to a project of which Project FIRR is between about 7% and 12%. • Various amount of up-front subsidy should be studied to check if NPER is positive. (Max. subsidy is limited to 50% of the project cost in accordance with BOT Law.)
Type-3: Segment Dividing Type	GRP Segment to be leased to SPC	• Applicable to a project of which Project FIRR is between 6% and 12%. • Various divisions of segment as well as lease fee of GRP segment should be studied. • Needs to check if NPER is positive or not. • Not applicable to a short project in length (say less than 5 km.) • A project should be divided that a segment earlier completed than the other can function by itself.
	GRP Segment is leased to SPC free of charge	• Applicable to a project of which Project FIRR is between 4% and 10%. • If IRR for SPC and Equity IRR become quite high (say about 22% or more), GRP segment should be leased to SPC. • Not applicable to a short project in length (say less than 5 km.) • A project should be divided that a segment earlier completed than the other can function by itself.
Type-4: Service Payment Type	With GRP Subsidy	• Applicable to a project of which Project FIRR is between 0% and 6%. • Needs to be check if GRP subsidy is within a reasonable range.
	Without GRP Subsidy	• Applicable to a project of which Project FIRR is between 5% and 9%. • IRR for SPC and Equity IRR should be within a reasonable range (say about 22%). • When this type is applied to a project with Project FIRR of about 11% or more, toll revenue becomes much higher than the service fee, which means the Government gets high profit, thus such projects should be planned to adopt Type-1 or Type-2.
	Common to above	• The Government must allocate budget for payment of service fee for the full duration of operation period (commonly 30 consecutive years), thus, sustainable and firm commitment of the Government for this type is required.
Type-5: Lease Type		• Applicable to a project of which Project FIRR is between 0% to 6%. • When this type is applied to a project of which Project FIRR is over about 6%, the private sector's financial return becomes unreasonably high, thus, other types with higher participation of the private sector should be studied, or toll rates should be set low.

8.4 RISKS, RISK MANAGEMENT AND RISK ALLOCATION

A risk is a fundamental feature of any public-private-partnership and it substantially influences the overall project cost. A risk comes from the uncertainty of the assumptions on which estimates of project future revenue and costs have been based. A risk can be characterized by its two main components, i.e. the probability of its occurrence and its magnitude.

Risk management contains mainly three steps such as: 1) Risk identification, 2) Risk assessment and 3) Risk allocation.

8.4.1 Risk identification

The first step of the risk management is to identify risks. When identifying risks, such specific conditions must be properly addressed as the socio-economic feature of the target country, condition of the target sector and specific aspect of the project. Risk identification should be performed with representatives of the involved parties within a PPP project. External experts with experiences in the target country, sector and project can be invited. The identification exercise can be done with checklists in workshops or brainstorming sessions. The basic types of the risks to be identified are as follows:

- **Background Risks**: the risks which do not link to the project but rather to the target country
- **Project Cost Risks**: the risks which exceed initial cost estimates for the construction or operation and maintenance of the project
- **Commercial Risks:** the risks which come out depending on the traffic and toll rates applied

(1) Background Risks

These risks include risks caused by decisions made by the public authorities directly concerning the project, and risks affecting the project resulting from random factors and uncertainties which is not necessarily influenced by any public authorities. The main background risks can be categorized as follows:

TABLE 8.4.1-1 CATEGORIES OF THE BACKGROUND RISKS

Risk Categories	Types of the Risks
Political, Legal, Institutional and Regulatory Risk	Change of law
	Resort to legal action by the third parties
	Conflict between the central government and local authorities
	Breach of the contract due to change of political situation
	Cancelation of approval
Social Risk	Change of social acceptance
Economic Risk	Occurrence of macro economic crisis
	Financial crisis
	Currency devaluation
	Energy supply crisis
Force Majeure	Acts of God risks e.g. earthquake, flood, fire etc.
	Trade embargo
	Armed conflict/War
	Occurrence of riot

Source: JICA Study Team

a) Political Risk

Political Risk is a type of risk that affects the progress of the operations, resulting from the movement of the government or governmental institutions, also from the institutional issues. This type of risk is known as Political Risk or Country Risk. There are following detailed examples in this type of risk.

- Risk of losing rights of operations after new government in host country unilaterally terminates a contract along with the change of government in the host country, although this contract had been concluded with previous administration.
- Risk of losing the warranty of the operations suddenly and becomes unable to continue the business although it had been admitted beforehand, due to amendments to the law structure in the host county in this operation period.
- Risk of having sudden cease of the operations after business assets being forced to be insufficient upon small amount of subsidy from the government of host country.
- Risk of host country government not executing the contracts and get into the serious breach of contract.
- Risk of being in the state to unable to continue the operations in such disturbed circumstances as riot, terrorism, civil war, revolution and strikes in the host country.

In order to avoid such Political Risks stated above, it is indispensable to identify host country capability of performance of obligation, so to speak, Sovereign Risk, through thorough pre-survey before actual implementation of the businesses. Alternatively, it is also important to prepare the measures to have governmental institutions of the host country to be involved in problem resolution in the event of occurrence of political circumstance that might result in Political Risk. Such preventive measure is called “Sovereign Hook”. In this measure, there is a contract, so to speak, “Direct Agreement”, in which, host country government and public financial institutions conclude legally binding contract directly. It is also one of the patterns of “Sovereign Hook”, that host country government remains documents called “Government Letter” for those items that had been agreed with operating companies, although it has no legal binding force. Such risks stated here are basically the types of the risk that host country government should bear.

b) Social Risk

This is the type of the risk that operations are unable to continue further as people becomes to be reluctant to accept the projects due to change in peoples’ concept of values along with change of administration, visit of senior officials from overseas, occurrence of riot, sudden change in external social conditions. In order to avoid such Social Risk, it is important to implement the business after giving due consideration concerning concept of the values as well as the matters that are regarded as taboos, by having thorough pre-survey regarding cultural, religious, ethnic and social background of the target country. Such risks stated here are basically the types of the risk that host country government should bear.

c) Economic Risk

As for majority of cases, revenue of the infrastructure businesses is quoted in local currency. Local currency in developing countries are called “Soft Currency”, which has restrictions as of bringing them out to the overseas and cannot guarantee exchange with “Hard Currency” at free and appropriate rate within foreign exchange market. Under such situations, foreign exchange has probability of having volatile fluctuation along with change in host country government circumstance and economic crisis from home and abroad. Under this condition,

there is risk of suffering huge risks in the form of exchange-rate loss. Such exchange risk is typical type of the Economic Risk and is basically the types of the risk that host country government should bear. One of the measures to avoid exchange risk is that to exchange revenues instantly to the hard currency and deposit them to the off-shore international bank.

d) Force Majeure

Force Majeure represents the type of risks that cannot be avoided no matter how you prepare the preventive measures. In that sense, above mentioned Political Risk is also included in this Force Majeure in the broad sense and is called as "Political Force Majeure". Force majeure contains all the forms of the risks from occurrence of civil war, riot, terrorism, and war to natural disaster caused by freak of nature, and all those disable the continuation of the businesses. Such risks stated here are basically the types of the risk that host country government should bear. So as to avoid such risks, several warranty allowances can be considered including Terrorism and Sabotage Insurance.

(2) Project Cost Risks

These risks are associated not only with construction but also operation and maintenance. Compared to other sectors, these risks are particularly high in toll road projects due to the significant investment cost required and long operation period. In addition, highways are tailor-made infrastructure and individual by nature. Project cost risks can be categorized in the following table.

TABLE 8.4.1-2 CATEGORIES OF THE PROJECT COST RISKS

Risk Categories	Types of the Risks
Project Preparation Risk	Delay or failure of the project preparation
Land Acquisition Risk	Delay or failure of land acquisition
	Increase of land acquisition cost
	Obstruction of the moving inhabitants
Environmental Risk	Contamination of natural resources
Design Risk	Excessive design
	Design error
	Technology risks
Construction and Repair Risk	Cost overrun
	Delay of completion of the construction
	Poor quality of the construction
	Conflicts among sub-contractors
Financial Risk	Increase of the material price
	Increase of interest rates
	Increase of O&M cost

Source: JICA Study Team

a) Project Preparation Risk

This is the type of the risk that the project cannot be initiated as is scheduled. This risk includes the conditions that host administration, the other party of the contract, is unable to prepare the legal structure that will be required by the time of start of the project, is unable to conclude the contract, or is unable to complete land acquisition as is scheduled initially. Such delay in project preparation is the primary factor of the cessation of the financing from the lenders to the SPC. Such risks stated here are basically the types of the risk that host country government should bear.

b) Land Acquisition Risk

This is the type of the risk that is included in above Project Preparation Risk and is unable to complete the land of acquisition up until the start of the project. In the Philippines, governmental institutions is regarded to assume the responsibility of the land acquisition, thus, the risks stated here should be borne by host country government.

c) Environmental Risk

This is the type of the risks that the business has no choice but should cease its operations when the conditions are not meeting the environmental standard, which conditions are waste generated from construction stage, destruction of the natural environment as of construction, and inappropriate transaction of waste water and waste materials generated from the operations. Also, when any deposits such as archaeological objects are discovered from the land as of construction stage, there is probability of serious delay in construction. In here, there are these types of risks including those caused by environmental destruction which operating companies could not assume initially, or those where environmental standard are being modified during the operation period. Any of the risks stated here should be borne by both host country government and operating company.

d) Design Risk

This is the type of the risk that occurs when sub-contractors did not follow the initial specification as of designing, and results in cost overrun from excess designing, designing mistakes and technical mistakes to be applied. Such risks stated here are basically the types of the risk that host country government should bear.

e) Construction and Repair Risk

This is the type of the risk that occurs when construction cannot be completed as planned, or may have cost overrun due to repair works that had not been assumed. As for risk of completion of construction, operating companies can transfer the risks to EPC contractor by concluding Turn Key Contract with EPC contract who undertakes the construction. At all events, such risks stated here are basically the types of the risk that host country government should bear.

f) Financial Risk

This is the cost overrun risk that is caused by unexpected additional O&M cost and also by sudden rise in prices. So as to avoid such risks, estimation of the business cost encompassing enough contingencies is indispensable. Such risks stated here are basically the types of the risk that host country government should bear.

(3) Commercial Risks

Commercial risks may be the greatest risks faced by SPC when their project revenue directly originates from the road users. Traffic volume and tariff are the source of risks. Traffic volume can be influenced by many factors. For instance, traffic volume depends on overall economic circumstances. This means that macro economic recession pulls down the number of users of the toll road and it results in absolute reduction of the toll revenue. In addition, road network affects the usage of the specific road section. Road network generally spreads the road users over a wide area. Road users can have more option of choosing alternative roads. This results in

diversification of number of users and reduction of toll revenue in the specific road section.
As for tariff, the tariff level is subject to political risks, namely that of the pressure of public opinion and of the public authorities modifying the legal and fiscal framework. In general, raise of the tariff level is difficult due to the opposition of the public opinion supported by the government.

TABLE 8.4.1-3 CATEGORIES OF THE COMMERCIAL RISKS

Risk Categories	Types of the Risks
Traffic Demand Risk	Lower demand level than expected
Toll Risk	Lower level of the toll acceptance than expected
	Unpaid toll by road users
	Un-approval of toll adjustment
Road Network Risk	Decreasing traffic volume due to change of road network

Source: JICA Study Team

a) Traffic Demand Risk

This is the type of the risk that occurs, when traffic volume as of operation are way below the estimated value that had been prospected initially, and as a result, the revenue becomes below the amount initially planned, leading the operations hard to continue further. What operating companies can do in order to avoid such risks is that to improve the accuracy of demand forecasting as much as possible, and also have thorough sensitivity analysis to prepare measures that should be carried out in case demand is small Also, the host country government should guarantee minimum revenue of the operating companies in the form of subsidy. Any of the risks stated here should be borne by both host country government and operating company

b) Toll Risk

This is the typical type of the risk that occurs, when increase of the toll rate is not admitted by public opinion or because of political reason, even if operating company tries to increase the toll rate in response to price rise in commodities. In addition, there are other types of risks like, toll rate cannot be admitted from the beginning of operations although it had been prospected by operating companies initially, or that users do not pay the toll rate appropriately. Any of the risks stated here should be borne by both host country government and operating company

c) Road Network Risk

This is the type of the risk that business revenues go below the planned value since the traffic volume went below the initial demand estimation as a result of dispersion of traffic volume to the newly established road network, which could not be prospected at the beginning of the business. Such risks stated here are basically the types of the risk that host country government should bear.

8.4.2 Risk Assessment

Traditionally, provision for risk in public-funded projects has been provided through the use of contingencies, in which an amount is added to the public budget for construction to allow for unforeseen circumstances or unexpected additional works, which is often 10%. However, PPP projects require a much more sophisticated risk assessment to support the process for risk allocation. The risk assessment items to be investigated can be listed as follows:

1) Estimation of risk intensity

Risk intensity means its magnitude or impact. Risk intensity can be influenced by the effect and timing. The effect can be described in such a way that risk occurrence cases one year delay in construction and it brings about serious financial damage. As for timing, it means that different risks may affect the project at different timings in the life of the project.

2) Probability of risk occurrence

Estimating probabilities is not an exact science but some assumptions have to be made. Assumptions must be reasonable and fully documented. There are some risks whose probability is low however, the risks can not be dismissed as negligible because the impact will be huge if it once occurs.

3) Breakdown into sub-risks

Risks must be assessed with respect to their component sub-risks. For instance, the risk of a decrease in traffic volume may be linked to a number of economic parameters which can be assessed more accurately. Construction risk will be composed of the combined risk of a number of contributing factors such as a)unexpected high cost of raw materials, b)un-assumed high level of labor cost and c)delay in construction results in increased construction cost.

8.4.3 Risk Allocation

Risks can be accepted, transferred, avoided or insured. In order to create a PPP based project schemes, proper risk allocation among players concerned must be accepted. Players include several private entities as SPC, a lender, an insurance company, an investor, a sub-contractor, while several public entities such as contracting agencies and guarantee public sector. Private players are willing to take some of the project risks if the nature of the risks relates to their expertise so that they are capable of properly assessing the consequences. Clear and appropriate risk allocation in PPP contract is the most important factor for successful PPP Project. It is important to understand that unclear risk allocation in the PPP contract might bring future dispute between Public and Private sector. Also, inappropriate risk allocation can rather increase overall project cost. The basic principle of risk allocation is “A risk should be borne by those who can best manage it.” Another important principle is “Risks which both Private and Public Sectors cannot bear should be allocated to the Public Sector.” Basic idea of risk allocation between public sector and private sector can be shown in **Table 8.4.3-1**.

TABLE 8.4.3-1 BASIC IDEA OF RISK ALLOCATION

Risk Categories	Risk Allocation	
	Public Entity	Private Entity
Background Risks		
Political, Legal, Institutional and Regulatory Risk	●	
Social Risk	●	
Economic Risk	●	
Force Majeure	●	
Project Cost Risks		
Project Preparation Risk	●	
Land Acquisition Risk	●	
Environmental Risk	●	●
Design Risk		●
Construction and Repair Risk		●
Financial Risk		●
Commercial Risks		
Traffic Demand Risk	●	●
Toll Risk	●	●
Road Network Risk	●	

Source: JICA Study Team

8.4.4 Risk Management

Risk management and mitigation measures are shown in Table 10.4.3-2.

TABLE 10.4.3-2 RISK MANAGEMENT AND MITIGATION MEASURES

Risk Category		**Type of Risk**	**Risk Management / Risk Measures**	**Risk Allocation**	
				Public	Private
A. Background	Political, legal, institutional and regulatory risk	1. Change in laws, policies and strategies	• The Government should compensate any losses of the private sector • In medium term, PPP fund to guarantee political and regulatory risk should be created	●	
		2. Delayed approval of contract	• Concerned agencies should expedite the approval process • Additional government financial support should be provided, if necessary.	●	
		3. Delayed LGUs' endorsement of the project	• During a feasibility study stage, full discussion should be made with LGUs	●	
		4. Political pressure on approval of toll rates and toll rate adjustment	• The Government should compensate, or • Concession period should be adjusted.	●	
		5. Imposition of new tax including local government taxes	• New taxes should be exempted or shouldered by the government.	●	

	Social Risk	1. Objection of the public against the project	• During a feasibility stage, consultation meetings with local people should be held. ROW Acquisition Plan and Resettlement Action Plan should be prepared and implemented.	●	
		2. Objection of the public against toll rates and toll rate adjustment	• Both the government and the private sector should disclose information and make campaign how toll rates adjustments are determined.	●	●
	Macro Economic Risk	1. Decrease of traffic and toll revenue due to macro economic crisis	• Minimum toll revenue guarantee or similar should be introduced, or • Additional government financial support should be provided.	●	
		2. Delayed financial closure due to freezed financial market	• Additional government financial support should be studied.	●	
		3. Change in foreign exchange rate	• The private sector should seek local currency loans as much as possible. • The government should also study additional government financial support.	●	●
		4. Higher inflation than assumed	• Additional government financial support, or toll rate adjustment, or extension of concession period.	●	
	Force Majeure	1. Occurrence of natural disasters	• Partially covered by all risks insurance. • The government should compensate damages.	●	
		2. Armed conflict/war/riot	• The Government should compensate losses of the private sector.	●	
B. Project Cost Risk	Project Preparation Risk	1. Insufficient business case / feasibility study	• Enough time and funds should be spent for the study. • Qualified consultants should be selected.	●	
		2. Delay in securing of ECC	• ECC should be secured during the feasibility study.	●	
		3. Delay in LGUs' endorsement for the project	• During the feasibility stage, LGUs should be involved.	●	
		4. Delay in approval of the project by NEDA Board	• Enough information should be provided to NEDA ahead of the schedule. • NEDA ICC and NEDA Board should evaluate the project on schedule.	●	

	Tendering Risk	1. Lengthy / delayed tendering process	• Full scale feasibility study should be undertaken and enough information should be disclosed. • Request of reconsideration from bidders should not be entertained.	●	
		2. Unclear scope of works and engineering standards	• Additional government financial support should be considered. • Full scale feasibility study should be undertaken to determine scope of works and engineering standards.	●	
		3. Unclear criteria of evaluation of tender	• Before advertisements, evaluation criteria of tender documents should be established and announced to the bidders.	●	
	Land Acquisition Risk	1. Delayed financial closure due to delayed ROW acquisition	• One or some of the following measures should be adopted: - Adjustment of toll rates - Additional government financial support - Extension of concession period	●	
		2. Delayed start of construction due to delayed ROW acquisition	• Same as above	●	
		3. Construction cost increase due to inflation during prolonged ROW acquisition period	• Same as above	●	
		4. O&M cost increase due to inflation during prolonged ROW acquisition period	• Same as above	●	
		5. Opposition against the project by the public due to insufficient compensation and measures to decrease social impacts	• Consultation meetings from the time of feasibility study should be held and legal requirements should be explained to the people concerned. • ROW Acquisition Plan and Resettlement Action Plan should be explained and agreed during the feasibility study stage.	●	
	Environmental Risk	1. Adverse impacts on natural environment (ecology, erosion, etc.)	• Recommended measures for identified adverse impacts should be implemented.		●
		2. Adverse social impacts	• Recommended measures in Resettlement Action Plan should be implemented	●	

	Design Risk	1. Over or under design	• Exercise Value Engineering by the third party		●
		2. Design error	• Design checking by the third party. • Insure the design		●
		3. Changes in scope of works (additional interchanges, flyovers, under passes, on and off ramps, etc.)	• Scope of works should be discussed with the all concerned parties including LGUs and finalized during a feasibility study stage. • The government should shoulder the cost of design and civil works.	●	
		4. Inadequate survey data (topographic and geo-technical data) provided during tendering	• Sufficient surveys should be undertaken during a feasibility study. • The private sector should assess all available data and provision for uncertainty of data should be properly made by the bidders.	●	●
	Construction Risk	1. Cost overrun	• Employment of qualified contractor		●
		2. Delay in construction	• Employment of qualified contractor		●
		3. Poor quality of work	• Employment of qualified management consultants • Employment of qualified contractor		●
		4. Conflicts with sub-contractor	• Selection of reliable sub-contractor		●
		5. Delay in material procurement (borrow material, sand and gravel materials, etc.)	• Discussion with LGUs and material concessionaries should be made in advance. • Alternative material sources should be tapped.		●
	Operation and Maintenance Risk	1. Increase in operation cost	• Toll collection system to decrease toll collection cost should be studied. • Automatic toll collection system should be tapped.		●
		2. Increase in maintenance cost	• Timely implementation of maintenance works. • Undertake life-cycle-cost analysis for the pavement		●
		3. Delayed issuance of toll operation certificate	• Additional government financial support or extension of concession period.	●	

C. Commercial Risk	Traffic Demand and Toll Revenue Risk	1. Lower traffic demand and toll revenue than estimated	• Reliable traffic analysis during the feasibility study. • Bidders should make their own traffic demand forecast. • Scheme such as minimum revenue guarantee should be introduced. • Extension of toll concession period should be introduced.	●	●
		2. Delayed approval of toll rates and toll rate adjustment	• The government should compensate losses of the private sector, or agree on extension of toll concession period.	●	
	Road Network Risk	1. Decreasing traffic volume due to change of road network	• Planned improvement of national roads along the same corridor as an expressway should be informed during the tendering. • When some road improvement projects which compete with an expressway are implemented and not informed during the tendering, the government should compensate by extending concession period.	●	

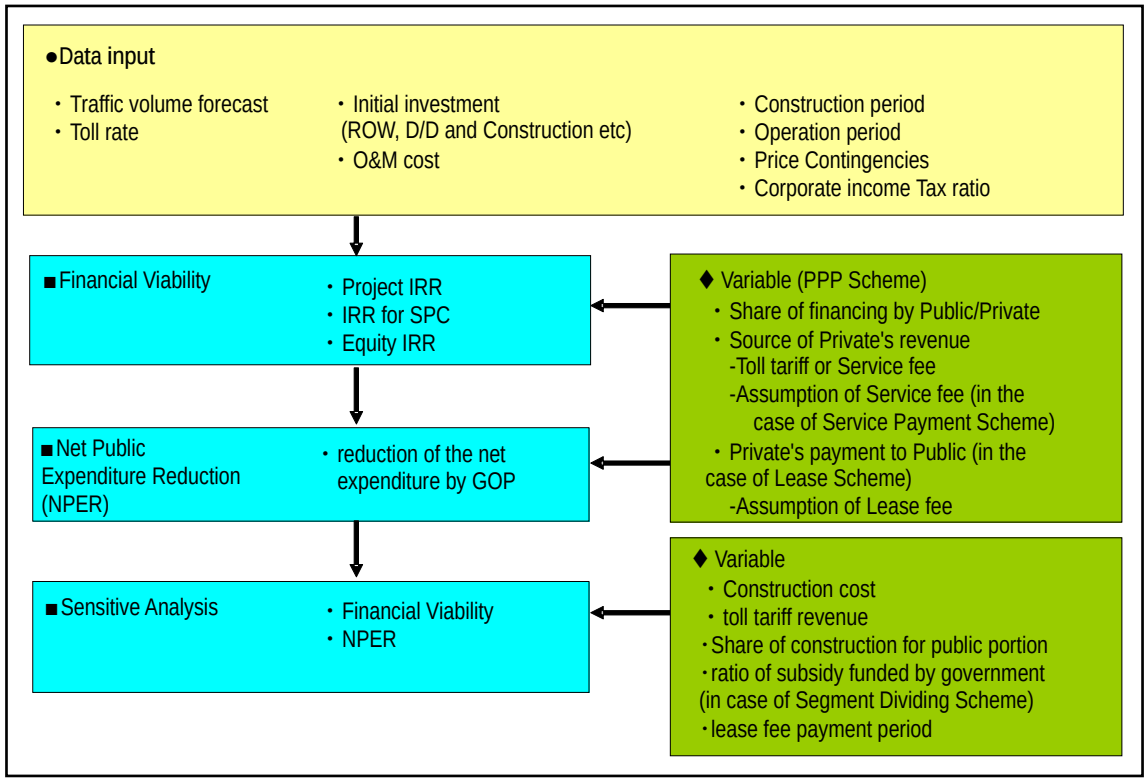
8.5 PRE-BUSINESS CASE STUDY

8.5.1 Procedure of Pre-Business Case Study

Firstly, the financial viability of the 10 projects selected in first screening is examined as a brief Pre-Business Case Study. The financial viability is examined for a variety of PPP schemes.

Secondly, Net Public Expenditure Reduction (NPER) is briefly examined in order to clarify the reduction of the net expenditure by Government of Philippine in applying PPP Schemes.

Finally, the sensitive analysis is examined for the variation of construction cost, toll tariff revenue and other parameters.



Source: JICA Study Team

FIGURE 8.5.1-1 PROCEDURE OF PRE-BUSINESS CASE STUDY

8.5.2 PPP Schemes Studied for Each Project

(1) Type of PPP Schemes

In our study, 5 types of PPP scheme shown in **Table 8.5.2-1** are identified for the Pre-Business Case Study.

Type 1 Pure BOT is the type of PPP scheme in which private sector would take the largest responsibility except ROW acquisition, when comparing from other type of PPP schemes. On the other hand, in Type 5 Lease, public sector would take the largest responsibility comparing from other type of PPP schemes, that private sector is only responsible in O&M.

As for Type 2 BOT with subsidy by government of Philippine (GOP) and Type 3 Segment dividing, both private and public sector shares the roles of financing and construction, and its role sharing depends on ratio of the subsidy and segmentation. As for Type 3 Segment dividing, 2 cases including with and without lease fee payment to public are to be considered. Different from other type of PPP schemes, in Type 4 Service Payment, the revenue of the private sector doesn't come from the toll tariff revenue but from service fee paid by GOP.

TABLE 8.5.2-1 ROLE OF PUBLIC / PRIVATE SECTOR FOR EACH TYPE OF PPP SCHEME

Type of PPP Schemes		Public (GOP: Government of Philippine)	Private (SPC: Special Purpose Company)
Type1: Pure BOT		- ROW acquisition & Project Administration only	- Detailed Design, financing, construction and O&M - Revenue comes from toll tariff
Type2: BOT with subsidy by GOP		- ROW acquisition & Project Administration - Additionally, GOP grants SPC a subsidy up to 50% of construction cost to support the construction work done by SPC	- Detailed Design, financing, construction and O&M - Revenue comes from toll tariff
Type3: Segment dividing	**Type 3-1:** With lease fee payment to Public	- ROW acquisition & Project Administration - Additionally, for GOP portion, Detailed Design, financing, construction - GOP receives lease fee from SPC as compensation for GOP's financing.	- For SPC portion, Detailed Design, financing and construction - O&M for all segment - Revenue comes from toll tariff of all segment - SPC pays lease fee to GOP
	Type 3-2: Without lease fee payment to Public	- Basically, the same condition as type 3-1 but GOP doesn't require lease fee.	- Basically, the same condition as type 3-1 but SPC doesn't need the payment of lease fee.
Type4: Service Payment		- ROW acquisition & Project Administration - Additionally, GOP holds the toll tariff. - GOP pays the service fee to SPC through the O&M period.	- Detailed Design, financing, construction and O&M - Revenue comes from service fee paid by GOP
Type5: Lease		- ROW acquisition & Project Administration - Additionally, Detailed Design, financing, construction - GOP receives lease fee from SPC as compensation for GOP's financing.	- O&M - Revenue comes from toll tariff - SPC pays lease fee to GOP

Source: JICA Study Team

TABLE 8.5.2-2 RESPONSIBILITY SHARING FOR EACH TYPE OF PPP SCHEME

Type of PPP Schemes		ROW Acquisition & Project Administration	Finance for Construction	Construction	O&M	Holder of toll tariff revenue	Payment to GRP by SPC
Type1: Pure BOT		GRP	SPC	SPC	SPC	SPC	No
Type2: BOT with subsidy by GOP		GRP	SPC(with subsidy by GRP)	SPC	SPC	SPC	No
Type3: Segment Dividing	**Type 3-1:** With lease fee payment to Public	GRP	GRP/SPC	GRP/SPC	SPC	SPC	Yes (Lease fee)
	Type 3-2: Without lease fee payment to Public	GRP	GRP/SPC	GRP/SPC	SPC	SPC	No
Type4: Service Payment		GRP	SPC	SPC	SPC	GRP	No
Type5: Lease		GRP	GRP	GRP	SPC	SPC	Yes (Lease fee)

Source: JICA Study Team

(2) Applied PPP schemes for each project

The cases of PPP modality in the table shown below are evaluated in our study. Applied PPP schemes for each project are mainly selected from those schemes that could be feasible. As for Type 3 Segment dividing, only those projects that can be subject to segmentation are selected in consideration of the existence of required nodes and extension of the routes.

TABLE 8.5.2-3 SELECTION OF PPP MODALITY FOR PRE-BUSINESS CASE STUDY

Project	Project FIRR (%)	Selection of PPP Modality for Pre-Business Case Study				
		Type-1 Pure BOT Scheme	**Type-2** BOT with Subsidy	**Type-3** Segment Dividing Scheme	**Type-4** Service Payment Scheme	**Type-5** Lease Scheme
1. NLEX-SLEX Link Expressway	**9.14**	○	○	○	-	-
2. NAIA Expressway (Phase II)	**9.97**	○	○	X (too short)	○	○
3. C-6 Expressway &Global City Link (1) All section	**7.10**	○	○	○	-	-
(2) South-East Section & Global City Link	**5.14**	○	○	○	-	-
4. CALA Expressway	**12.51**	○	○	◎	○	(○)
5. C-5/FTI/Skyway Connector Road	**6.08**	○	○	X (too short)	-	-
6. Central Luzon Expressway (1) Phase I + II(2-lane)	**(Negative)**	○	○	○	○	○
(2) Phase I(2-lane)	**3.62**	○	○	X (Segmentation difficult)	○	○
(3) Phase I(4-lane)	**1.37**	○	○	X (Segmentation difficult)	○	○
7. SLEX Extension	**8.12**	○	○	○	○	○
8. Calamba-Los Banos Expressway	**5.34**	○	○	X (Segmentation difficult)	○	○
9. R-7 Expressway	**8.76**	○	○	-	○	○
10. NLEX-East (Phase I) with La Mesa Parkway	**2.50**	○	○	○	○	○

Notes: ○ : Pre-Business Case study undertaken, - : Applicable, but not studied, **X** : Not Applicable
Segmentation difficult → No suitable node to divide segments.Too Short → Project Length is too short.

Source: JICA Study Team

(3) Parameters for Financial Analysis

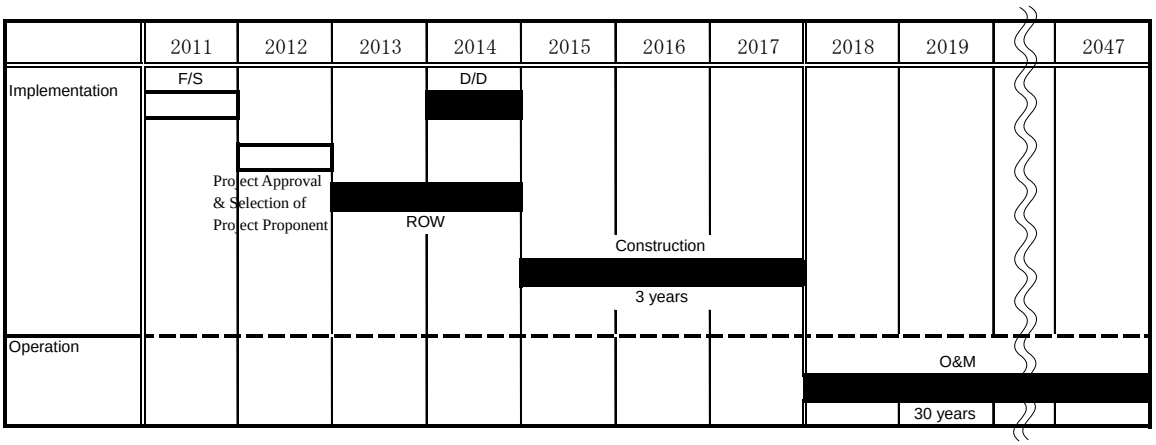
Basic parameters and their threshold value required for financial analysis are shown in **Table 8.5.2-4**. Basic parameters are set based on existing projects and financing. When having no actual reference data, hypothetical value is set.

TABLE 8.5.2-4 REQUISITE PARAMETERS FOR FINANCIAL ANALYSIS

Base year for financial analysis			・2010
Implementation/Operation Period			
	Beginning year of the implementation		・2011
	Beginning year of the operation		・2018
	From F/S to Project Approval		・2 years
	Land Acquisition Period		・2 years
	Construction Period		・3 years
	Operation Period		・30 years
Cost Estimate			
	Project Cost		
	(i) Land Acquisition Cost		・GOP is fully responsible
	(ii) Main Construction Work Cost		・Subsidy by GOP is up to 50% of Main Construction Works Cost in accordance with BOT Law in Philippine.
	(iii) Detailed Design Cost		・SPC is fully responsible. ・1.2% up to 4.0% of Main Construction Work Cost
	(iv) Supervision Cost		・SPC is fully responsible. ・1.8% up to 8.0% of Main Construction Work Cost
	(v) Administration Cost		・GOP is fully responsible.
	O & M Cost		
	Operating Cost		・5.0% increase at every two years
	Routine Maintenance Cost		・Annual 2.0% increase
	Periodic (every 10 yrs) Maintenance Cost		・10.0% increase at every maintenance
	Other Cost items		
	Annual Insurance Fee		・0.075% of depreciable assets at every year
	Price Contingency		・Annual 5.0% Price Escalation is applied to land acquisition cost, D/D cost, main construction cost, construction supervision cost and O&M Cost
	Loan Management Fee		・0.3% of Loan
Financing Structure			
	Equity		・30% of Project Cost excluded GOP's fund (e.g. ROW acquisition) (In case of Lease scheme, it is supposed that the Equity is equal to the O&M cost for the initial 2 years. Actually, SPC doesn't finance the capital cost with Lease scheme, but it is supposed that SPC will secure the Equity to prepare the O&M work in advance.
	Debt		・70% of Project Cost excluded GOP's fund
	Loan Interest Rate	Commercial bank	・10%
		Soft loan	・1.4%
	Rate of Return on Equity		・20% annual return rate
	Loan Tenure		
	Grace Period	Commercial bank	・None
		Soft loan	・10 years
	Loan Repayment Period	Commercial bank	・10 years
		Soft loan	・30 years
	Repayment Structure		・Even annuity basis (Annual loan amortization is done at constant amount)
Depreciation			
	Depreciation Methodology		・Linear (asset life cycle period is 50 yrs)
Taxation			
	Corporate Tax		・[Revenue - O&M cost - annual deprecation cost - insurance cost - interest payment] x tax rate (30%)
	Property Tax (BOT case)		・None
	Tax Exemption Period		・None

Source: JICA Study Team

TABLE 8.5.2-5 ASSUMED WORK SCHEDULE



(4) Assumption of Service Fee

In our study, the service fee in Type 4 Service Payment is supposed to be estimated as reasonable price on the dividend on equity, loan amortization for commercial bank, O&M cost and other costs paid by private sector to compensate the investment of private sector by receiving the service fee. It is calculated by the following formula;

$$\text{Anuall Service Fee} = \frac{\sum(\text{Eq} * r + Lo_i + O_i + In + Co_i)}{T}$$

Whereby:

Eq : The amount of Equity

r : Rate of Return on Equity (20%)

Lo_i : Loan amortization at the year i

O_i : O&M cost at the year i

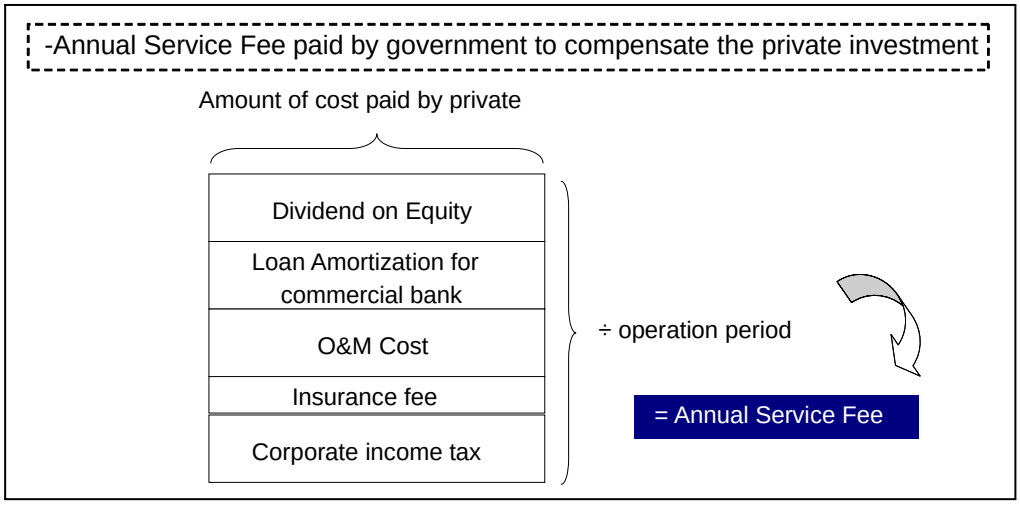
In : Annual insurance fee (0.075% of depreciable assets at constant)

Co_i : Corporate income tax at the year i

T : Operation Period (30 years)

In our study, it is supposed that the constant service fee is paid by government annually during the operation period. However, the loan repayment period for commercial bank is shorter than the operation period. So, there are also the cases that the net cash flow is minus for the initial operation period in this calculation. It means that the net cash flow for the dividend is not secured in such the initial period, although it will be secured after the completion of the repayment. Therefore, there are also the cases that the estimated Equity IRR is less than the assumed Rate of Return on Equity (20%).

Additionally, the actual service fee should be decided through the bidding process for selection of the project proponent. In case of high traffic demand expected, higher service fee than our estimated might be required to attract private's interest even if government takes the demand risk. It is supposed that the way of determination of actual service fee and the actual price are very different by each project. The concept diagram for annual service fee estimation is shown in **FIGURE 8.5.2-1**.



Source: JICA Study Team

FIGURE 8 .5.2-1 CONCEPTUAL DIAGRAM FOR ANNUAL SERVICE FEE ESTIMATION IN OUR STUDY

(5) Assumption of Lease fee

In our study, the lease fee in Type 3-1 Segment dividing with Lease fee and Type 5 Lease is supposed to be estimated as reasonable price on the capital cost and other costs paid by government to compensate the funding of government by receiving the lease fee. It is calculated by the following formula;

$$\text{Anuall Lease Fee} = \frac{\sum (Ca_i + Lo_i + In)}{Tp}$$

Whereby:

Ca_i : Capital cost at the year i financed by government own budget except the cost of ROW acquisition and project administration.

Lo_i : Loan amortization at the year i

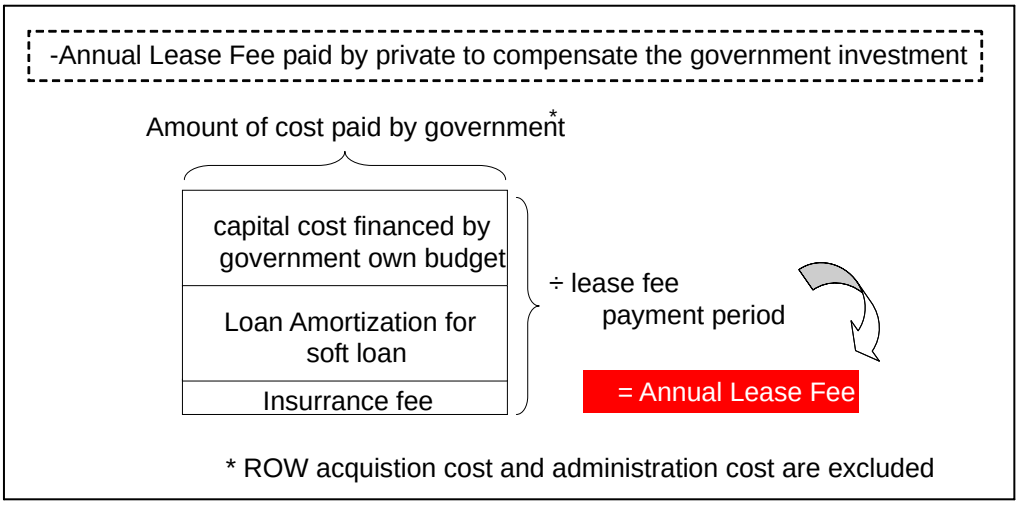
(ROW acquisition and project administration are excluded from the Loan because it would be financed by government own budget)

In : Annual insurance fee (0.075% of depreciable assets at constant)

Tp : Lease fee payment period

In our study, it is supposed that the constant lease fee is paid by private annually from the beginning of the operation to the end of the lease fee payment period. In our study, the lease fee payment period is not supposed only to be equal to the whole operation period, but also to be shorter, which the payment begins in the commencement year of operation, although the annual lease fee is higher.

Additionally, the actual annual lease fee and the lease fee payment period should be also decided through the bidding process for selection of the project proponent. In case of low traffic demand expected, lower lease fee than our estimated might be required to attract private's interest because the private sector must take the demand risk. On the other hand, in case of high traffic demand expected, the lease fee might be lower due to the competition on the bidding process among participants. It is also supposed that the way of determination of the actual lease fee etc and the actual price etc are very different by each project. The concept diagram for annual lease fee estimation is shown in **Figure 8.5.2-2**.



Source: JICA Study Team

FIGURE 8.5.2-2 CONCEPTUAL DIAGRAM FOR ANNUAL LEASE FEE ESTIMATION IN OUR STUDY

(6) Indicator for Financial Viability

In our study, 3 kinds of Internal Rate of Return (IRR) as shown below are set for the examination of financial viability. IRR means the discount rate when the discounted amount of the revenue is equal to the discounted amount of the investment and operating cost. Whenever an interest rate or cash yield for the finance to the target project is less than IRR, the financial viability of the project will be secured. IRR is the rate which satisfies the following formula:

$$\sum \frac{R_i - I_i - C_i}{(1+IRR)^i} = 0$$

Whereby:

R_i : Revenue at the year i

I_i : Investment at the year i

C_i : Operating cost at the year i

IRR for SPC and Equity IRR are estimated for each of considerable PPP modalities, but Project IRR isn't affected by the modalities. So, Project IRR is estimated as a unique value for each project.

Project IRR:	It is calculated with toll tariff revenue and the whole project cost including ROW acquisition. It is the basic indicator for financial viability.
IRR for SPC	It means an internal rate of return for private sector (SPC). It is calculated with the revenue of private sector and the investment cost which is subtracted public sector financing from the whole project cost. It will be required IRR for SPC is more than WACC (Weighted Average Capital Cost) in order to attract concerns of private sector to invest the project.
Equity IRR	It means an internal rate of return against equity investments for the project. (It means an IRR for Equity investor.)

WACC is calculated from the weighted average of interest-bearing debt cost and equity cost, and represents financing cost for privates sector. Calculation formula of WACC is stated as below.

$$WACC = r(E) \times \frac{E}{(D+E)} + r(D) \times \frac{D}{(D+E)}$$

Whereby:

$r(E)$: cost of Equity (Return on Equity)

$r(D)$: cost of debt (interest rate)

E: total value of equity

D: total value of debt

WACC is 11.5% in case of the below condition on the financing by private sector.

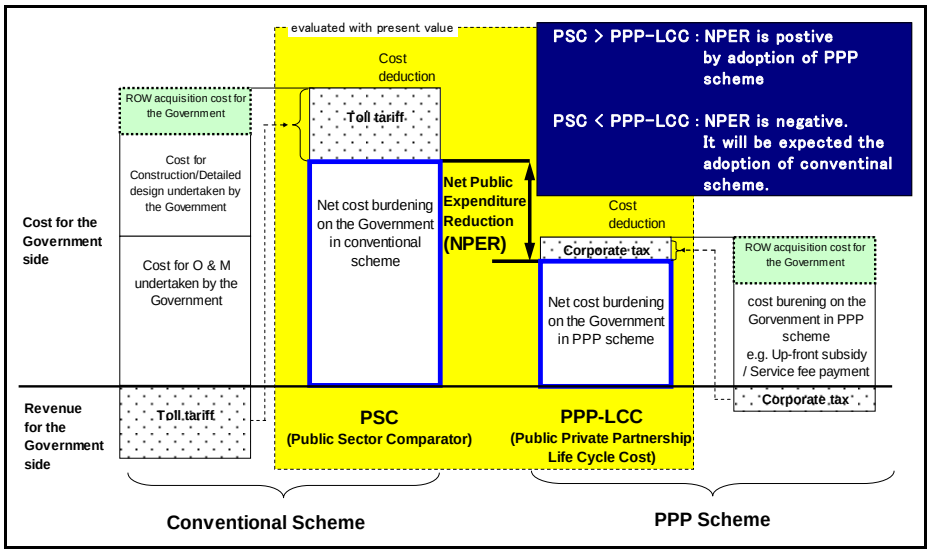
CONDITION FOR THE WACC CALCULATION IN THIS STUDY

Equity	Loan
-share of equity is 30% -cash yield is 15%	-share of loan is 70% -interest rate is 10%

(7) Net Public Expenditure Reduction (NPER) Estimation

Net Public Expenditure Reduction (NPER) is estimated for each of considerable PPP modalities. NPER is calculated in the form that Public Sector Comparator (PSC) minus PPP Life Cycle Cost (PPP-LCC). PSC is the present value of net cost (e.g., construction/O&M cost minus toll revenue) taken by the Government assuming that the Government solely undertakes the construction work and O&M on the basis of the conventional business scheme, while PPP-LCC is the present value of net cost taken by the Government assuming that either the Government or SPC undertake the construction work and O&M on the basis of PPP scheme.

If PSC is higher than PPP-LCC, NPER is positive. It means that public can reduce the net expenditure of public by the adoption of PPP scheme. Otherwise, if PSC is lower than PPP-LCC, NPER is negative. It means that public had better adopt the conventional scheme.



Source: JICA Study Team

FIGURE 8.5.2-3 CONCEPTUAL DIAGRAM FOR NET PUBLIC EXPENDITURE REDUCTION (NPER) EVALUATION

By the adoption of PPP schemes, public can reduce the net expenditure comparing from the conventional scheme, but at the same time, the public comes to loose toll revenue with all PPP schemes, except Type 4 Service Payment. Therefore, when adopting PPP schemes for those projects with high traffic demand expected, NPER may become negative in case net expenditure of public remains high relatively.

Calculation formulae for PSC, PPP-LCC and NPER are stated as below. For the calculation of PSC and PPP-LCC, it is necessary to discount net cost burdening on the government at appropriate discount rate so as to be able to convert the value to the present value of the base year. As for discount rate, 15% is used in our study in the light of discount rate applied in existing studies as well as interest rate of the commercial banks in the Philippines.

$$NPER = PSC - PPPLCC$$

$$PSC \text{ or } \mathrm{PPPLCC} = \sum_{i=0}^{T} \frac{(C_i - I_i)}{(1+r)^i}$$

Whereby

C_i : Cost burdening on the government at year i

(e.g. capital cost funded by government own budget, loan amortization and O&M cost in case of conventional scheme. ROW acquisition cost, subsidy, capital cost for segment dividing scheme and service fee payment in case of PPP scheme)

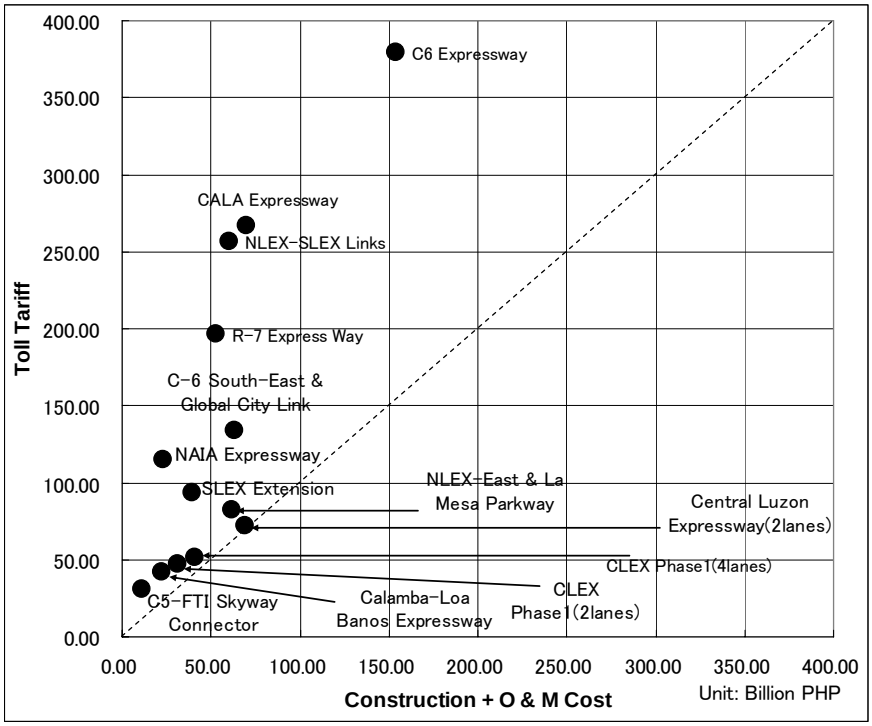
I_i : Income for the government at year i

(e.g. toll tariff in case of conventional scheme. Corporate tax income, lease fee in case of PPP scheme)

r : Discount rate

(8) Project cost and Toll tariff revenue

The project cost and toll tariff revenue for each project in current price is shown in **Figure 8.5.2-4**. The projects plotted nearby the diagonal line on the graph mean that it is likely to be inviable.



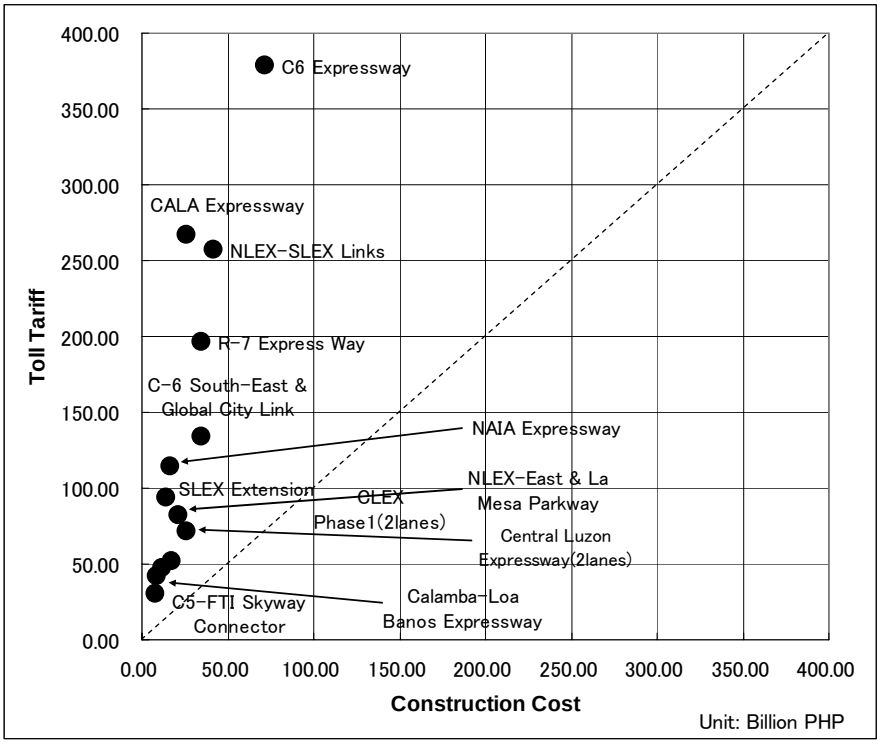
Source: JICA Study Team

FIGURE 8.5.2-4 PROJECT COST AND TOLL TARIFF REVENUE FOR EACH PROJECT (IN CURRENT PRICE)

TABLE 8.5.2-6 PROJECT COST AND TOLL TARIFF REVENUE FOR EACH PROJECT

Unit: Billion PHP

Project		Total Const + O & M Cost	Toll Tariff
1	NLEX-SLEX Links	60.13	256.91
2	NAIA Expressway	23.23	114.72
3-1	C6 Expressway	154.22	378.97
3-2	C-6 South-East & Global City Link	62.84	134.00
4	CALA Expressway	70.05	267.28
5	C5-FTI Skyway Connector	11.28	30.56
6-1	Central Luzon Expressway(2lanes)	69.08	71.73
6-2	CLEX Phase1(2lanes)	30.99	47.03
6-3	CLEX Phase1(4lanes)	41.05	51.74
7	SLEX Extension	39.14	93.59
8	Calamba-Loa Banos Expressway	22.48	41.97
9	R-7 Express Way	52.79	196.40
10	NLEX-East & La Mesa Parkway	61.46	82.56



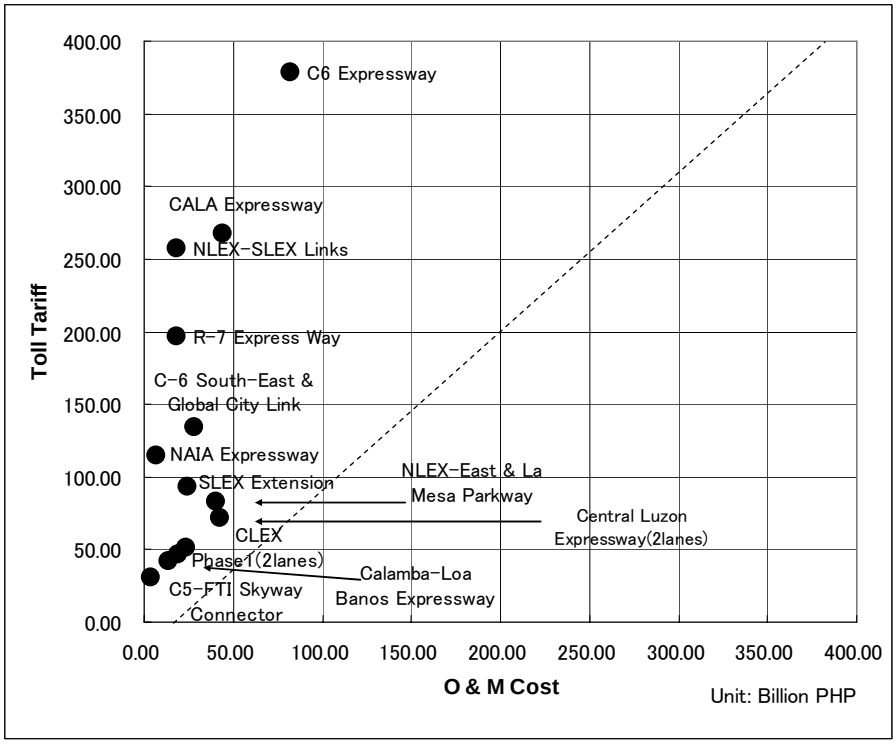
Source: JICA Study Team

FIGURE 8.5.2-5 CONSTRUCTION COST AND TOLL TARIFF REVENUE FOR EACH PROJECT (IN CURRENT PRICE)

TABLE 8.5.2-7 CONSTRUCTION COST AND TOLL TARIFF REVENUE FOR EACH PROJECT

Unit: Billion PHP

		Total Const Cost	Toll Tariff
1	NLEX-SLEX Links	41.90	256.91
2	NAIA Expressway	16.30	114.72
3	C6 Expressway	71.98	378.97
4	C-6 South-East & Global City Link	34.86	134.00
5	CALA Expressway	26.13	267.28
6	C5-FTI Skyway Connector	7.55	30.56
7	Central Luzon Expressway(2lanes)	26.18	71.73
7-1	CLEX Phase1(2lanes)	11.81	47.03
	CLEX Phase1(4lanes)	17.55	51.74
8	SLEX Extension	14.47	93.59
9	Calamba-Loa Banos Expressway	8.53	41.97
10	R-7 Express Way	34.72	196.40
11	NLEX-East & La Mesa Parkway	21.18	82.56



Source: JICA Study Team

FIGURE 8.5.2-6 O&M COST AND TOLL TARIFF REVENUE FOR EACH PROJECT (IN CURRENT PRICE)

TABLE 8.5.2-8 O&M COST AND TOLL TARIFF REVENUE FOR EACH PROJECT

Unit: Billion PHP

		O & M Cost	Toll Tariff
1	NLEX-SLEX Links	18.23	256.91
2	NAIA Expressway	6.92	114.72
3	C6 Expressway	82.24	378.97
4	C-6 South-East & Global City Link	27.98	134.00
5	CALA Expressway	43.91	267.28
6	C5-FTI Skyway Connector	3.73	30.56
7	Central Luzon Expressway(2lanes)	42.90	71.73
7-1	CLEX Phase1(2lanes)	19.18	47.03
	CLEX Phase1(4lanes)	23.50	51.74
8	SLEX Extension	24.67	93.59
9	Calamba-Loa Banos Expressway	13.95	41.97
10	R-7 Express Way	18.08	196.40
11	NLEX-East & La Mesa Parkway	40.28	82.56

8.5.3 Results of Financial Analysis

(1) Financial Viability of Each Project

The results of evaluation for financial viability and investment viability as to target roads are shown in **Table 8.5.3-1**. Viability criteria is;

- Financially viable if IRR for SPC higher than WACC (11.5%)
- Investment viable if Equity IRR higher than the rate of return on equity (15%)

Regarding Type 3-1 and Type 5, it makes a difference whether government will finance with soft loan or not. Because the lease fee with soft loan would be higher due to the repayment of loan interest rate.

TABLE 8.5.3-1 RESULTS OF THE EXAMINATION OF FINANCIAL VIABILITY FOR EACH PROJECT

		Project IRR		PPP scheme							
				Type 1	Type 2	Type 3 Segment dividing			Type 4	Type 5 Lease	
				Pure BOT	BOT with subsidy	Type 3-1 With lease fee		Type 3-2 Without lease fee	Service Payment		
						GOP's Budget	Soft Loan			GOP's Budget	Soft Loan
1	NLEX-SLEX Link Expressway	9.14%	IRR for SPC	9.45%	15.53%	15.80%	15.11%	17.99%	–	–	–
			Equity IRR	8.51%	17.81%	18.03%	16.83%	22.20%	–	–	–
2	NAIA Expressway-2	9.97%	IRR for SPC	10.54%	16.78%	–	–	–	10.05%	374.41%	271.52%
			Equity IRR	10.04%	19.85%	–	–	–	8.86%	374.41%	271.52%
3-1	C-6 Expressway + Global Link	7.10%	IRR for SPC	8.10%	13.58%	12.09%	11.55%	13.67%	–	–	–
			Equity IRR	6.60%	14.71%	12.29%	11.48%	14.81%	–	–	–
3-2	C-6 Expressway South East section & Global City Link	5.14%	IRR for SPC	6.04%	11.09%	12.12%	10.95%	15.48%	–	–	–
			Equity IRR	3.90%	10.79%	12.33%	10.63%	18.01%	–	–	–
4	CALA Expressway	12.51%	IRR for SPC	13.59%	20.11%	18.14%	17.83%	19.12%	11.67%	202.20%	177.18%
			Equity IRR	14.63%	26.71%	22.52%	21.88%	24.58%	11.66%	202.20%	177.18%
5	C-5/FTI/SKYWAY Connector Rd.	6.08%	IRR for SPC	6.24%	11.59%	–	–	–	–	–	–
			Equity IRR	4.24%	11.54%	–	–	–	–	–	–
6-1	CLEX Phase1+2(2lanes)	Negative	IRR for SPC	Negative	3.64%	Negative	Negative	3.33%	11.62%	Negative	Negative
			Equity IRR	Negative	0.30%	Negative	Negative	Negative	11.56%	Negative	Negative
6-2	CLEX Phase1(2lanes)	3.62%	IRR for SPC	4.36%	8.84%	–	–	–	11.62%	38.49%	22.37%
			Equity IRR	1.69%	7.52%	–	–	–	11.56%	38.49%	22.37%
6-3	CLEX Phase1(4lanes)	1.37%	IRR for SPC	1.80%	5.79%	–	–	–	11.17%	16.01%	4.69%
			Equity IRR	Negative	3.42%	–	–	–	10.73%	16.01%	4.69%
7	SLEX Extension (to Lucena)	8.12%	IRR for SPC	8.60%	13.82%	12.96%	12.42%	14.56%	11.62%	93.53%	70.73%
			Equity IRR	7.31%	15.08%	13.61%	12.77%	16.27%	11.56%	93.53%	70.73%
8	Calamba-Los Banos Toll Expressway	5.34%	IRR for SPC	6.46%	11.33%	–	–	–	11.77%	45.76%	31.24%
			Equity IRR	4.56%	11.17%	–	–	–	11.85%	45.76%	31.24%
9	R-7 Express Way	8.76%	IRR for SPC	9.15%	15.38%	–	–	–	10.14%	347.70%	263.57%
			Equity IRR	8.02%	17.75%	–	–	–	8.99%	347.70%	263.57%
10	NLEX-East & La Mesa Parkway	2.50%	IRR for SPC	2.82%	6.87%	6.73%	4.97%	11.69%	11.84%	17.39%	9.02%
			Equity IRR	Negative	4.95%	5.12%	3.10%	11.70%	12.00%	17.39%	9.02%

Note: IRR for SPC over 11.5 %(WACC): Yellow
Equity IRR over 15%: Yellow

GOP's Budget: Financed by government own budget only
Soft Loan: Financed by Soft Loan and government own budget

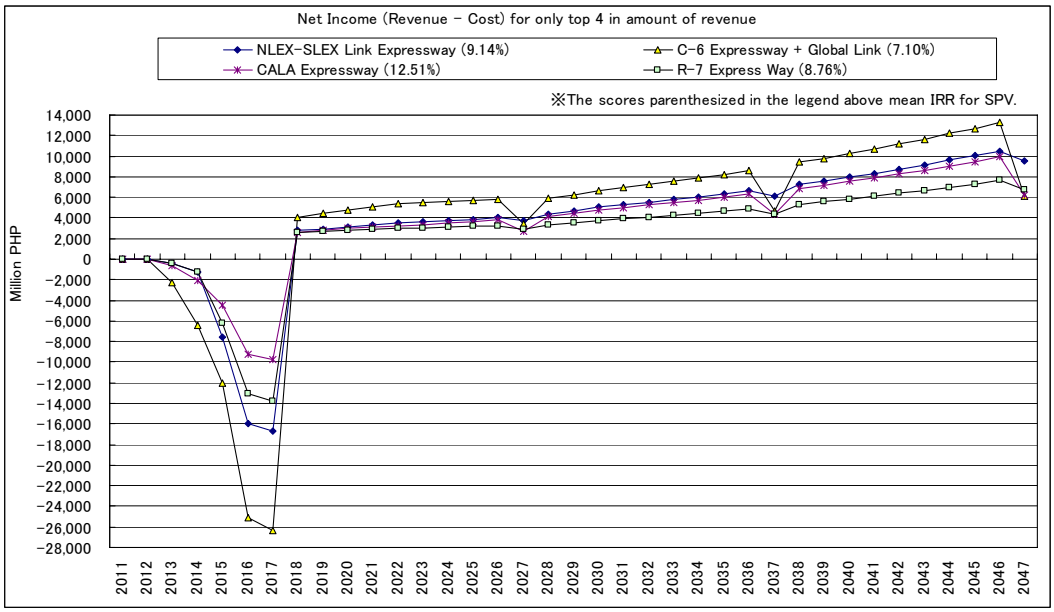
Source: JICA Study Team

(2) Project IRR for Each Targeted Project

The net income flows on Project IRR for each targeted project are shown as in **Figure 8.5.3-1**.

The net income of C-6 Expressway and Global Link in operation period is the highest in the top 4projects with revenue, but the capital cost is also more than other projects. Project IRR tends to be more sensitive to the net income in the initial period. So, the Project IRR of C-6 Expressway and Global Link is the lowest as 7.10%.

Regarding CALA expressway, the capital cost is the lowest and the net income in operation period is relatively higher. So, the Project IRR is the highest as 12.51%.



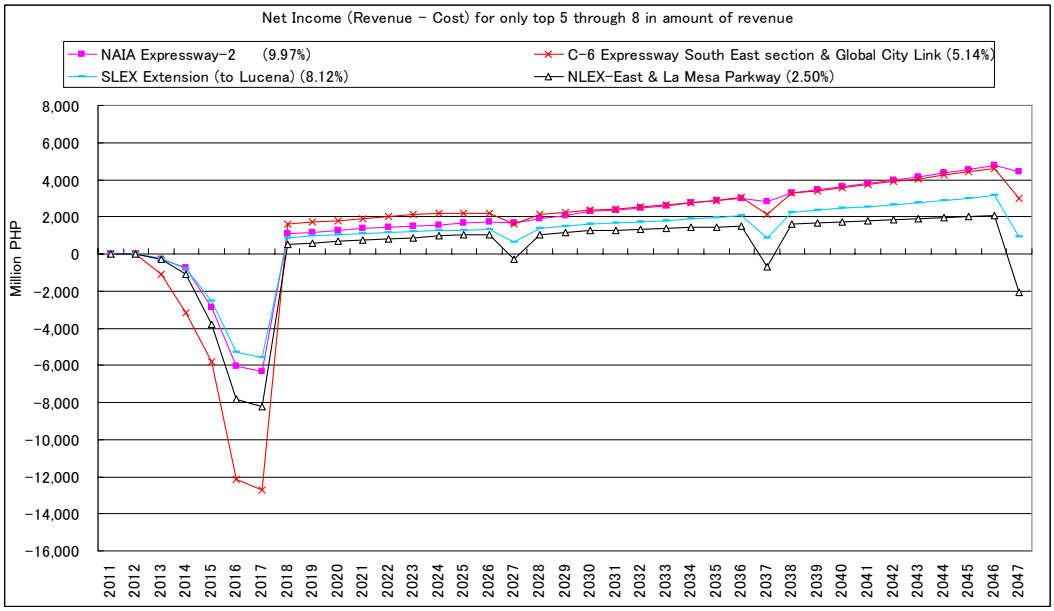
Source: JICA Study Team

FIGURE 8.5.3-1 NET INCOME FLOW IN THE BASE CASE FOR ONLY TOP 4 IN THE AMOUNT REVENUE

The capital cost of NAIA Expressway is low and the net income in operation period is high, so the Project IRR is the highest as 9.97% in the top5 through 8 projects with revenue.

Regarding C6 South East and Global City Link, the net income is relatively high, but the capital cost is the highest, so the Project IRR is low as 5.14%.

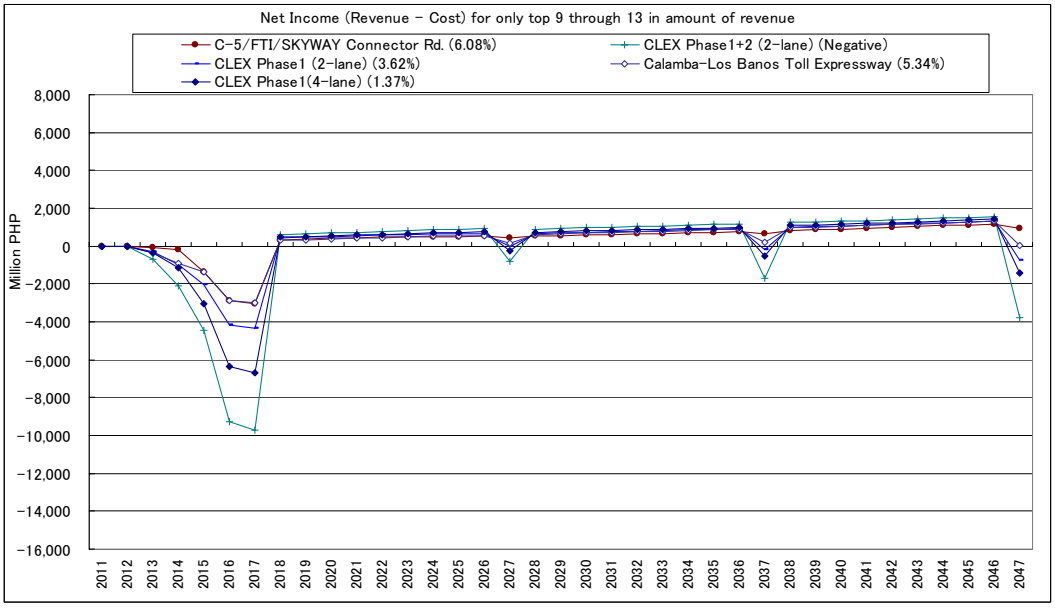
Regarding NLEX-East expressway, the net income is the lowest and the capital cost is relatively high, so the Project IRR is the lowest as 2.50%.



Source: JICA Study Team

FIGURE 8.5.3-2 NET INCOME FLOW IN THE BASE CASE FOR ONLY TOP 5 THROUGH 8 IN THE AMOUNT REVENUE

The capital cost of CLEX Phase 1+2 with 2 lane is the highest in the top 9 through 13 project with revenue, and the net income is almost the same as other projects, so the Project IRR is "Negative". Regarding CLEX Phase1 with 2 lane, the capital cost is higher than Calamba Los Banos and C-5/FTI/Skyway Connector Rd, and the net income is relatively low, so the Project IRR is low as 3.62%.



Source: JICA Study Team

FIGURE 8.5.3-3 NET INCOME FLOW IN THE BASE CASE FOR ONLY TOP 9 THROUGH 13 IN THE AMOUNT REVENUE

(3) Examples of the Detail Result of Financial Viability Estimation for Each PPP Scheme

The examples of the result of financial viability estimation for each PPP scheme are shown as follows:

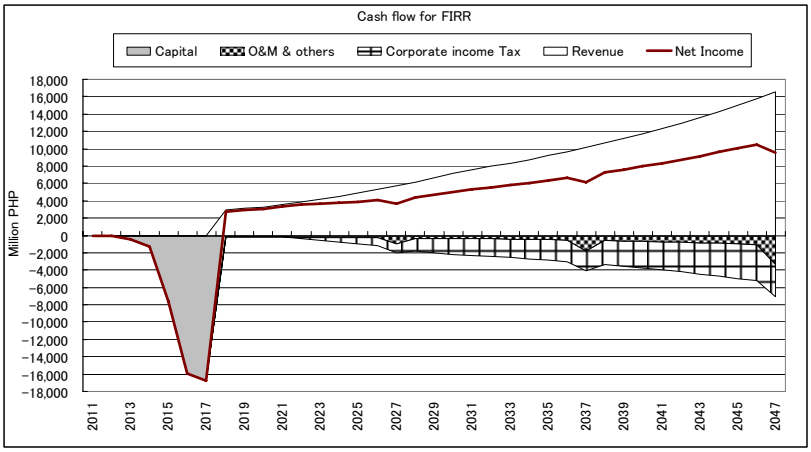
(a) Type 1 (Pure BOT): Cases of NLEX-SLEX Link and NLEX-East & La Mesa Parkway

In the case of NLEX-SLEX Link, the both of IRR for SPC and Equity IRR show high scores relatively due to the sufficient revenue, although the capital cost is high. Meanwhile, in the case of NLEX-East & La Mesa Parkway, the both of IRR for SPC and Equity IRR are low due to the lack of the revenue.

TABLE 8.5.3-2 RESULTS OF THE ESTIMATION OF IRR FOR SPC AND EQUITY IRR IN CASE OF TYPE 1

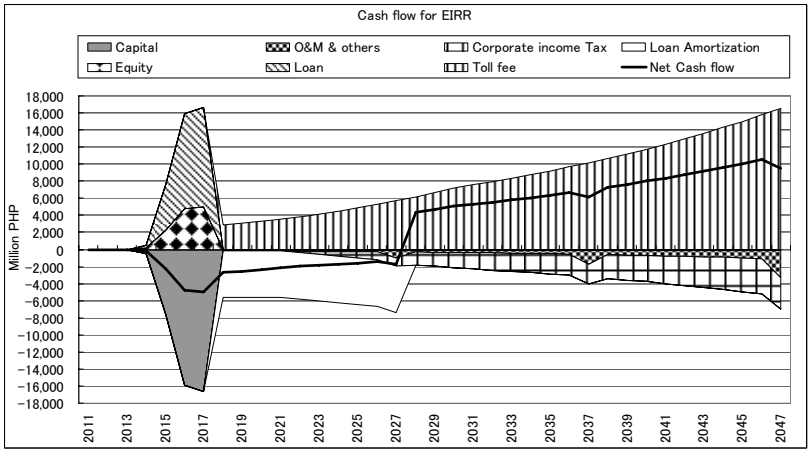
Project	Type	IRR for SPC	Equity IRR
NLEX-SLEX Link	**Pure BOT**	9.45%	8.51%
NLEX-East &La Mesa Parkway	**Pure BOT**	2.82%	Negative

Source: JICA Study Team



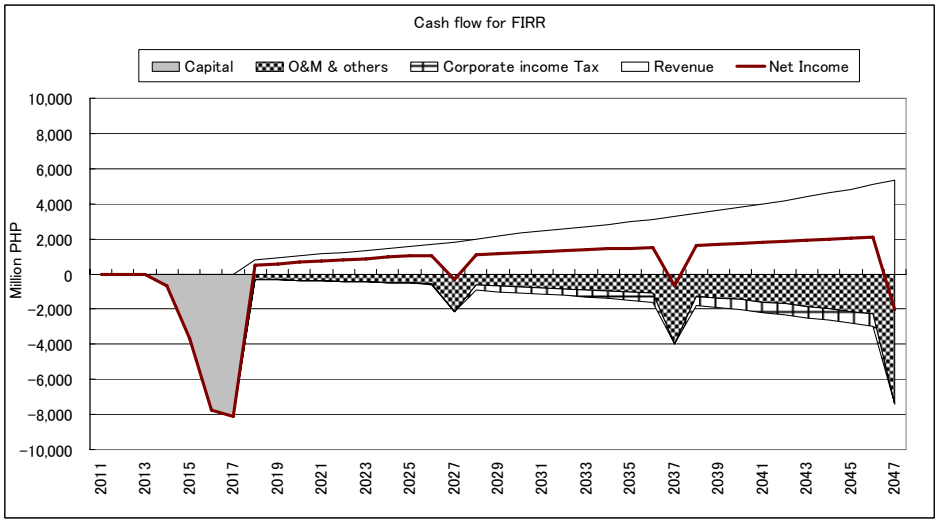
Source: JICA Study Team

FIGURE 8.5.3-4 CASH FLOW FOR "IRR FOR SPC" ESTIMATION IN CASE OF NLEx - SLEx LINK BY PURE BOT



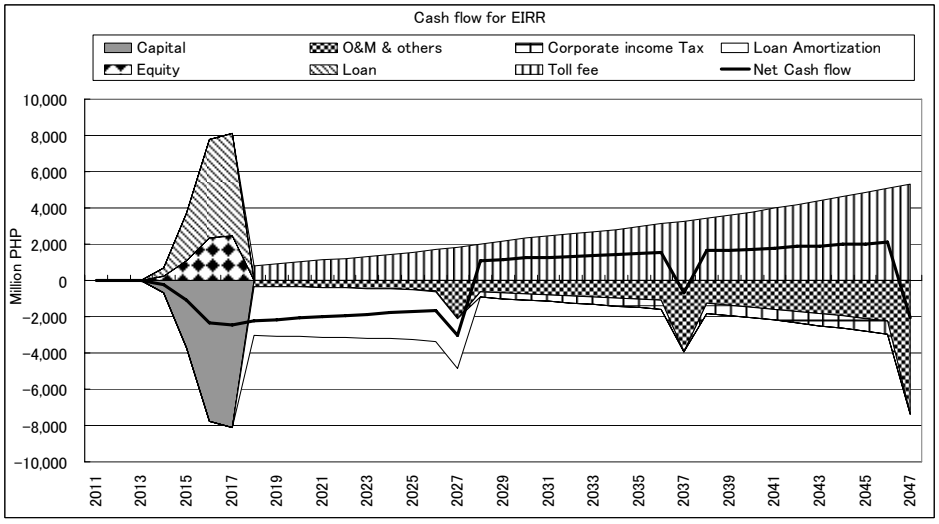
Source: JICA Study Team

FIGURE 8.5.3-5 CASH FLOW FOR "EQUITY IRR" IN CASE OF PURE BOT



Source: JICA Study Team

FIGURE 8.5.3-6 CASH FLOW FOR "IRR FOR SPC" ESTIMATION IN CASE OF NLEx – EAST & LA MESA PARKWAY BY PURE BOT



Source: JICA Study Team

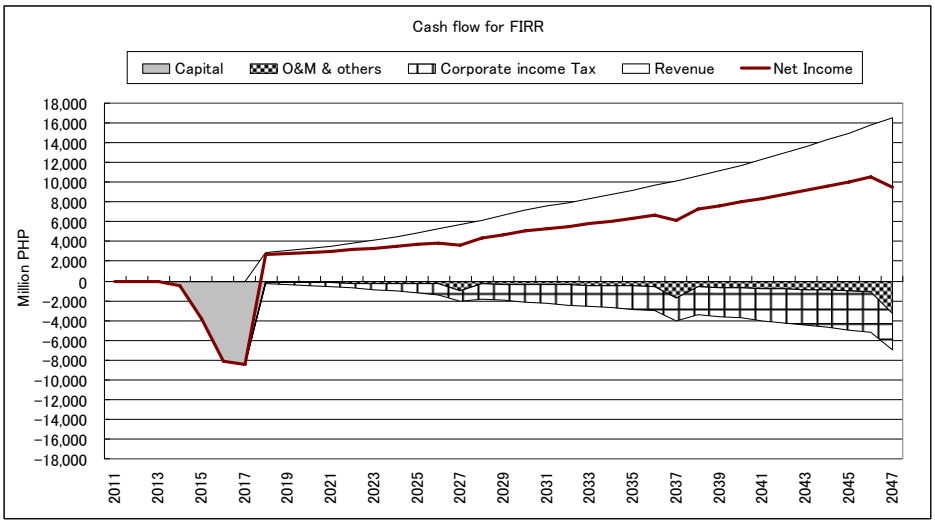
FIGURE 8.5.3-7 CASH FLOW FOR "EQUITY IRR" ESTIMATION IN CASE OF NLEx – EAST & LA MESA PARKWAY BY PURE BOT

(b) Type 2 (BOT with subsidy): Case of NLEX-SLEX Link

In the case of NLEX-SLEX Link by BOT with subsidy, the both of IRR for SPC and Equity IRR are improved rather than the case of Pure BOT, because the expenditure of SPC for construction is reduced by the subsidy from government.

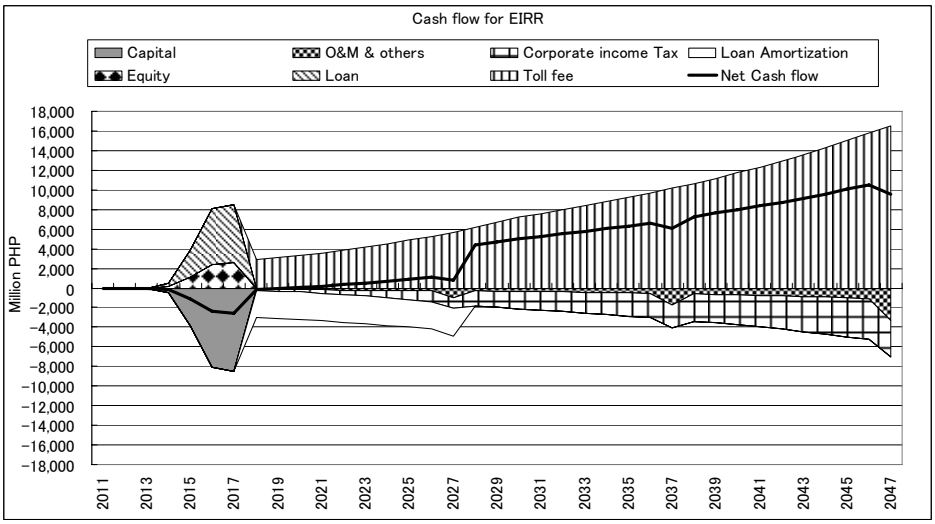
TABLE 8.5.3-3 RESULTS OF THE ESTIMATION OF IRR FOR SPC AND EQUITY IRR IN CASE OF TYPE 2

Project	Type	IRR for SPC	Equity IRR
NLEX-SLEX Link	**BOT with subsidy**	15.53%	17.81%
NLEX-SLEX Link	**Pure BOT**	9.45%	8.51%



Source: JICA Study Team

FIGURE 8.5.3-8 CASH FLOW FOR "IRR FOR SPC" ESTIMATION IN CASE OF NLEx - SLEx LINK BY BOT WITH SUBSIDY



Source: JICA Study Team

FIGURE 8.5.3-9 CASH FLOW FOR "EQUITY IRR" ESTIMATION IN CASE OF NLEx -SLEx LINK BY BOT WITH SUBSIDY

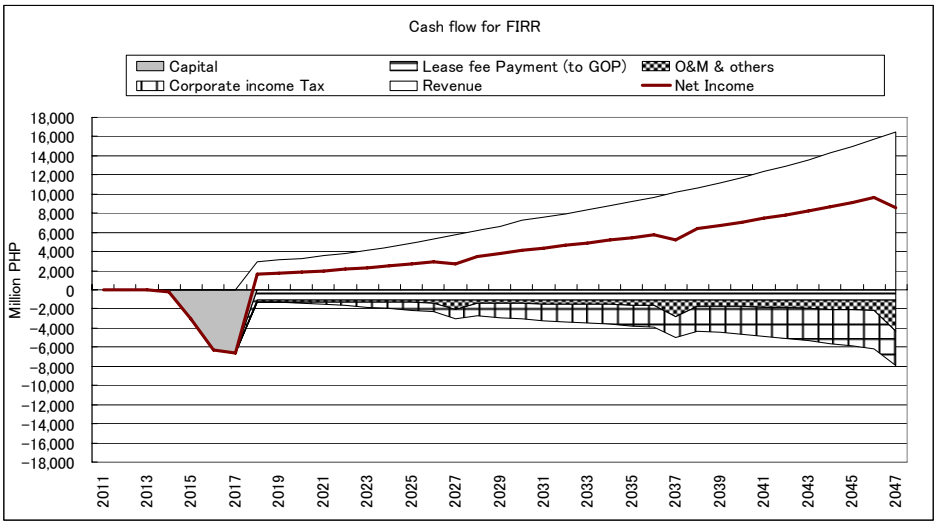
(c) Type 3 (Segment dividing): Case of NLEx - SLEx Link

In case of Segment dividing, the both of IRR for SPC and Equity IRR are also improved rather than case of Pure BOT, because the expenditure of SPC for construction is reduced by government undertaking the construction for government segment. However, in case of Segment dividing with lease fee payment to government, SPC has to pay the lease fee to government to compensate for the construction for government segment. Therefore, both of the IRR for SPC and the Equity IRR decrease rather than the case of Segment dividing without lease fee. Additionally, both the IRR with soft loan are lower due to the higher lease fee.

TABLE 8.5.3-4 RESULTS OF THE ESTIMATION OF IRR FOR SPC AND EQUITY IRR IN CASE OF TYPE 3

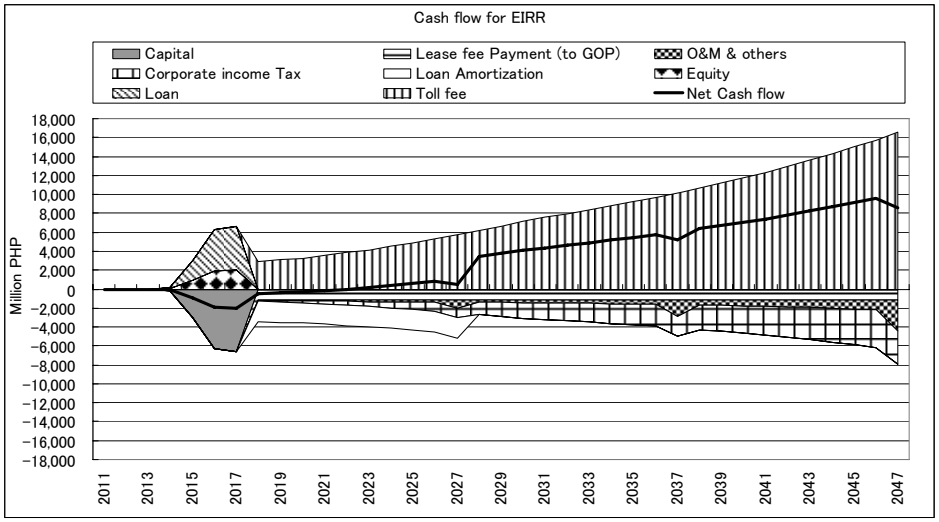
Project	Type			IRR for SPC	Equity IRR
NLEX-SLEX Link	**Segment dividing**	With lease fee	GOP's Budget	15.80%	18.03%
			Soft Loan	15.11%	16.83%
NLEX-SLEX Link	**Segment dividing**	Without lease fee		17.99%	22.20%

Source: JICA Study Team



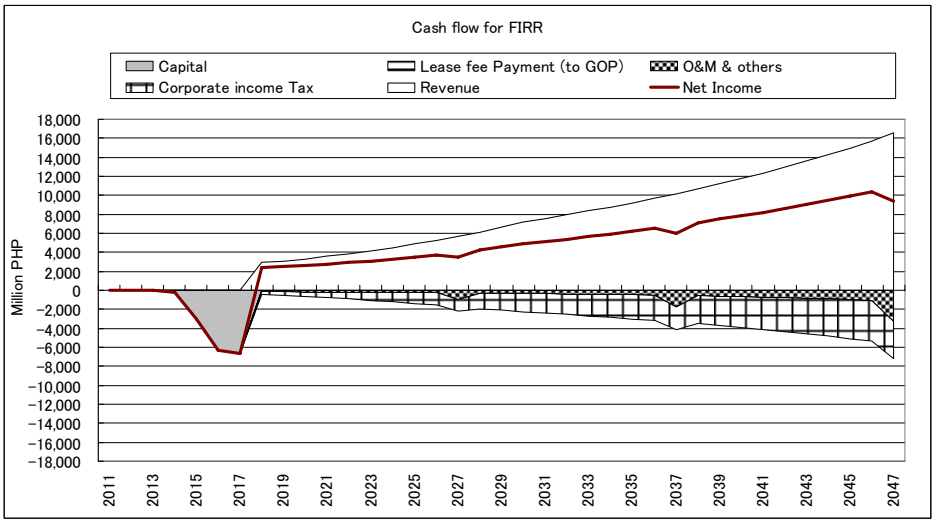
Source: JICA Study Team

FIGURE 8.5.3-10 CASH FLOW FOR "IRR FOR SPC" ESTIMATION IN CASE OF NLEx - SLEx LINK BY SEGMENT DIVIDING WITH LEASE FEE PAYMENT



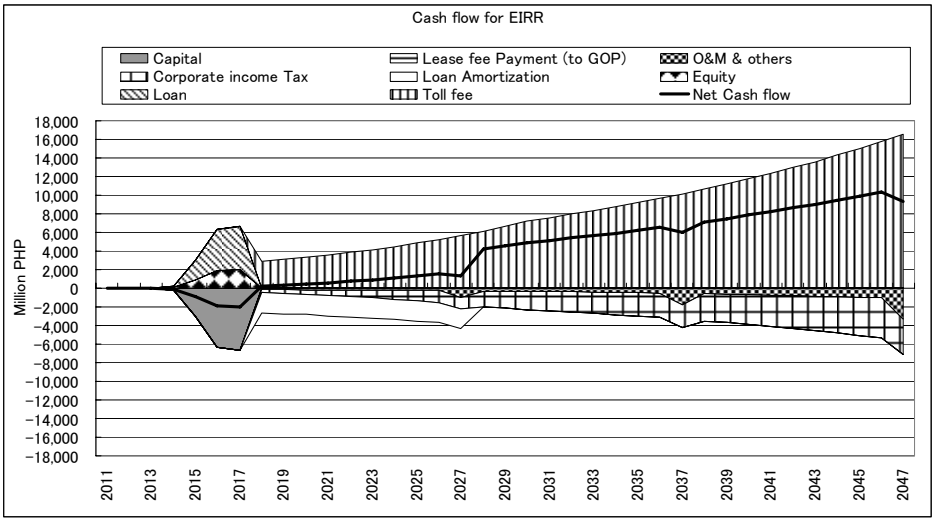
Source: JICA Study Team

FIGURE 8.5.3-11 CASH FLOW FOR "EQUITY IRR" ESTIMATION IN CASE OF NLEx - SLEx LINK BY SEGMENT DIVIDING WITH LEASE FEE PAYMENT



Source: JICA Study Team

FIGURE 8.5.3-12 CASH FLOW FOR "IRR FOR SPC" ESTIMATION IN CASE OF NLEx - SLEx LINK BY SEGMENT DIVIDING WITHOUT LEASE FEE PAYMENT



Source: JICA Study Team

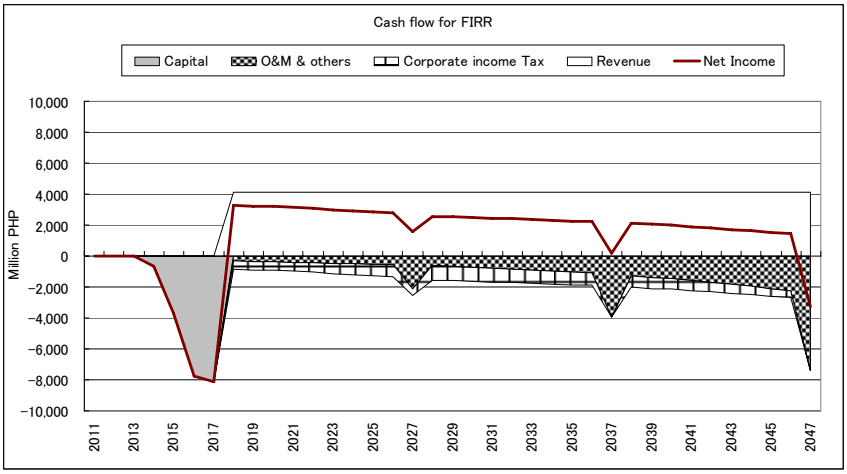
FIGURE 8.5.3-13 CASH FLOW FOR "EQUITY IRR" ESTIMATION IN CASE OF NLEx - SLEx LINK BY SEGMENT DIVIDING WITHOUT LEASE FEE PAYMENT

(d) Type 4 (Service Payment): Case of NLEX-East&La Mesa Parkway

In case of Service Payment, SPC can receive the service fee from government constantly during the O&M period to compensate SPC's investment and O&M cost. So, the IRR for SPC and Equity IRR are sustained up to the level to secure the financial viability regardless of the revenue from toll tariff.

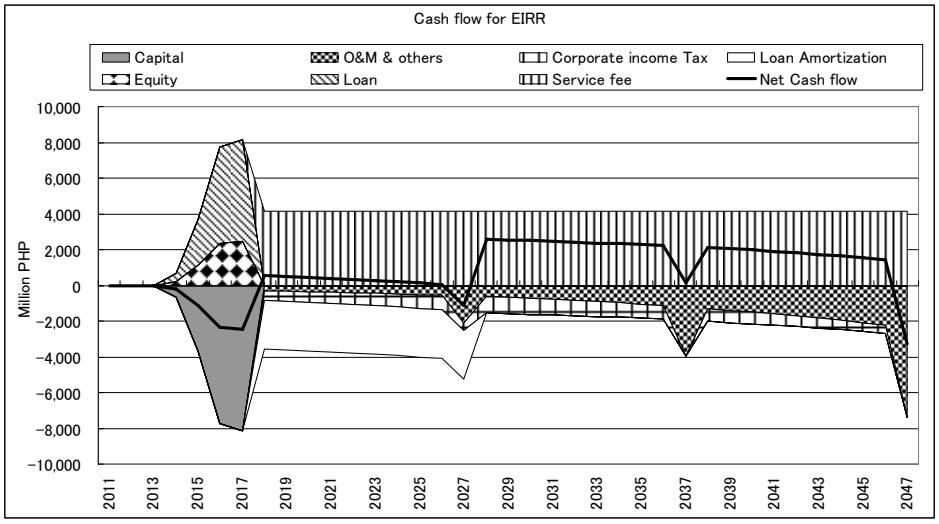
TABLE 8.5.3-5 RESULTS OF THE ESTIMATION OF IRR FOR SPC AND EQUITY IRR IN CASE OF TYPE 4

Project	Type	IRR for SPC	Equity IRR
NLEx – East & La Mesa Parkway	**Service Payment**	11.84%	12.00%
NLEx - East&La Mesa Parkway	**Pure BOT**	2.82%	Negative



Source: JICA Study Team

FIGURE 8.5.3-14 CASH FLOW FOR "IRR FOR SPC" ESTIMATION IN CASE OF NLEx – EAST & LA MESA PARKWAY BY SERVICE PAYMENT



Source: JICA Study Team

FIGURE 8.5.3-15 CASH FLOW FOR "EQUITY IRR" ESTIMATION IN CASE OF NLEx – EAST & LA MESA PARKWAY BY SERVICE PAYMENT

Table 8.5.3-6 shows total amount of toll tariff revenue and service fee payment of each project adopting Type 4 Service Payment scheme. In such project expecting low traffic demand as CLEX, total amount of service fee payment is higher than that of toll tariff revenue. It means that the public needs to pay service fee not only from the toll tariff revenue but also from government own budget or from other forms of public funds, in order to adopt Type 4 Service Payment scheme. On the other hand, in such project expecting high traffic demand as CALA Expressway, public is available to pay service fee only from toll tariff revenue. In all cases, public needs to bear whole demand risk, when adopting Type 4 Service Payment scheme.

TABLE 8.5.3-6 COMPARISON OF TOLL TARIFF AND SERVICE FEE

Unit: Billion PHP(current price)

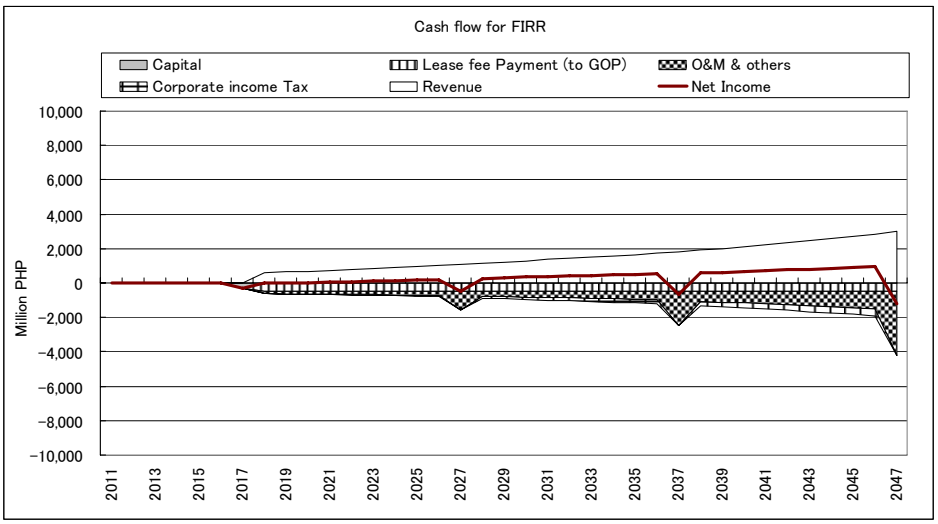
		Revenue(total)	
		Toll tariff	Service fee
2	NAIA Expressway-2	114.72	69.20
4	CALA Expressway	267.28	142.56
6-1	CLEX Phase1+2 (2-lane)	71.73	141.27
6-2	CLEX Phase1 (2-lane)	47.03	63.15
6-3	CLEX Phase1(4-lane)	51.74	90.77
7	SLEX Extension (to Lucena)	93.59	81.31
8	Calamba-Los Banos Toll Expressway	41.97	44.37
9	R-7 Express Way	196.40	153.11
10	NLEX-East & La Mesa Parkway	82.56	123.71

(e) Type 5 (Lease): Cases of CLEx Phase 1 (2-lane)

In case of Lease, both of IRR for SPC and Equity IRR are higher than Pure BOT due to the reduction of SPC's investment, although SPC has to pay the lease fee to government for the compensation of the capital cost funded by government.

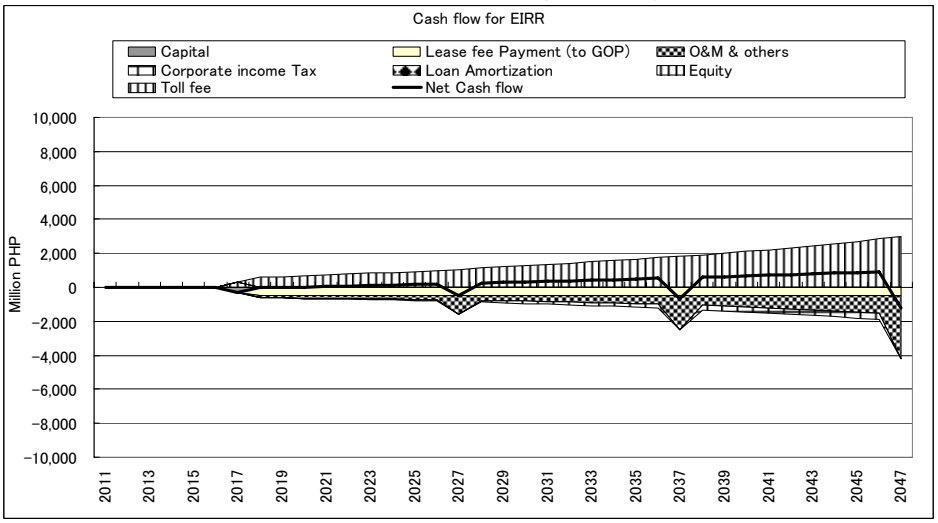
TABLE 8.5.3-7 RESULTS OF THE ESTIMATION OF IRR FOR SPC AND EQUITY IRR IN CASE OF TYPE 5

Project	Type		IRR for SPC	Equity IRR
CLEx Phase 1 (2-lane)	**Lease**	**GOP's Budget**	38.49%	38.49%
		Soft Loan	22.37%	22.37%
CLEx Phase 1 (2-lane)	**Pure BOT**		4.36%	1.69%



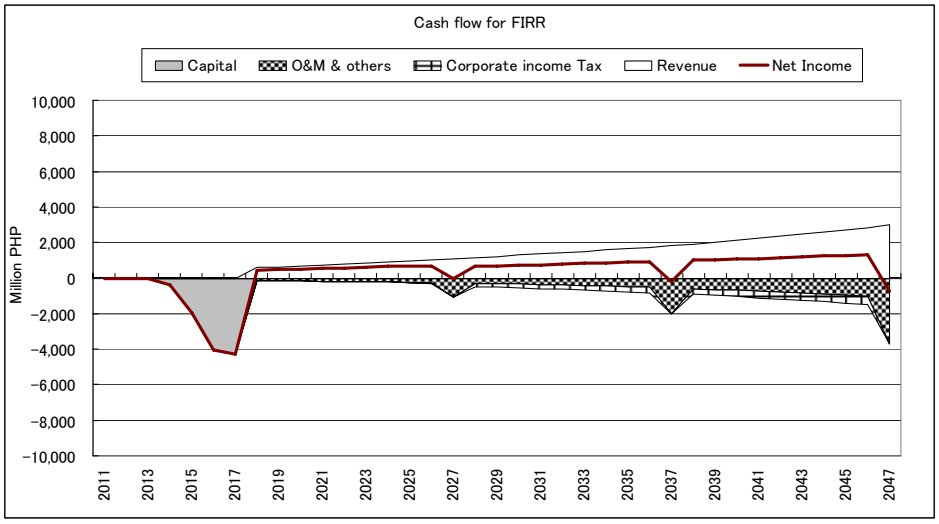
Source: JICA Study Team

FIGURE 8.5.3-16 CASH FLOW FOR "IRR FOR SPC" ESTIMATION IN CASE OF CLEx PHASE 1 (2-LANE) BY LEASE



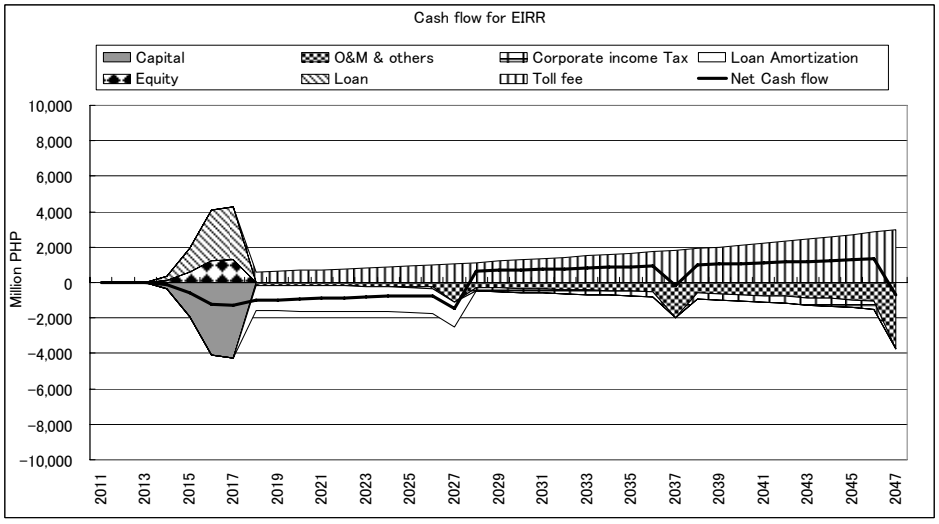
Source: JICA Study Team

FIGURE 8.5.3-17 CASH FLOW FOR "EQUITY IRR" ESTIMATION IN CASE OF CLEx PHASE 1 (2-LANE) BY LEASE



Source: JICA Study Team

FIGURE 8.5.3-18 CASH FLOW FOR "IRR FOR SPC" ESTIMATION IN CASE OF CLEx PHASE 1 (2 - LANE) BY PURE BOT



Source: JICA Study Team

FIGURE 8.5.3-19 CASH FLOW FOR "EQUITY IRR" ESTIMATION IN CASE OF CLEx PHASE 1 (2 - LANE) BY PURE BOT

(3) Net Public Expenditure Reduction (NPER) Evaluation

The results of evaluation for NPER as to target roads are shown in **TABLE 8.5.3-8** . PSC that means the net expenditure of government by conventional scheme is calculated with an assumption that the government expenditure comes from its own budget without the funding by soft loan.

The red cell means NPER is negative. Therefore, in case of NPER is negative, it will be required the decrease of the net government expenditure including the reduction of subsidy from government or the increase of lease fee paid by private in order to secure NPER.
In case of the financing by government own budget, the expenditure of government at the present value is higher because government must expend the construction in the implementation period. However, in case of the financing by soft loan, it is lower because government can repay loan

amortization in the repayment period after the completion of civil work. That is why the NPER in the most case of Soft Loan is positive but the NPER in the most case of GOP's budget is negative for Type 3 and Type 5.

TABLE 8.5.3-8 RESULTS OF THE EXAMINATION OF NPER FOR EACH PROJECT

Red means PSC < PFILCC (NPER is negative), Unit: Billion PHP

Project Name		Net Public Expenditure Reduction (NPER)								
		Pure BOT	BOT with Subsidy	Segment dividing				Service Payment	Lease	
			50% of construction cost	Lease fee payment						
				100%		0%				
				GOP's Budget	Soft Loan	GOP's Budget	Soft Loan		GOP's Budget	Soft Loan
1	NLEX–SLEX Link Expressway	7.46	-0.45	-0.56	8.74	-2.00	6.84	-	-	-
2	NAIA Expressway-2	2.40	-0.59	-	-	-	-	1.98	-2.56	3.29
3-1	C-6 Expressway + Global Link	13.77	1.71	3.40	15.33	1.54	12.82	-	-	-
3-2	C-6 Expressway South East section & Global City Link	8.10	2.15	1.05	9.07	-0.19	7.38	-	-	-
4	CALA Expressway	1.22	-2.92	-1.88	1.84	-2.45	1.09	2.01	-6.41	2.75
5	C-5/FTI/SKYWAY Connector Rd.	1.93	0.44	-	-	-	-	-	-	-
6-1	CLEX Phase1+2	8.37	3.88	4.69	8.84	3.87	7.75	2.04	0.14	9.41
6-2	CLEX Phase1	3.12	1.13	-	-	-	-	0.91	-0.47	3.62
6-3	CLEX Phase1(4lanes)	5.48	2.40	-	-	-	-	1.60	-0.16	6.20
7	SLEX Extension (to Lucena)	2.80	0.32	0.51	3.15	0.10	2.60	1.17	-1.68	3.58
8	Calamba-Los Banos Toll Expressway	1.93	0.51	-	-	-	-	0.60	-0.54	2.28
9	R-7 Express Way	6.18	-0.26	-	-	-	-	4.20	-4.54	8.16
10	NLEX-East & La Mesa Parkway	6.58	2.77	1.66	7.20	0.67	5.86	1.60	-0.35	7.47

Base year: 2010, Discount rate: 15%

Source: JICA Study Team

TABLE 8.5.3-9 shows the results of the examination of PSC and PPPLCC for each project. For those projects that have negative PPPLCC indicate that the government income is larger than the government expenditure by adopting PPP scheme. Because public sector would receive large amount of tax income due to high traffic demand and present value of the public cost would come to smaller by utilizing soft loan.

TABLE 8.5.3-9 RESULTS OF THE EXAMINATION OF PSC AND PPPLCC FOR EACH PROJECT

PSC or PPPLCC is minus: Yellow
(It means government income including corporate tax is larger than the government expenditure)
Unit: Billion PHP

Project Name		PSC	PPPLCC								
			Pure BOT	BOT with Subsidy	Segment dividing				Service Payment	Lease	
				50% of construction cost	Lease fee payment						
					100%		0%				
					GOP's Budget	Soft Loan	GOP's Budget	Soft Loan		GOP's Budget	Soft Loan
1	NLEX–SLEX Link Expressway	6.53	-0.93	6.98	7.08	-2.22	8.52	-0.31	-	-	-
2	NAIA Expressway-2	2.11	-0.28	2.71	-	-	-	-	0.14	4.68	-1.18
3-1	C-6 Expressway + Global Link	16.21	2.44	14.50	12.81	0.88	14.67	3.39	-	-	-
3-2	C-6 Expressway South East section & Global City Link	9.69	1.59	7.54	8.64	0.63	9.88	2.31	-	-	-
4	CALA Expressway	0.35	-0.87	3.27	2.23	-1.50	2.80	-0.74	-1.66	6.75	-2.40
5	C-5 / FTI / SKYWAY Connector Rd.	1.85	-0.07	1.41	-	-	-	-	-	-	-
6-1	CLEX Phase1+2	9.57	1.20	5.69	4.88	0.73	5.70	1.82	7.53	9.43	0.16
6-2	CLEX Phase1	3.62	0.50	2.49	-	-	-	-	2.71	4.09	0.00
6-3	CLEX Phase1(4lanes)	6.00	0.52	3.60	-	-	-	-	4.40	6.16	-0.20
7	SLEX Extension (to Lucena)	2.74	-0.07	2.41	2.22	-0.42	2.63	0.13	1.56	4.42	-0.84
8	Calamba-Los Banos Toll Expressway	2.43	0.51	1.92	-	-	-	-	1.84	2.97	0.15
9	R-7 Express Way	5.67	-0.52	5.93	-	-	-	-	1.47	10.20	-2.49
10	NLEX-East & La Mesa Parkway	6.89	0.31	4.12	5.23	-0.31	6.22	1.03	5.29	7.24	-0.58

Base year: 2010, Discount rate: 15%
Source: JICA Study Team

8.5.4 SENSITIVITY ANALYSIS

(1) Variation of Construction Cost Increasing and Revenue Decreasing

The cases of sensitivity analysis of IRR for SPC and Equity IRR on the construction cost and revenue are as follow.

CASE FOR SENSITIVITY ANALYSIS ON THE CONSTRUCTION COST AND REVENUE

Case 1	- Construction cost +10%
Case 2	- Revenue from toll tariff -10%
Case 3	- Construction cost +10% and Revenue from toll tariff -10%

Generally, the reduction of the revenue is more sensitive than the increase of the construction cost on the decrease of financial viability. Especially, in case of Lease scheme, the financial viability decreases much more because the small initial investment makes it be more sensitive against the variation of the revenue and cost in operation period.

Results of the above cases are shown in **Table 8.5.4-1.**

The results of sensitivity analysis of NPER on the construction cost and revenue are shown in **Table 8.5.4-2**. Generally, there is a tendency to improve NPER with the construction cost increasing and revenue decreasing. Because, construction cost increasing and revenue decreasing may lead to PSC increasing, and also in conventional scheme, public may bear total higher project cost than PPPLCC increasing. With this circumstance, positive NPER may enlarge and some projects with negative NPER are becoming positive.

TABLE 8.5.4-1 (1/4) RESULTS OF IRR SENSITIVITY ANALYSIS FOR THE CONSTRUCTION COST AND REVENUE

Bold and Italic with double underlined: IRR for SPC less than 11.5% and Equity IRR less than 15.0%

IRR decrease: 1.0 ～2.0% 2.0～3.0% Over 3.0%

Project Name		PPP scheme	Lease fee		IRR	Base Case	Sensitivity Analysis					
							Construction Cost +10%		Revenue -10%		Construction Cost +10%& Revenue -10%	
1	NLEX–SLEX Link Expressway	Type 3: Segment dividing	100 %	Soft Loan	IRR for SPV	15.11%	13.96 %	-1.15%	13.75 %	-1.35%	12.63 %	-2.47 %
					Equity IRR	16.83%	15.01 %	-1.82%	***14.70 %***	-2.13%	***13.03 %***	-3.80 %
				GOP's budget	IRR for SPC	15.80%	14.70 %	-1.10%	14.51 %	-1.29%	13.43 %	-2.37 %
					Equity IRR	18.03%	16.22 %	-1.81%	15.92 %	-2.11%	***14.24 %***	-3.79 %
			0%	-	IRR for SPC	17.99%	16.93 %	-1.06%	16.75 %	-1.24%	15.75 %	-2.24 %
					Equity IRR	22.20%	20.23 %	-1.97%	19.91 %	-2.29%	18.15 %	-4.05 %
2	NAIA Expressway-2	Type 2: BOT with subsidy	-	-	IRR for SPC	16.78%	15.83 %	-0.94%	15.68 %	-1.10%	14.76 %	-2.02 %
					Equity IRR	19.85%	18.22 %	-1.64%	17.95 %	-1.90%	16.42 %	-3.44 %
3-1	C-6 Expressway + Global Link	Type 3: Segment dividing	100 %	Soft Loan	IRR for SPV	11.55%	***10.55 %***	-1.00%	***10.20 %***	-1.35%	***9.24%***	-2.31 %
					Equity IRR	***11.48%***	***10.05 %***	-1.43%	***9.56%***	-1.93%	***8.24%***	-3.24 %
			100 %	GOP's budget	IRR for SPC	12.09%	***11.12 %***	-0.97%	***10.78 %***	-1.31%	***9.84%***	-2.25 %
					Equity IRR	***12.29%***	***10.85 %***	-1.44%	***10.36 %***	-1.93%	***9.04%***	-3.24 %
			0%	-	IRR for SPC	13.67%	12.78 %	-0.89%	12.48 %	-1.19%	11.63 %	-2.04 %
					Equity IRR	***14.81%***	***13.38 %***	-1.44%	***12.90 %***	-1.91%	***11.60 %***	-3.21 %

TABLE 8.5.4-1 (2/4) RESULTS OF IRR SENSITIVITY ANALYSIS FOR THE CONSTRUCTION COST AND REVENUE

Bold and Italic with double underlined: IRR for SPC less than 11.5% and Equity IRR less than 15.0%

IRR decrease: 1.0 ～2.0% 2.0～3.0% Over 3.0%

Project Name		PPP scheme	Lease fee		IRR	Base Case	Sensitivity Analysis					
							Construction Cost +10%		Revenue -10%		Construction Cost +10%& Revenue -10%	
3-2	C-6 Expressway South East section & Global City Link	Type 3: Segment dividing	100 %	Soft Loan	IRR for SPV	***10.95%***	***9.74%***	-1.21%	***9.33%***	-1.62%	***8.16%***	-2.79 %
					Equity IRR	***10.63%***	***8.98%***	-1.65%	***8.43%***	-2.20%	***6.93%***	-3.70 %
			100 %	GOP's budget	IRR for SPC	12.12%	***10.98 %***	-1.14%	***10.59 %***	-1.53%	***9.48%***	-2.65 %
					Equity IRR	***12.33%***	***10.66 %***	-1.67%	***10.11 %***	-2.22%	***8.59%***	-3.74 %
			0%	-	IRR for SPC	15.48%	14.48 %	-1.00%	14.16 %	-1.32%	13.22 %	-2.26 %
					Equity IRR	18.01%	16.23 %	-1.78%	15.68 %	-2.32%	***14.12 %***	-3.89 %
4	CALA Expressway	Type 3: Segment dividing	100 %	Soft Loan	IRR for SPV	17.83%	16.67 %	-1.16%	16.36 %	-1.47%	15.27 %	-2.56 %
					Equity IRR	21.88%	19.75 %	-2.12%	19.20 %	-2.67%	17.32 %	-4.55 %
			100 %	GOP's budget	IRR for SPC	18.14%	16.99 %	-1.15%	16.68 %	-1.46%	15.60 %	-2.54 %
					Equity IRR	22.52%	20.37 %	-2.15%	19.82 %	-2.70%	17.91 %	-4.60 %
			0%	-	IRR for SPC	19.12%	17.98 %	-1.13%	17.68 %	-1.44%	16.62 %	-2.50 %
					Equity IRR	24.58%	22.36 %	-2.22%	21.79 %	-2.78%	19.82 %	-4.75 %
5	C-5/FTI/SKYWAY Connector Rd.	Type 2: BOT with subsidy	-	-	IRR for SPC	11.59%	***10.78 %***	-0.81%	***10.59 %***	-1.00%	***9.81%***	-1.78 %
					Equity IRR	***11.54%***	***10.34 %***	-1.20%	***10.07 %***	-1.47%	***8.96%***	-2.58 %

TABLE 8.5.4-1 (3/4) RESULTS OF IRR SENSITIVITY ANALYSIS FOR THE CONSTRUCTION COST AND REVENUE

Bold and Italic with double underlined: IRR for SPC less than 11.5% and Equity IRR less than 15.0%

IRR decrease: 1.0 ～2.0% 2.0～3.0% Over 3.0%

Project Name		PPP scheme	Lease fee		IRR	Base Case	Sensitivity Analysis					
							Construction Cost +10%		Revenue -10%		Construction Cost +10%& Revenue -10%	
6-1	CLEX Phase1+2	Type 3: Segment dividing	0%	-	IRR for SPC	***3.33%***	***2.69%***	-0.65%	***1.34%***	-1.99%	***0.71%***	-2.62 %
					Equity IRR	***Negative***	-	-	-	-	-	-
6-2	CLEX Phase1	Type 5: Lease	-	GOP's budget	IRR for SPV	22.37%	17.42 %	-4.95%	13.67 %	-8.70%	***9.81%***	-12.56 %
					Equity IRR	22.37%	17.42 %	-4.95%	***13.67 %***	-8.70%	***9.81%***	-12.56 %
			-	-	IRR for SPC	38.49%	32.81 %	-5.68%	27.05 %	-11.44 %	22.33 %	-16.16 %
					Equity IRR	38.49%	32.81 %	-5.68%	27.05 %	-11.44 %	22.33 %	-16.16 %
6-3	CLEX Phase1(4lanes)	Type 5: Lease	-	Soft Loan	IRR for SPV	***4.69%***	***0.95%***	-3.74%	***Negative***	-	***Negative***	-
					Equity IRR	***4.69%***	***0.95%***	-3.74%	***Negative***	-	***Negative***	-
			-	-	IRR for SPC	16.01%	11.85 %	-4.17%	***7.81%***	-8.20%	***3.88%***	-12.13%
					Equity IRR	16.01%	***11.85 %***	-4.17%	***7.81%***	-8.20%	***3.88%***	-12.13%
7	SLEX Extension (to Lucena)	Type 3: Segment dividing	100 %	Soft Loan	IRR for SPV	12.42%	***11.40 %***	-1.02%	***10.96 %***	-1.46%	***9.97%***	-2.45 %
					Equity IRR	***12.77%***	***11.28 %***	-1.50%	***10.64 %***	-2.13%	***9.26%***	-3.51 %
			100 %	GOP's budget	IRR for SPC	12.96%	11.97 %	-0.99%	11.55 %	-1.41%	***10.59 %***	-2.37 %
					Equity IRR	***13.61%***	***12.11 %***	-1.50%	***11.49 %***	-2.12%	***10.11 %***	-3.50 %

TABLE 8.5.4-1 (4/4) RESULTS OF IRR SENSITIVITY ANALYSIS FOR THE CONSTRUCTION COST AND REVENUE

Bold and Italic with double underlined: IRR for SPC less than 11.5% and Equity IRR less than 15.0%

IRR decrease: 1.0 ～2.0% 2.0～3.0% Over 3.0%

Project Name		PPP scheme	Lease fee		IRR	Base Case	Sensitivity Analysis					
							Construction Cost +10%		Revenue -10%		Construction Cost +10%& Revenue -10%	
			0%	-	IRR for SPC	14.56%	13.65 %	-0.91%	13.27 %	-1.29%	12.41 %	-2.15 %
					Equity IRR	16.27%	***14.75 %***	-1.51%	***14.15 %***	-2.12%	***12.80 %***	-3.47 %
8	Calamba-Los Banos Toll Expressway	Type 2:	-	-	IRR for SPC	***11.33%***	***10.54 %***	-0.79%	***10.06 %***	-1.27%	***9.31%***	-2.02 %
		BOT with subsidy			Equity IRR	***11.17%***	***10.03 %***	-1.14%	***9.35%***	-1.82%	***8.31%***	-2.86 %
9	R-7 Express Way	Type 2:	-	-	IRR for SPC	15.38%	14.43 %	-0.95%	14.25 %	-1.13%	13.36 %	-2.02 %
		BOT with subsidy			Equity IRR	17.75%	16.10 %	-1.66%	15.80 %	-1.96%	***14.31 %***	-3.45 %
10	NLEX-East & La Mesa Parkway	Type 3:	0%	-	IRR for SPC	11.69%	***10.86 %***	-0.84%	***9.97%***	-1.72%	***9.19%***	-2.50 %
		Segment dividing			Equity IRR	***11.70%***	***10.45 %***	-1.25%	***9.14%***	-2.55%	***8.03%***	-3.67 %

Source: JICA Study Team

TABLE 8.5.4-2 (1/2) RESULTS OF NPER SENSITIVITY ANALYSIS FOR THE CONSTRUCTION COST AND REVENUE

NPER is negative: Red

Bold and Italic with double underlined: NPER increase more than 1 billion PHP

Unit: Billion PHP

Project Name		PPP scheme			NPER (Net Public Expenditure Reduction)						
					Base Case	Sensitivity Analysis					
			Lease fee			Construction Cost +10%		Revenue -10%		Construction Cost +10% & Revenue -10%	
1	NLEX–SLEX Link Expressway	Type 3: Segment dividing	100%	Soft loan	8.74	10.44	***1.70***	9.62	0.88	11.36	***2.61***
				GOP budget	-0.56	0.19	0.75	0.30	0.85	1.07	***1.63***
			0%	Soft loan	6.84	8.32	***1.49***	7.69	0.85	9.18	***2.34***
				GOP budget	-2.00	-1.39	0.60	-1.14	0.85	-0.54	***1.46***
2	NAIA Expressway-2	Type 2: BOT with subsidy	-	GOP budget	-0.59	-0.30	0.29	-0.22	0.37	0.07	0.66
3-1	C-6 Expressway + Global Link	Type 3: Segment dividing	100%	Soft loan	15.33	18.05	***2.72***	16.75	***1.42***	19.51	***4.18***
				GOP budget	3.40	4.91	***1.51***	4.80	***1.40***	6.34	***2.93***
			0%	Soft loan	12.82	15.20	***2.38***	14.14	***1.32***	16.53	***3.71***
				GOP budget	1.54	2.79	***1.25***	2.86	***1.32***	4.12	***2.58***
3-2	C-6 Expressway South East section & Global City Link	Type 3: Segment dividing	100%	Soft loan	9.07	10.43	***1.36***	9.61	0.54	10.98	***1.91***
				GOP budget	1.05	1.59	0.54	1.57	0.52	2.13	***1.07***
			0%	Soft loan	7.38	8.53	***1.14***	7.87	0.48	9.01	***1.62***
				GOP budget	-0.19	0.20	0.38	0.29	0.48	0.68	0.87
4	CALA Expressway	Type 3: Segment dividing	100%	Soft loan	1.84	2.81	0.97	2.74	0.90	3.71	***1.86***
				GOP budget	-1.88	-1.29	0.59	-0.98	0.90	-0.39	***1.49***
			0%	Soft loan	1.09	1.98	0.89	1.98	0.90	2.87	***1.79***
				GOP budget	-2.45	-1.92	0.54	-1.55	0.90	-1.02	***1.44***

TABLE 8.5.4-2 (2/2) RESULTS OF NPER SENSITIVITY ANALYSIS FOR THE CONSTRUCTION COST AND REVENUE

NPER is negative: Red

Bold and Italic with double underlined: NPER increase more than 1 billion PHP

Unit: Billion PHP

Project Name		PPP scheme			NPER (Net Public Expenditure Reduction)						
					Base Case	Sensitivity Analysis					
			Lease fee			Construction Cost +10%		Revenue -10%		Construction Cost +10% & Revenue -10%	
5	C-5/FTI/SKYWAY Connector Rd.	Type 2: BOT with subsidy	-	GOP budget	0.44	0.59	0.15	0.56	0.12	0.71	0.27
6-1	CLEX Phase1+2	Type 3: Segment dividing	0%	Soft loan	7.75	8.69	0.94	8.06	0.31	9.01	***1.25***
				GOP budget	3.87	4.42	0.55	4.18	0.31	4.74	0.87
6-2	CLEX Phase1	Type 5: Lease	-	Soft loan	3.62	4.10	0.48	3.80	0.18	4.29	0.67
				GOP budget	-0.47	-0.41	0.06	-0.31	0.17	-0.24	0.23
6-3	CLEX Phase1(4lanes)	Type 5: Lease	-	Soft loan	6.20	6.97	0.77	6.43	0.23	7.19	0.99
				GOP budget	-0.16	-0.04	0.12	0.05	0.21	0.17	0.33
7	SLEX Extension (to Lucena)	Type 3: Segment dividing	100%	Soft loan	3.15	3.73	0.58	3.49	0.34	4.08	0.93
				GOP budget	0.51	0.82	0.31	0.84	0.33	1.16	0.65
			0%	Soft loan	2.60	3.11	0.51	2.92	0.32	3.43	0.82
				GOP budget	0.10	0.36	0.26	0.42	0.32	0.68	0.57
8	Calamba-Los Banos Toll Expressway	Type 2: BOT with subsidy	-	GOP budget	0.51	0.67	0.16	0.67	0.15	0.83	0.31
9	R-7 Express Way	Type 2: BOT with subsidy	-	GOP budget	-0.26	0.36	0.62	0.44	0.70	1.07	***1.33***
10	NLEX-East & La Mesa Parkway	Type 3: Segment dividing	0%	Soft loan	5.86	6.61	0.75	6.15	0.29	6.91	***1.05***
				GOP budget	0.67	0.90	0.23	0.96	0.29	1.20	0.53

Base year: 2010, Discount rate: 15%

Source: JICA Study Team

TABLE 8.5.4-3 RESULTS OF PSC SENSITIVITY ANALYSIS FOR THE CONSTRUCTION COST AND REVENUE

Bold and Italic with double underlined: PSC increase more than 1 billion PHP

Unit: Billion PHP

Project Name		PSC (Public Sector Comparator)						
		Base Case	Sensitivity Analysis					
			Construction Cost +10%		Revenue -10%		Construction Cost +10% & Revenue -10%	
1	NLEX–SLEX Link Expressway	6.53	8.25	***1.72***	7.74	***1.22***	9.47	***2.94***
2	NAIA Expressway-2	2.11	2.77	0.65	2.64	0.52	3.29	***1.18***
3-1	C-6 Expressway + Global Link	16.21	18.96	***2.74***	18.10	***1.88***	20.84	***4.63***
3-2	C-6 Expressway South East section & Global City Link	9.69	11.02	***1.33***	10.38	0.69	11.71	***2.01***
4	CALA Expressway	0.35	1.37	***1.02***	1.63	***1.28***	2.65	***2.31***
5	C-5/FTI/SKYWAY Connector Rd.	1.85	2.17	0.31	2.01	0.15	2.32	0.47
6-1	CLEX Phase1+2	9.57	10.59	***1.02***	9.93	0.36	10.95	***1.38***
6-2	CLEX Phase1	3.62	4.07	0.46	3.85	0.23	4.31	0.69
6-3	CLEX Phase1(4lanes)	6.00	6.70	0.70	6.26	0.26	6.96	0.96
7	SLEX Extension (to Lucena)	2.74	3.32	0.59	3.19	0.45	3.77	***1.04***
8	Calamba-Los Banos Toll Expressway	2.43	2.75	0.31	2.63	0.19	2.94	0.51
9	R-7 Express Way	5.67	7.08	***1.42***	6.67	1.00	8.08	***2.42***
10	NLEX-East & La Mesa Parkway	6.89	7.75	0.86	7.27	0.38	8.14	***1.25***

Base year: 2010, Discount rate: 15%

Source: JICA Study Team

TABLE 8.5.4-4 (1/2) RESULTS OF PPPLCC SENSITIVITY ANALYSIS FOR THE CONSTRUCTION COST AND REVENUE

PPPLCC is minus: Yellow

Bold and Italic with double underlined: PPPLCC increase more than 1 billion PHP

Unit: Billion PHP

Project Name		PPP scheme			PPPLCC						
					Base Case	Sensitivity Analysis					
			Lease fee			Construction Cost +10%		Revenue -10%		Construction Cost +10% & Revenue -10%	
1	NLEX–SLEX Link Expressway	Type 3: Segment dividing	100 %	Soft loan	-2.22	-2.20	0.02	-1.88	0.34	-1.89	0.33
				GOP budget	7.08	8.06	0.97	7.45	0.37	8.39	***1.31***
			0%	Soft loan	-0.31	-0.08	0.24	0.05	0.37	0.29	0.60
				GOP budget	8.52	9.64	***1.12***	8.89	0.37	10.01	***1.48***
2	NAIA Expressway-2	Type 2: BOT with subsidy	-	GOP budget	2.71	3.07	0.37	2.86	0.16	3.22	0.51
3-1	C-6 Expressway + Global Link	Type 3: Segment dividing	100 %	Soft loan	0.88	0.91	0.03	1.34	0.46	1.33	0.45
				GOP budget	12.81	14.05	***1.24***	13.29	0.49	14.50	***1.69***
			0%	Soft loan	3.39	3.75	0.36	3.96	0.57	4.31	0.91
				GOP budget	14.67	16.16	***1.49***	15.24	0.57	16.72	***2.04***
3-2	C-6 Expressway South East section & Global City Link	Type 3: Segment dividing	100 %	Soft loan	0.63	0.59	-0.03	0.77	0.15	0.72	0.10
				GOP budget	8.64	9.43	0.79	8.81	0.17	9.58	0.94
			0%	Soft loan	2.31	2.49	0.18	2.52	0.21	2.70	0.39
				GOP budget	9.88	10.82	0.94	10.09	0.21	11.03	***1.15***
4	CALA Expressway	Type 3: Segment dividing	100 %	Soft loan	-1.50	-1.44	0.06	-1.11	0.39	-1.05	0.44
				GOP budget	2.23	2.66	0.43	2.61	0.39	3.04	0.81
			0%	Soft loan	-0.74	-0.61	0.13	-0.35	0.39	-0.22	0.52
				GOP budget	2.80	3.29	0.49	3.19	0.39	3.67	0.87

TABLE 8.5.4-4 (2/2) RESULTS OF PPPLCC SENSITIVITY ANALYSIS FOR THE CONSTRUCTION COST AND REVENUE

PPPLCC is minus: Yellow

Bold and Italic with double underlined: PPPLCC increase more than 1 billion PHP

Unit: Billion PHP

Project Name		PPP scheme			PPPLCC						
					Base Case	Sensitivity Analysis					
			Lease fee			Construction Cost +10%		Revenue -10%		Construction Cost +10% & Revenue -10%	
5	C-5/FTI/SKYWAY Connector Rd.	Type 2: BOT with subsidy	-	GOP budget	1.41	1.58	0.16	1.45	0.03	1.61	0.20
6-1	CLEX Phase1+2	Type 3: Segment dividing	0%	Soft loan	1.82	1.90	0.08	1.87	0.05	1.95	0.13
				GOP budget	5.70	6.17	0.47	5.75	0.05	6.22	0.52
6-2	CLEX Phase1	Type 5: Lease	-	Soft loan	0.00	-0.03	-0.03	0.05	0.05	0.02	0.02
				GOP budget	4.09	4.48	0.39	4.16	0.07	4.55	0.46
6-3	CLEX Phase1(4lanes)	Type 5: Lease	-	Soft loan	-0.20	-0.26	-0.06	-0.17	0.03	-0.24	-0.04
				GOP budget	6.16	6.75	0.59	6.21	0.05	6.79	0.63
7	SLEX Extension (to Lucena)	Type 3: Segment dividing	100 %	Soft loan	-0.42	-0.41	0.01	-0.31	0.11	-0.31	0.11
				GOP budget	2.22	2.50	0.28	2.34	0.12	2.61	0.39
			0%	Soft loan	0.13	0.21	0.08	0.27	0.14	0.34	0.21
				GOP budget	2.63	2.96	0.33	2.77	0.14	3.09	0.46
8	Calamba-Los Banos Toll Expressway	Type 2: BOT with subsidy	-	GOP budget	1.92	2.08	0.15	1.96	0.04	2.11	0.19
9	R-7 Express Way	Type 2: BOT with subsidy	-	GOP budget	5.93	6.72	0.79	6.23	0.30	7.02	***1.09***
10	NLEX-East & La Mesa Parkway	Type 3: Segment dividing	0%	Soft loan	1.03	1.14	0.11	1.12	0.09	1.23	0.20
				GOP budget	6.22	6.85	0.63	6.32	0.09	6.94	0.72

Base year: 2010, Discount rate: 15%

Source: JICA Study Team

(2) Share of Public and Private in Segment Dividing Scheme

For CALA Expressway, the results of financial viability with the variation of the construction cost share of public and private in Segment dividing scheme are shown in **Table 8.5.4-5**.
In case of "With Lease fee and soft loan", the IRR for SPC increases up to 25.57% and the Equity IRR increases up to 37.57% when the share of public and private is 7:3. However, the IRR for SPC decreases down to 16.35% and the Equity IRR decreases down to 19.24% when the share of public and private is 3:7. In case of "Without Lease fee", the same tendency as others is shown, but it is more sensitive.

TABLE 8.5.4-5 RESULTS OF IRR SENSITIVITY ANALYSIS ON THE SHARE OF PUBLIC AND PRIVATE IN SEGMENT DIVIDING

IRR variation: Over -2.0% 2.0～10.0% Over 10.0%

Project Name	PPP scheme				Base case	Share of Segment dividing					
						Public: Private =3:7		Public: Private =5:5		Public: Private =7:3	
CALA Expressway	Type 3: Segment dividing	With Lease Fee	Soft Loan	IRR for SPC	17.83%	16.35%	-1.47%	19.50 %	1.67%	25.57%	7.75%
				Equity IRR	21.88%	19.24%	-2.63%	25.02 %	3.14%	37.57%	15.70 %
			GOP budget	IRR for SPC	18.14%	16.56%	-1.58%	19.94 %	1.80%	26.52%	8.38%
				Equity IRR	22.52%	19.63%	-2.89%	25.99 %	3.47%	39.97%	17.45 %
		Without Lease Fee		IRR for SPC	19.12%	17.19%	-1.93%	21.32 %	2.20%	29.46%	10.35 %
				Equity IRR	24.58%	20.86%	-3.72%	29.13 %	4.56%	47.50%	22.92 %
	Construction cost including ROW acquisition etc (Unit: Billion PHP)			Public	11.96	9.41	-2.55	14.19	2.23	18.97	7.01
				Private	14.17	16.72		11.95		7.17	

Source: JICA Study Team

For CALA Expressway, the results of NPER evaluation with the variation of the construction cost share of public and private in Segment dividing scheme are shown as below.

In case of "With Lease fee and soft loan", the positive NPER increases when the construction cost share of public increases. Because the lease fee paid by private increases at a constant price in the operation period while the repayment for soft loan by government is applied with a grace period. It could make the present value of net public expenditure decrease in the initial operation stage.

Meanwhile, in case of "With Lease fee and government own budget", while construction by the public sector enlarges its share against private sector, NPER may deteriorate in reverse. Because enlarging the share of the public construction may result in increase in public financial burden at the implementation stage.

In case of "Without Lease fee and soft loan", the positive NPER decreases when the share of public increases. In case of "Without Lease fee and government own budget", NPER may also deteriorate.

TABLE 8.5.4-6 RESULTS OF NPER SENSITIVITY ANALYSIS ON THE SHARE OF PUBLIC AND PRIVATE IN SEGMENT DIVIDING

NPER is negative: Red
Unit: Billion PHP

Project Name	PPP scheme			Base case	Share of Segment dividing					
					Public: Private=3:7		Public: Private=5:5		Public: Private=7:3	
CALA Expressway	Type 3: Segment dividing	With Lease Fee	GOP budget	-1.88	-1.07	0.81	-2.59	-0.71	-4.12	-2.24
			Soft Loan	1.84	1.68	-0.16	1.99	0.14	2.29	0.45
		Without Lease Fee	GOP budget	-2.45	-1.49	0.96	-3.30	-0.84	-5.10	-2.65
			Soft Loan	1.09	1.12	0.04	1.05	-0.03	0.99	-0.10

Base year: 2010, Discount rate: 15%
Source: JICA Study Team

(3) Variation of Ratio of Subsidy for Type 2 (BOT with subsidy)

The results of sensitivity analysis on the ratio of subsidy for Type 2 are shown in **Table 8.5.4-7**. The reduction of subsidy from government makes IRR lower, but NPER is improved. In the case of NAIA Expressway-2, the NPER becomes positive and the IRR for SPC is still viable when the ratio of subsidy is 30%, although the Equity IRR is a little less than 15%. In case of CALA Expressway, NPER is negative even if the ratio is 30% because the PSC is very low due to the high toll tariff revenue expected in conventional scheme.

TABLE 8.5.4-7 RESULTS OF SENSITIVITY ANALYSIS FOR UP-FRONT SUBSIDY VARIATION

NPER is negative: Red cell, Unit for NPER: Billion PHP
IRR for SPC less than 11.5% and Equity IRR less than 15.0%: Bold and Italic with double underlined
IRR decrease: blue underlined -2 to -5%, red underlined over -5%

Project Name		PPP Scheme		Base Case (Subsidy 50%)	Subsidy 40%		Subsidy 30%	
1	NLEX–SLEX Link Expressway	Type 2: BOT with subsidy	IRR for SPC	15.53%	13.79%	-1.73%	***12.40%***	-3.12%
			Equity IRR	17.81%	***14.92%***	-2.89%	***12.75%***	-5.07%
			NPER	-0.45	1.08		2.65	
2	NAIA Expressway-2		IRR for SPC	16.78%	15.00%	-1.78%	13.57%	-3.21%
			Equity IRR	19.85%	16.80%	-3.05%	***14.51%***	-5.34%
			NPER	-0.59	-0.01		0.58	
4	CALA Expressway		IRR for SPC	20.11%	18.27%	-1.84%	16.78%	-3.33%
			Equity IRR	26.71%	22.98%	-3.72%	20.15%	-6.56%
			NPER	-2.92	-2.09		-1.27	
9	R-7 Expressway		IRR for SPC	15.38%	13.58%	-1.80%	***12.17%***	-3.21%
			Equity IRR	17.75%	***14.67%***	-3.09%	***12.41%***	-5.34%
			NPER	-0.26	1.00		2.26	

Base year: 2010, Discount rate: 15%
Source: JICA Study Team

(4) Variation of Lease Fee Payment Period for Type3-1 (Segment dividing with Lease fee) and Type 5 (Lease)

The results of sensitivity analysis on the lease fee payment period for Type 3-1 and Type 5 are shown in **Table 8.5.4-8**. Following analysis assumes that net public expenditure is not utilizing soft loan and all contributed from government own budget. The shorter payment period is set, the higher NPER is secured, although both IRRs decrease. Because government can receive the higher annual lease fee in the initial operation period, and it is favorable to improve NPER. In case of NLEX-SLEX Link Expressway with lease fee payment period of 15-year, NPER becomes positive and financially viable. On the other hand, in case of such projects with low traffic demand expected as CLEX and NLEX-East & La Mesa Parkway, NPER becomes positive, yet IRR is not viable. For those projects with high demand expected, NPER tends to remain unchanged at negative even with lease fee payment period of 15-year, and especially with CALA with quite huge traffic demand, NPER only becomes positive with lease fee payment period of 3-year or less.

TABLE 8.5.4-8 RESULTS OF SENSITIVITY ANALYSIS FOR LEASE FEE PAYMENT PERIOD VARIATION IN TYPE 3 – 1 SEGMENT DIVIDING WITH LEASE FEE AND TYPE 5 LEASE

All projects is to supposed to be implemented by government own budget.
Lease fee is calculated by dividing capital cost for public portion (except ROW acquisition cost) by lease fee payment period.
NPER is negative: Red cell, Unit for NPER: Billion PHP
IRR for SPC more than 11.5% and Equity IRR more than 15.0%: Yellow cell

				Lease Fee Payment Period					
				30 years (Base case)	**15 years**	**5 years**	**3 years**	**2 years**	**1 year**
1	NLEX–SLEX Link Expressway	Type 3-1 Segment dividing with lease fee	IRR for SPC	15.80%	14.06%	-	-	-	-
			Equity IRR	18.03%	15.04%	-	-	-	-
			NPER	-0.6	0.7	-	-	-	-
2	NAIA Expressway-2	Type 5 Lease	IRR for SPC	374.41 %	92.91%	-	-	-	-
			Equity IRR	374.41 %	92.91%	-	-	-	-
			NPER	-2.6	-1.9	-	-	-	-
4	CALA Expressway	Type 3-1 Segment dividing with lease fee	IRR for SPC	18.14%	17.33%	15.83%	14.98%	14.52%	14.10%
			Equity IRR	22.52%	20.79%	17.72%	16.24%	15.51%	14.87%
			NPER	-1.9	-1.4	-0.6	0.0	0.3	0.7
		Type 5 Lease	IRR for SPC	202.20 %	127.09 %	-	-	-	-
			Equity IRR	202.20 %	127.09 %	-	-	-	-
			NPER	-6.4	-5.3	-	-	-	-
6-2	CLEX Phase1	Type 5 Lease	IRR for SPC	38.49%	10.71%	-	-	-	-
			Equity IRR	38.49%	10.71%	-	-	-	-
			NPER	-0.5	0.1	-	-	-	-
6-3	CLEX Phase1 (4lanes)	Type 5 Lease	IRR for SPC	16.01%	3.53%	-	-	-	-
			Equity IRR	16.01%	3.53%	-	-	-	-
			NPER	-0.2	0.9	-	-	-	-
7	SLEX Extension (to Lucena)	Type 5 Lease	IRR for SPC	93.53%	35.09%	-	-	-	-
			Equity IRR	93.53%	35.09%	-	-	-	-
			NPER	-1.7	-1.0	-	-	-	-
8	Calamba-Los Banos Toll Expressway	Type 5 Lease	IRR for SPC	45.76%	16.53%	-	-	-	-
			Equity IRR	45.76%	16.53%	-	-	-	-
			NPER	-0.5	-0.1	-	-	-	-
9	R-7 Express Way	Type 5 Lease	IRR for SPC	347.70 %	100.69 %	-	-	-	-
			Equity IRR	347.70 %	100.69 %	-	-	-	-
			NPER	-4.5	-3.0	-	-	-	-
10	NLEX-East & La Mesa Parkway	Type 5 Lease	IRR for SPC	17.39%	5.74%	-	-	-	-
			Equity IRR	17.39%	5.74%	-	-	-	-
			NPER	-0.4	0.9	-	-	-	-

Base year: 2010, Discount rate: 15%
Source: JICA Study Team

As for CALA Expressway with Type 3-1 Segment Dividing with Lease Fee, the results of the sensitivity analysis assuming smaller shares of public construction is stated as below.

In the case of the share of the construction by public and private sector is 2:8 for CALA Expressway by Type 3-1, the 30 years payment makes the NPER negative, but in the 10 years payment it becomes positive.

TABLE 8.5.4-9 RESULTS OF SENSITIVITY ANALYSIS FOR LEASE FEE PAYMENT PERIOD AND THE SHARE OF PUBLIC- PRIVATE IN THE CASE OF CALA EXPRESSWAY BY TYPE 3-1 SEGMENT DIVIDING WITH LEASE FEE

NPER is negative: Red cell, Unit for NPER: Billion PHP
IRR for SPC more than 11.5% and Equity IRR more than 15.0%: Yellow cell

Public	Private		Lease Fee Payment Period			
			5 yrs	10 yrs	15 yrs	30 yrs
0.1	0.9	IRR for SPC	14.06%	14.19%	14.27%	14.41%
		Equity IRR	15.32%	15.57%	15.72%	15.96%
		NPER	0.76	0.64	0.57	0.46
0.2	0.8	IRR for SPC	14.58%	14.89%	15.08%	15.38%
		Equity IRR	16.05%	16.66%	17.02%	17.58%
		NPER	0.31	0.06	-0.09	-0.31
0.3	0.7	IRR for SPC	15.14%	15.72%	16.05%	16.56%
		Equity IRR	16.82%	17.95%	18.62%	19.63%
		NPER	-0.12	-0.52	-0.74	-1.07

Base year: 2010, Discount rate: 15%
Source: JICA Study Team

Table 8.5.4-10 shows the results of sensitivity analysis assuming that construction cost and O&M cost undertaken by private sector decreases by 10%. This hypothesis is based on hypothetical scenario that by adopting PPP scheme in which private sector utilizes own management effort and know-how, project gets more efficient than conventional scheme undertaken by public. As for overall trend, majority of the cases are the same with those with no cost reduction, yet positive NPER are getting higher value.

TABLE 8.5.4-10 RESULTS OF SENSITIVITY ANALYSIS FOR LEASE FEE PAYMENT PERIOD AND THE SHARE OF PUBLIC- PRIVATE IN THE CASE OF CALA EXPRESSWAY BY TYPE 3-1 SEGMENT DIVIDING WITH LEASE FEE (IN 10% DECREASE OF THE CONSTRUCTION AND O & M COST UNDERTAKEN BY PRIVATE SECTOR)

NPER is negative: Red cell, Unit for NPER: Billion PHP
IRR for SPC more than 11.5% and Equity IRR more than 15.0%: Yellow cell

Public	Private		lease fee payment period			
			5 yrs	10 yrs	15 yrs	30 yrs
0.1	0.9	IRR for SPC	14.62%	14.75%	14.84%	14.98%
		Equity IRR	16.22%	16.48%	16.65%	16.91%
		NPER	0.83	0.72	0.65	0.54
0.2	0.8	IRR for SPC	15.13%	15.46%	15.67%	15.98%
		Equity IRR	16.95%	17.60%	18.01%	18.62%
		NPER	0.37	0.13	-0.01	-0.23
0.3	0.7	IRR for SPC	15.71%	16.31%	16.66%	17.20%
		Equity IRR	17.71%	18.93%	19.68%	20.78%
		NPER	-0.08	-0.46	-0.67	-1.00

Base year: 2010, Discount rate: 15%
Source: JICA Study Team

As for CLEX Phase 1 with 2-lane, the results of the sensitivity analysis not only of lease fee payment period but also of revenue and O&M cost are stated below.

In the case of CLEX Phase1 with 2lane by Type 5, in the 15 years payment it becomes positive but IRR is no longer viable. However, in case revenue increased by 10% while O&M cost decreased by 10% within same 15-year, NPER becomes positive, and at the same time, IRR remains viable.

TABLE 8.5.4-11 THE RESULTS OF SENSITIVITY ANALYSIS FOR LEASE FEE PAYMENT PERIOD, REVENUE AND O & M COST FOR PRIVATE SECTOR IN THE CASE OF CLEX PHASE 1 (2-LANE) BY TYPE 5 LEASE

NPER is negative: Red cell, Unit for NPER: Billion PHP
IRR for SPC more than 11.5% and Equity IRR more than 15.0%: Yellow cell

Revenue	O&M cost		lease fee payment period		
			10yrs	15yrs	30yrs
0%	0%	IRR for SPC	6.67%	10.71%	38.49%
		Equity IRR	6.67%	10.71%	38.49%
		NPER	0.64	0.11	-0.47
0%	-10%	IRR for SPC	7.53%	12.10%	44.97%
		Equity IRR	7.53%	12.10%	44.97%
		NPER	0.65	0.12	-0.46
+10%	-10%	IRR for SPC	9.70%	16.02%	58.58%
		Equity IRR	9.70%	16.02%	58.58%
		NPER	0.68	0.16	-0.39

Base year: 2010, Discount rate: 15%
Source: JICA Study Team

8.5.5 REFERENTIAL DATA

(1) Revenue and Cost

Data concerning revenue and cost of each project are stated in **Table 8.5.5-1**.

TABLE 8.5.5-1 (1/2) TRAFFIC DEMAND FORECAST AND TOLL RATE OF EACH PROJECT FOR PRE-BUSINESS STUDY

Road name	Year 2015									
	No. of Vehicle					Toll Fee (Peso/veh)		Revenue(thousand Peso)		
	Car	Jeepney	Bus	Truck	Total	Class 1	Class 2	Class 1	Class 2	Total
North-South Link Expressway	36,057	0	5,782	20,692	62,531	77.8	155.6	2,661	3,908	**6,569**
	Year 2020									
	25,611	0	7,399	25,035	58,045	99.3	198.6	2,410	6,104	**8,514**
	Year 2030									
	33,437	0	8,521	35,858	77,816	161.7	323.5	4,016	10,660	**14,676**
NAIA Expressway-2	48,715	0	7,049	11,733	67,496	28.2	56.5	1,598	1,232	**0**
	Year 2020									
	44,037	0	9,769	19,219	73,025	36.0	72.1	1,845	2,429	**0**
	Year 2030									
	78,663	0	14,620	22,150	115,434	58.7	117.4	4,208	3,934	**0**
C-6 Expressway + Global Link	1,723,218	609,740	235,484	499,416	3,067,859	2.7	5.4	5,558	4,587	**10,146**
	Year 2020									
	1,965,838	713,825	340,542	549,698	3,569,903	3.4	6.8	6,936	8,325	**15,261**
	Year 2030									
	2,200,957	736,332	375,193	713,672	4,026,154	5.6	11.1	10,547	12,298	**22,845**
C-6 Expressway South East section & Global City Link	786,363	246,452	81,335	192,927	1,307,077	2.7	5.4	5,558	4,587	**10,146**
	Year 2020									
	776,220	282,873	112,339	199,633	1,371,065	3.4	6.8	6,936	8,325	**15,261**
	Year 2030									
	776,305	255,081	118,258	261,160	1,410,804	5.6	11.1	10,547	12,298	**22,845**
CALA Expressway	1,076,386	316,799	162,576	233,662	1,789,423	2.7	5.4	4,491	3,635	**8,126**
	Year 2020									
	1,510,382	391,637	228,460	286,700	2,417,179	3.4	6.8	6,688	6,468	**13,156**
	Year 2030									
	1,794,240	636,897	274,483	333,160	3,038,780	5.6	11.1	10,550	9,976	**20,525**
C-5/ FTI/ SKYWAY Connector Rd.	75,958	21,513	7,793	13,331	118,595	0.0	0.0	0	0	**0**
	Year 2020									
	78,632	23,438	8,723	23,728	134,521	0.0	0.0	0	0	**0**
	Year 2030									
	89,602	20,644	11,868	29,409	151,523	0.0	0.0	0	0	**0**
CLEx Phase1+2	429,252	68,198	51,745	103,303	652,499	2.7	5.4	2,102	1,003	**3,105**
	Year 2020									
	423,258	50,715	74,911	120,888	669,772	3.4	6.8	2,982	1,618	**4,601**
	Year 2030									
	458,258	47,946	74,281	154,557	735,041	5.6	11.1	5,277	2,369	**7,646**
CLEx Phase1 (2lanes)	286,922	27,223	32,322	58,554	405,020	2.7	5.4	2,102	1,003	**3,105**
	Year 2020									
	316,785	30,057	35,686	64,648	447,175	3.4	6.8	2,982	1,618	**4,601**
	Year 2030									
	367,642	34,882	41,415	75,027	518,965	5.6	11.1	5,277	2,369	**7,646**

TABLE 8.5.5-1 (2/2) TRAFFIC DEMAND FORECAST AND TOLL RATE OF EACH PROJECT FOR PRE-BUSINESS STUDY

Road name	Year 2015									
	No. of Vehicle					Toll Fee (Peso/veh)		Revenue(thousand Peso)		
	Car	Jeepney	Bus	Truck	Total	Class 1	Class 2	Class 1	Class 2	Total
CLEx Phase1 (4lanes)	315,614	29,946	35,554	64,409	445,522	2.7	5.4	2,102	1,003	**3,105**
	Year 2020									
	348,463	33,062	39,254	71,113	491,893	3.4	6.8	2,982	1,618	**4,601**
	Year 2030									
	404,406	38,370	45,556	82,529	570,862	5.6	11.1	5,277	2,369	**7,646**
SLEx Extension (to Lucena)	383,082	114,619	87,304	106,558	691,564	2.7	5.4	2,400	1,858	**4,259**
	Year 2020									
	515,579	50,685	86,398	136,961	789,622	3.4	6.8	3,961	3,014	**6,976**
	Year 2030									
	649,806	70,232	101,516	177,177	998,731	5.6	11.1	6,384	4,481	**10,864**
Calamba-Los Banos Toll Expressway	125,673	59,975	33,017	28,580	247,245	2.7	5.4	1,100	910	**2,010**
	Year 2020									
	180,006	51,857	45,235	41,837	318,935	3.4	6.8	1,477	1,316	**2,793**
	Year 2030									
	299,577	62,099	51,483	58,562	471,721	5.6	11.1	2,039	1,672	**3,711**
R-7 Expressway	583,347	230,680	68,847	96,431	979,306	5.8	11.6	4,721	1,917	**6,639**
	Year 2020									
	466,105	250,020	97,067	91,947	905,139	7.4	14.8	5,299	2,797	**8,097**
	Year 2030									
	595,600	227,377	100,950	104,882	1,028,810	12.0	24.0	9,876	4,940	**14,816**
NLEx-East & La Mesa Parkway	216,498	146,434	57,664	54,699	475,295					
	Year 2020									
	397,963	113,246	69,189	93,382	673,780					
	Year 2030									
	520,046	125,509	79,795	169,420	894,769					

Source: JICA Study Team

TABLE 8.5.5-2 TOLL TARIFF REVENUE OF EACH PROJECT PRE-BUSINESS STUDY

#	Project name	2015	2020	2030
1	North-South Link Expressway	6,924	8,983	19,762
2	NAIA Expressway-2	2,436	3,676	8,934
3	C-6 Expressway + Global Link	10,267	15,164	28,501
4	C-6 Expressway South East section & Global City Link	4,270	5,722	9,975
5	CALA Expressway	5,901	9,970	20,318
6	C-5/FTI/SKYWAY Connector Rd.	805	1,228	2,310
7	CLEx Phase1+2	2,180	2,943	5,371
8	CLEx Phase1 (2lanes)	1,339	1,862	3,540
9	CLEx Phase1 (4lanes)	1,473	2,048	3,894
10	SLEx Extension (to Lucena)	2,391	3,444	7,118
11	Calamba-Los Banos Toll Expressway	834	1,380	3,242
12	R-7 Express Way	6,639	8,097	14,816
13	NLEx-East & La Mesa Parkway	1,575	2,844	6,374

Source: JICA Study Team

TABLE 8.5.5-3 PROJECT COST OF EACH PROJECT FOR PRE-BUSINESS STUDY

		Project Cost (B.P); Year 2010					Public/ Private share
		Construction Cost	Engineering Cost	Administra-ti on	R.O.W. Cost	Total	
NLEx–SLEx Link Expressway	Total	**29.12**	**0.87**	**0.15**	**0.99**	**31.13**	
	Public section	17.56	0.53	0.09	0.58	18.75	60.2%
	Private section	11.56	0.35	0.06	0.41	12.37	39.8%
NAIA Expressway-2	Total	11.06	0.33	0.06	0.71	12.15	
C-6 Expressway + Global Link	Total	44.08	3.53	1.29	5.35	54.25	
	North	7.85	0.63	0.23	1.23	9.94	
	East	14.93	1.19	0.41	1.49	18.02	
	South-East	20.44	1.64	0.62	2.60	25.30	
	Global City Link	0.86	0.07	0.03	0.03	0.99	
	North&East (Private)	22.78	1.82	0.64	2.72	27.96	51.5%
	South-East & Global City Link (Public)	21.3	1.70	0.65	2.63	26.28	48.5%
C-6 Expressway South East section & Global City Link	Total	**21.30**	**1.70**	**0.64**	**2.63**	**26.28**	
	Public section	14.30	1.14	0.43	1.03	16.91	64.3%
	Private section	7.00	0.56	0.21	1.60	9.37	35.7%
CALA Expressway	Total	15.81	1.90	0.55	1.41	19.67	
	Public section	**6.43**	**0.77**	**0.23**	**0.45**	**7.88**	40.0%
	Private section	**9.38**	**1.13**	**0.33**	**0.96**	**11.79**	60.0%
C-5/FTI/ SKYWAY Connector Rd.	Total	5.32	0.16	0.03	0.10	5.60	
CLEx (2lanes)	Total	**15.77**	**1.89**	**0.62**	**1.44**	**19.72**	
	Phase1(Public)	7.05	0.85	0.38	0.65	8.93	45.3%
	Phase2(Private)	8.72	1.05	0.24	0.79	10.80	54.7%
CLEx (4lanes)	Total	10.85	1.30	0.38	0.65	13.18	
SLEx Extension (to Lucena)	Total	**9.08**	**1.09**	**0.28**	**0.39**	**10.84**	
	Phase1(Public)	4.54	0.55	0.14	0.22	5.45	50.3%
	Phase2(Private)	4.54	0.54	0.14	0.17	5.39	49.7%
Calamba-Los Banos Toll Expressway	Total	5.05	0.40	0.15	0.85	6.45	
R-7 Expressway	Total	23.98	0.72	0.12	1.00	25.81	
NLEx-East & La Mesa Parkway	Total	**13.42**	**1.54**	**0.45**	**0.45**	**15.86**	
	Phase1 (Public section)	9.48	1.09	0.33	0.36	11.26	71.0%
	La Mesa (Private)	3.94	0.45	0.12	0.09	4.60	29.0%

Source: JICA Study Team

TABLE 8.5.5-4 O & M COST OF EACH PROJECT FOR PRE-BUSINESS STUDY

		Maintenance Cost (M.Php)		Operation Cost (M.Php)/Year	O & M Cost (M.Php)/Year
		Routine Maintenance/year	Periodic Maintenance/10y		
		Cost in Total	Cost in Total	Cost in Total	Cost in Total
NLEx–SLEx Link Expressway	Total	15	291	73	87
NAIA Expressway-2	Total	6	111	28	33
C-6 Expressway + Global Link	Total	159	1,489	229	388
	North	39	393	55	94
	East	75	747	75	149
	South-East	41	307	82	123
	Global City Link	4	43	17	22
C-6 Expressway South East section & Global City Link	Total	45	350	99	144
CALA Expressway	Total	98	791	111	208
C-5/FTI/SKYWAY Connector Rd.	Total	5	53	13	19
CLEx (2 lanes)	Total	126	789	79	205
	Phase1	56	353	35	92
	Phase2	70	436	44	113
CLEx (4 lanes)	Phase1	68	458	42	110
SLEx Extension (to Lucena)	Total	73	454	45	118
Calamba-Los Banos Toll Expressway	Total	25	252	40	66
R-7 Expressway	Total	19	240	72	91
NLEx-East & La Mesa Parkway	Total	88	671	107	196
	Phase1 (Public section)	57	474	76	133
	La Mesa (Private)	31	197	31	63

Source: JICA Study Team

(2) Details of Cost and Revenue to Public Sector for NPER Estimation

As for calculation of NPER, cost and revenue details of the public sector are shown in **Table 8.5.5-5** by each project. Cost of the public sector is assuming that all of them are funded by government own budget.

TABLE 8.5.5-5 (1/13) COST AND REVENUE FOR PUBLIC SECTOR IN NLEx – SLEx LINK EXPRESSWAY

		Conventional		PPP Scheme							
				Pure BOT		BOT with Subsidy		Segment Dividing			
								with Lease fee		with lease fee	
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	41.9		1.3		21.0		25.8		25.8	
	Loan Amortizations							0.0		0.0	
	O&M Cost	18.2									
	Insurance cost	0.9						0.6		0.6	
	Service fee payment										
	Total	61.0	18.7	1.3	0.8	21.0	9.1	26.3	11.2	26.3	11.2
Revenue	Corporate income Tax			58.7		60.8		58.6		66.1	
	Toll tariff	256.9									
	Lease fee							25.0		0.0	
	Total	256.9	12.2	58.7	1.7	60.8	2.1	83.6	4.1	66.1	2.6
Net Cost			PSC	PPP-LCC							
			6.5		-0.9		7.0		7.1		8.5

TABLE 8.5.5-5 (2/13) COST AND REVENUE FOR PUBLIC SECTOR IN NAIA EXPRESSWAY-2

		Conventional		PPP Scheme							
				Pure BOT		BOT with Subsidy		Service Payment		Lease	
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	16.3		0.9		8.4		0.9		16.3	
	Loan Amortizations									0.0	
	O&M Cost	6.9									
	Insurance cost	0.3								0.3	
	Service fee payment							69.2			
	Total	23.6	7.3	0.9	0.5	8.4	3.7	70.1	6.2	16.7	7.1
Revenue	Corporate income Tax			27.4		28.2		13.4		27.6	
	Toll tariff	114.7						114.7			
	Lease fee									15.8	
	Total	114.7	5.2	27.4	0.8	28.2	1.0	128.1	6.1	43.4	2.4
Net Cost			PSC	PPP-LCC							
			2.1		-0.3		2.7		0.1		4.7

TABLE 8.5.5-5 (3/13) COST AND REVENUE FOR PUBLIC SECTOR IN C-6 EXPRESSWAY + GLOBAL CITY LINK

		Conventional		PPP Scheme							
				Pure BOT		BOT with subsidy		Segment Dividing			
								with Lease Fee		with Lease Fee	
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	72.0		7.7		37.5		38.8		38.8	
	Loan Amortizations							0.0		0.0	
	O&M Cost	82.2									
	Insurance cost	1.4						0.7		0.7	
	Service fee payment										
	Total	155.7	35.0	7.7	4.5	37.5	17.0	39.5	17.7	39.5	17.7
Revenue	Corporate income Tax			68.8		71.6		68.2		77.6	
	Toll tariff	379.0									
	Lease fee							31.8		0.0	
	Total	379.0	18.8	68.8	2.0	71.6	2.5	100.0	4.9	77.6	3.1
Net Cost			PSC	PPP-LCC							
			16.2		2.4		14.5		12.8		14.7

TABLE 8.5.5-5 (4/13) COST AND REVENUE FOR PUBLIC SECTOR IN C-6 EXPRESSWAY SOUTH & EAST SECTION GLOBAL CITY LINK

		Conventional		PPP Scheme							
				Pure BOT		BOT with Subsidy		Segment Dividing			
								with Lease Fee		with Lease Fee	
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	34.9		3.8		18.2		24.7		24.7	
	Loan Amortizations							0.0		0.0	
	O&M Cost	28.0									
	Insurance cost	0.7						0.5		0.5	
	Service fee payment										
	Total	63.5	16.6	3.8	2.2	18.2	8.3	25.1	11.1	25.1	11.1
Revenue	Corporate income Tax			22.7		23.6		22.0		28.3	
	Toll tariff	134.0									
	Lease fee							21.3		0.0	
	Total	134.0	6.9	22.7	0.6	23.6	0.7	43.3	2.5	28.3	1.2
Net Cost			PSC	PPP-LCC							
			9.7		1.6		7.5		8.6		9.9

TABLE 8.5.5-5 (5/13) COST AND REVENUE FOR PUBLIC SECTOR IN CALA EXPRESSWAY

		Conventional		PPP Scheme											
				Pure BOT		BOT with Subsidy		Segment Dividing with Lease Fee		Segment Dividing with Lease Fee		Service Payment		Lease	
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	26.1		2.2		12.9		12.0		12.0		2.2		26.1	
	Loan Amortizations							0.0		0.0				0.0	
	O&M Cost	43.9													
	Insurance cost	0.5						0.2		0.2				0.5	
	Service fee payment											142.6			
	Total	70.6	13.2	2.2	1.3	12.9	5.8	12.2	5.4	12.2	5.4	144.8	13.0	26.7	11.5
Revenue	Corporate income Tax			58.8		60.5		59.2		62.1		22.7		59.7	
	Toll tariff	267.3										267.3			
	Lease fee							9.9		0.0				24.4	
	Total	267.3	12.8	58.8	2.2	60.5	2.5	69.1	3.2	62.1	2.6	290.0	14.7	84.1	4.8
Net Cost			PSC	PPP-LCC											
			0.3		-0.9		3.3		2.2		2.8		-1.7		6.8

TABLE 8.5.5-5 (6/13) COST AND REVENUE FOR PUBLIC SECTOR IN C-5・FTI・SKYWAY CONNECTOR

		Conventional		**PPP Scheme**			
				Pure BOT		**BOT with subsidy**	
		current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	7.6		0.1		3.7	
	Loan Amortizations						
	O&M Cost	3.7					
	Insurance cost	0.2					
	Service fee payment						
	Total	11.4	3.4	0.1	0.1	3.7	1.6
Revenue	Corporate income Tax			5.9		6.1	
	Toll tariff	30.6					
	Lease fee						
	Total	30.6	1.5	5.9	0.2	6.1	0.2
Net Cost			PSC	PPP-LCC			
			1.9		-0.1		1.4

TABLE 8.5.5-5 (7/13) COST AND REVENUE FOR PUBLIC SECTOR IN CLEX PHASE 1 + 2 (2-LANE)

		Conventional		PPP Scheme											
				Pure BOT		BOT with Subsidy		Segment Dividing with Lease Fee		Segment Dividing with Lease Fee		Service Payment		Lease	
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	26.2		2.3		13.0		13.0		13.0		2.3		26.2	
	Loan Amortizations							0.0		0.0				0.0	
	O&M Cost	42.9													
	Insurance cost	0.5						0.2		0.2				0.5	
	Service fee payment											141.3			
	Total	69.6	13.2	2.3	1.3	13.0	5.8	13.2	5.9	13.2	5.9	143.6	13.0	26.7	11.5
Revenue	Corporate income Tax			5.7		5.8		5.0		7.1		22.6		4.1	
	Toll tariff	71.7										71.7			
	Lease fee							10.9		0.0				24.4	
	Total	71.7	3.6	5.7	0.1	5.8	0.1	15.8	1.0	7.1	0.2	94.4	5.4	28.5	2.1
Net Cost			PSC	PPP-LCC											
			9.6		1.2		5.7		4.9		5.7		7.5		9.4

TABLE 8.5.5-5 (8/13) COST AND REVENUE FOR PUBLIC SECTOR IN CLEX PHASE 1 (2-LANE)

		Conventional		PPP Scheme							
				Pure BOT		BOT with Subsidy		Service Payment		Lease	
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	11.8		1.2		5.9		1.2		11.8	
	Loan Amortizations									0.0	
	O&M Cost	19.2									
	Insurance cost	0.2								0.2	
	Service fee payment							63.2			
	Total	31.2	6.0	1.2	0.7	5.9	2.7	64.3	5.9	12.1	5.2
Revenue	Corporate income Tax			6.0		6.1		10.1		5.7	
	Toll tariff	47.0						47.0			
	Lease fee									10.9	
	Total	47.0	2.3	6.0	0.2	6.1	0.2	57.2	3.1	16.6	1.1
Net Cost			PSC	PPP-LCC							
			3.6		0.5		2.5		2.7		4.1

TABLE 8.5.5-5 (9/13) COST AND REVENUE FOR PUBLIC SECTOR IN CLEX PHASE 1 (4 - LANE)

		Conventional		PPP Scheme							
				Pure BOT		BOT with Subsidy		Service Payment		Lease	
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	17.6		1.2		8.5		1.2		17.6	
	Loan Amortizations									0.0	
	O&M Cost	23.5									
	Insurance cost	0.4								0.4	
	Service fee payment							90.8			
	Total	41.4	8.6	1.2	0.7	8.5	3.8	91.9	8.1	17.9	7.7
Revenue	Corporate income Tax			5.6		5.7		15.2		4.6	
	Toll tariff	51.7						51.7			
	Lease fee									16.8	
	Total	51.7	2.6	5.6	0.1	5.7	0.1	66.9	3.7	21.4	1.5
Net Cost			PSC	PPP-LCC							
			6.0		0.5		3.6		4.4		6.2

TABLE 8.5.5-5 (10/13) COST AND REVENUE FOR PUBLIC SECTOR IN SLEx EXTENSION

		Conventional		PPP Scheme											
				Pure BOT		BOT with Subsidy		Segment Dividing				Service Payment		Lease	
								with Lease Fee		with Lease Fee					
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	14.5		0.7		6.9		7.6		7.6		0.7		14.5	
	Loan Amortizations							0.0		0.0				0.0	
	O&M Cost	24.7													
	Insurance cost	0.3						0.2		0.2				0.3	
	Service fee payment											81.3			
	Total	39.5	7.2	0.7	0.4	6.9	3.0	7.8	3.4	7.8	3.4	82.1	7.1	14.8	6.3
Revenue	Corporate income Tax			16.3		16.9		16.2		18.3		13.0		16.5	
	Toll tariff	93.6										93.6			
	Lease fee							7.0		0.0				14.0	
	Total	93.6	4.5	16.3	0.5	16.9	0.6	23.2	1.1	18.3	0.7	106.6	5.5	30.5	1.9
Net Cost			PSC	PPP-LCC											
			2.7		-0.1		2.4		2.2		2.6		1.6		4.4

TABLE 8.5.5-5 (11/13) COST AND REVENUE FOR PUBLIC SECTOR IN CALAMBA-LOS BAÑOS EXPRESSWAY

		Conventional		PPP Scheme							
				Pure BOT		BOT with Subsidy		Service Payment		Lease	
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	8.5		1.2		4.6		1.2		8.5	
	Loan Amortizations									0.0	
	O&M Cost	13.9									
	Insurance cost	0.2								0.2	
	Service fee payment							44.4			
	Total	22.6	4.4	1.2	0.7	4.6	2.1	45.5	4.3	8.7	3.8
Revenue	Corporate income Tax			6.4		6.6		7.0		6.2	
	Toll tariff	42.0						42.0			
	Lease fee									7.5	
	Total	42.0	1.9	6.4	0.2	6.6	0.2	49.0	2.5	13.8	0.9
Net Cost			PSC	PPP-LCC							
			2.4		0.5		1.9		1.8		3.0

TABLE 8.5.5-5 (12/13) COST AND REVENUE FOR PUBLIC SECTOR IN R-7 EXPRESSWAY

		Conventional		PPP Scheme							
				Pure BOT		BOT with Subsidy		Service Payment		Lease	
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	34.7		1.3		17.6		1.3		34.7	
	Loan Amortizations									0.0	
	O&M Cost	18.1									
	Insurance cost	0.8								0.8	
	Service fee payment							153.1			
	Total	53.5	15.7	1.3	0.8	17.6	7.6	154.4	13.4	35.5	15.0
Revenue	Corporate income Tax			42.6		44.6		29.1		43.3	
	Toll tariff	196.4						196.4			
	Lease fee									34.2	
	Total	196.4	10.0	42.6	1.3	44.6	1.7	225.5	11.9	77.4	4.8
Net Cost			PSC	PPP-LCC							
			5.7		-0.5		5.9		1.5		10.2

TABLE 8.5.5-5 (13/13) COST AND REVENUE FOR PUBLIC SECTOR IN NLEx-EAST (PHASE 1) WITH LA MESA PARKWAY

		Conventional		PPP Scheme											
				Pure BOT		BOT with Subsidy		Segment dividing				Service Payment		Lease	
								with Lease Fee		with Lease Fee					
		current price	present value	current price	present value	current price	present value	current price	present value	current price	present value	current price	present value	current price	present value
Cost	Capital Cost funded by government own budget	21.2		1.0		10.1		15.3		15.3		1.0		21.2	
	Loan Amortiza-tions							0.0		0.0				0.0	
	O&M Cost	40.3													
	Insurance cost	0.5						0.3		0.3				0.5	
	Service fee payment											123.7			
	Total	61.9	10.7	1.0	0.6	10.1	4.4	15.6	6.6	15.6	6.6	124.7	10.7	21.6	9.2
Revenue	Corporate income Tax			9.2		9.3		8.3		11.7		19.3		8.1	
	Toll tariff	82.6										82.6			
	Lease fee							14.6		0.0				20.6	
	Total	82.6	3.8	9.2	0.2	9.3	0.3	22.9	1.4	11.7	0.4	101.8	5.4	28.7	1.9
Net Cost			PSC	PPP-LCC											
			6.9		0.3		4.1		5.2		6.2		5.3		7.2

(3) Cash flow for each IRR

For calculation of Project IRR, IRR for SPC and Equity IRR, cash flow diagrams are presented in **Annex 8.5-1.** Net income flow of each project for Project IRR and IRR for SPC is shown in **Annex 8.5-2.**

8.6 SELECTION OF TYPE OF PPP MODALITY FOR 10 PROJECTS

8.6.1 Criteria for Selection of PPP Modality of Each Project

Criteria for selection of PPP modality of each project was established as follows;

SELECTION CRITERIA OF PPP MODALITY

1) IRR for SPC is higher than WACC (11.5%).

2) Equity IRR is higher than 15%.
3) Net Public Expenditure Reduction (NPER) shall be positive.
4) When above three conditions are satisfied, PPP modality with higher NPER is selected.

As shown in Figure 8.3.2-1, a project with Project FIRR of 4% to 12%, PPP schemes of Type-2, 3 and 4 are applicable, therefore, the Government should select a PPP scheme with due consideration of characteristics of PPP schemes, budget allocation easiness for short and long term, and implementation easiness. Under this Study, a factor of applicability of ODA to a PPP Scheme was considered.

8.6.2 PPP Modality Selected for Each Project

Based on the above selection criteria of PPP modality and results of financial analysis, PPP modality for each project was selected and summarized in **Table 8.6.2-1.**

TABLE 8.6.2-1 SELECTED PPP MODALITY FOR EACH PROJECT

Name of Project	Selected PPP Modality
1. NLEx – SLEx Link Expressway	**Type-3 (Segment Dividing) + Type-5 (Lease) for GRP Segment** GRP Segment : Private Segment = 60 : 40 GRP Segment Lease Fee = 100% GRP Segment utilizes Soft Loan.
2. NAIA Expressway: Phase II	**Type-2 (BOT with subsidy)** Subsidy = 35% ~ 40% of construction cost
3. C-6 Expressway/Global City Link: South East Section	**Type-3 (Segment Dividing)** GRP Segment : Private Segment = 64 : 36 GRP Segment Lease Fee = 0% GRP Segment utilizes Soft Loan.
4. CALA Expressway	**Type-3 (Segment Dividing) + Type-5 (Lease) for GRP Segment** GRP Segment : Private Segment = 40 : 60 GRP Segment Lease Fee = 100% GRP Segment utilizes Soft Loan.
5. C-5/FTI/Skyway Connector Road	**Type-2 (BOT with Subsidy)** Subsidy = 50% ~ 60% of construction cost
6. CLEx: Phase-I (2-lane)	**Type-5 (Lease)** GRP utilizes Soft Loan.
7. SLEx Extension (to Lucena City), (2-lane)	**Type-3 (Segment Dividing)** GRP Segment : Private Segment = 50 : 50 GRP Segment Lease Fee = 0%
8. Calamba – Los Baños Expressway	**Type-5 (Lease)** GRP utilizes Soft Loan.
9. R-7 Experessway	**Type-2 (BOT with Subsidy)** Subsidy = 40% of construction cost.
10. NLEx East + La Mesa Parkway	**Type-3 (Segment Dividing)** GRP Segment : Private Segment = 70 :30 GRP Segment Lease Fee = 0%

Project Name: NLEx-SLEx Link Expressway

	PPP Modality					
	Pure BOT	**BOT with Subsidy (50% of Construction Cost**	**Segment Dividing (60 : 40)**		**Service Payment**	**Lease**
			GRP Segment's Lease Fee 100%	**GRP Segment's Lease Fee 0%**		
Project FIRR	9.14	9.14	9.14	9.14	9.14	9.14
IRR for SPC	9.45	15.53	15.80 (15.11)	17.99	-	-
Equity IRR	8.51	17.81	18.03 (16.83)	22.20	-	-
NPER (Million PHP)	7,459	-453	-555 (8,742)	-1,996 (6,836)	-	-
Remarks		• Amount of subsidy needs to be reduced. • This is also recommendable scheme, however, utilization of a soft loan for subsidy is rather difficult.	• Recommended, on the condition that GRP Segment to be reduced or GRP utilizes a soft loan			

Note: Figure in ( ) shows when GRP utilizes a soft loan from multi, bi-lateral sources.

: IRR for SPC is less than 11.5%
: Equity IRR less than 15%
: NPER is negative.

Project Name: NAIA Expressway Phase II

	PPP Modality						
	Pure BOT	**BOT with Subsidy (40% of Construction Cost**	**Segment Dividing**		**Service Payment**	**Lease**	
			GRP Segment's Lease Fee 100%	**GRP Segment's Lease Fee 0%**			
Project FIRR	9.97	9.97	9.97	9.97	9.97	9.97	
IRR for SPC	10.54	15.00	-	-	10.05	374.41	(271.52) **(Note-1)**
Equity IRR	10.04	16.80	-	-	8.86	374.41	(271.52) **(Note-1)**
NPER (Million PHP)	2,397	-10	-	-	1,977	-2,563	(3,291) **(Note-1)** **(Note-2)**
Remarks		• Recommended • Amount of subsidy needs to be reduced to 35%.	• Not applicable due to short distance.	• Not applicable due to short distance.	• The service fee needs to be increased.	**(Note-1):** Toll Rate needs to be reduced. **(Note-2):** GRP utilizes ODA soft loan, of which repayment will be made from lease fee.	

Note: Figure in ( ) shows when GRP utilizes a soft loan from multi, bi-lateral sources.

: IRR for SPC is less than 11.5%
: Equity IRR less than 15%
: NPER is negative.

Project Name: C-6 Expressway + Global Link

	PPP Modality					
	Pure BOT	BOT with Subsidy (50% of Construction Cost	Segment Dividing (48 : 52)		Service Payment	Lease
			GRP Segment's Lease Fee 100%	GRP Segment's Lease Fee 0%		
Project FIRR	7.10	7.10	7.10	7.10	7.10	7.10
IRR for SPC	8.10	13.58	12.09 (11.55)	13.67	-	-
Equity IRR	6.60	14.71	12.29 (11.48)	14.81	-	-
NPER (Million PHP)	13,771	1,709	3,405 (15,329)	1,539 (12,821)	-	-
Remarks			• Needs to increase GRP segment	• Needs to increase GRP segment		

Note: Since North Section of the Project is to be built by MRT-7 Consortium, thus this case is only for reference.

Project Name: C-6 Expressway South East Section & Global City Link

	PPP Modality							
	Pure BOT	BOT with Subsidy (50% of Construction Cost	Segment Dividing (64 : 36)				Service Payment	Lease
			GRP Segment's Lease Fee 100%		GRP Segment's Lease Fee 0%			
Project FIRR	5.14	5.14	5.14		5.14		5.14	5.14
IRR for SPC	6.04	11.09	12.12	(10.95)	15.48	(15.48)	-	-
Equity IRR	3.90	10.79	12.33	(10.63)	18.01	(18.01)	-	-
NPER (Million PHP)	8,100	2,152	1,052	9,069	-190	(7,385)	-	-
Remarks					• Recommended, on the condition that GRP Segment to be reduced or GRP utilizes a soft loan			

Note: Figure in ( ) shows when GRP utilizes a soft loan from multi, bi-lateral sources.

: IRR for SPC is less than 11.5%
: Equity IRR less than 15%
: NPER is negative.

Project Name: CALA Expressway

	PPP Modality											
	Pure BOT	**BOT with Subsidy (30% of Construction Cost**	**Segment Dividing (40 : 60)**				**(20 : 80)**	**Service Payment**	**Lease**	
			GRP Segment's Lease Fee 100%		**GRP Segment's Lease Fee 0%**		**GRP Segment's Lease Fee 100%**			
Project FIRR	12.51	12.51	12.51		12.51		12.51	12.51	12.51	
IRR for SPC	13.59	16.78	18.14	(17.83)	19.12	(19.12)	14.89	11.67	202.20	(177.18) **(Note-1)**
Equity IRR	14.63	20.15	22.52	(21.88)	24.58	(24.58)	16.66	11.66	202.20	(177.18) **(Note-1)**
NPER (Million PHP)	1,220	-1,266	-1,882	(1,843)	-2,545	(1,085)	58 **(Note-1)**	2,009	-6,407	(2,751) **(Note-1)** **(Note-2)**
Remarks		• Needs to decrease subsidy to less than 30%. • This is also recommendable scheme, however, utilization of a soft loan for subsidy is rather difficult.	• Recommended, on the condition that GRP Segment to be reduced or GRP utilizes a soft loan				**(Note-1):** • Lease fee to be paid back to GRP in 10 years	• The service fee needs to be increased.	**(Note-1):** • Same as NAIA **(Note-2):** • Same as NAIA	

Note: Figure in ( ) shows when GRP utilizes a soft loan from multi, bi-lateral sources.

: IRR for SPC is less than 11.5%
: Equity IRR less than 15%
: NPER is negative.

Project Name: C-5/FTI/SKYWAY Connector Road

	PPP Modality					
	Pure BOT	BOT with Subsidy (50% of Construction Cost	Segment Dividing		Service Payment	Lease
			GRP Segment's Lease Fee 100%	GRP Segment's Lease Fee 0%		
Project FIRR	6.08	6.08	6.08	6.08	6.08	6.08
IRR for SPC	6.24	11.59	-	-	-	-
Equity IRR	4.24	11.54	-	-	-	-
NPER (Million PHP)	1,926	440	-	-	-	-
Remarks		• Recommended • Amount of subsidy needs to be increased.				

: IRR for SPC is less than 11.5%
: Equity IRR less than 15%
: NPER is negative.

Project Name: CLEx Phase 1 + 2 (2-lane)

	PPP Modality					
	Pure BOT	BOT with Subsidy (50% of Construction Cost	Segment Dividing (45 : 55) GRP Segment's Lease Fee 100%	Segment Dividing (45 : 55) GRP Segment's Lease Fee 0%	Service Payment	Lease
Project FIRR	Negative	Negative	Negative	Negative	Negative	Negative
IRR for SPC	Negative	3.64	Negative	3.33	11.62	Negative **(Note-1)**
Equity IRR	Negative	0.30	Negative	Negative	11.56	Negative **(Note-1)**
NPER (Million PHP)	8,370	3,879	4,686 (8,836)	3,871 (7,751)	2,037	140 (9,412)
Remarks					• The service fee needs to be increased.	**(Note-1)** • O & M cost is higher than revenue.

Note: This project is still prematured from viewpoints of financial viability.

Project Name: CLEx Phase 1 (2-lane)

	PPP Modality						
	Pure BOT	BOT with Subsidy (50% of Construction Cost	Segment Dividing GRP Segment's Lease Fee 100%	Segment Dividing GRP Segment's Lease Fee 0%	Service Payment	Lease	
Project FIRR	3.62	3.62	3.62	3.62	3.62	3.62	
IRR for SPC	4.36	8.84	-	-	11.62	38.49	(22.37)
Equity IRR	1.69	7.52	-	-	11.56	38.49	(22.37)
NPER (Million PHP)	3,120	1,132	-	-	910	-474	(3,616)
Remarks			• Project is difficult to divide.	• Project is difficult to divide.	• The service fee needs to be increased.	• Recommended, provided that lease fee to be recovered in a shorter period or GRP utilizes a soft loan	

Note: Figure in ( ) shows when GRP utilizes a soft loan from multi, bi-lateral sources.

: IRR for SPC is less than 11.5%
: Equity IRR less than 15%
: NPER is negative.

Project Name: CLEx Phase 1 (4 Lanes)

	PPP Modality						
	Pure BOT	BOT with Subsidy (50% of Construction Cost	Segment Dividing		Service Payment	Lease	
			GRP Segment's Lease Fee 100%	GRP Segment's Lease Fee 0%			
Project FIRR	1.37	1.37	1.37	1.37	1.37	1.37	
IRR for SPC	1.80	5.79	-	-	11.17	16.01	(4.69)
Equity IRR	Negative	3.42	-	-	10.73	16.01	(4.69)
NPER (Million PHP)	5,483	2,398	-	-	1,603	-160	(6,200)
Remarks			• Project is difficult to divide.	• Project is difficult to divide.	• The service fee needs to be increased.		

Note: This project is still premature.

Project Name: SLEx Extension (to Lucena)

	PPP Modality						
	Pure BOT	BOT with Subsidy (50% of Construction Cost	Segment Dividing (50 : 50)		Service Payment	Lease	
			GRP Segment's Lease Fee 100%	GRP Segment's Lease Fee 0%			
Project FIRR	8.12	8.12	8.12	8.12	8.12	8.12	
IRR for SPC	8.60	13.82	12.96 (12.42)	14.56	11.62	93.53	(70.73)
Equity IRR	7.31	15.08	13.61 (12.77)	16.27	11.56	93.53	(70.73)
NPER (Million PHP)	2,805	322	512 (3,153)	104 (2,605)	1,174	-1,680	(3,579)
Remarks		• This is also recommendable scheme, however, utilization of a soft loan for subsidy is rather difficult.		• Recommended	• The service fee needs to be increased.	• Toll rate needs to be reduced.	

Note: Figure in ( ) shows when GRP utilizes a soft loan from multi, bi-lateral sources.

: IRR for SPC is less than 11.5%
: Equity IRR less than 15%
: NPER is negative.

Project Name: Calamba - Los Baños Toll Expressway

	PPP Modality						
	Pure BOT	BOT with Subsidy (50% of Construction Cost	Segment Dividing		Service Payment	Lease	
			GRP Segment's Lease Fee 100%	GRP Segment's Lease Fee 0%			
Project FIRR	5.34	5.34	5.34	5.34	5.34	5.34	
IRR for SPC	6.46	11.33	-	-	11.77	45.76	(31.24)
Equity IRR	4.56	11.17	-	-	11.85	45.76	(31.24)
NPER (Million PHP)	1,927	512	-	-	596	-536	(2,282)
Remarks		• Needs to reduce cost by lowering facility level.	• Project is difficult to divide.	• Project is difficult to divide.	• The service fee needs to be increased.	• Recommended, on the condition that lease fee to be recovered in a shorter period or GRP utilizes a soft loan. • Needs to reduce toll rate.	

Project Name: R-7 Expressway

	PPP Modality						
	Pure BOT	BOT with Subsidy (40% of Construction Cost	Segment Dividing		Service Payment	Lease	
			GRP Segment's Lease Fee 100%	GRP Segment's Lease Fee 0%			
Project FIRR	8.76	8.76	8.76	8.76	8.76	8.76	
IRR for SPC	9.15	13.58	-	-	10.14	347.70	(263.57)
Equity IRR	8.02	14.67	-	-	8.99	347.70	(263.57)
NPER (Million PHP)	6,181	996	-	-	4,200	-4,536	(8,158)
Remarks		• Recommended • Facility level such as number of on-/ off-ramps to be lowered to reduce construction cost.	• Project is difficult to divide.	• Project is difficult to divide.	• The service fee needs to be increased.	• Toll rate needs to be reduced.	

Note: Figure in ( ) shows when GRP utilizes a soft loan from multi, bi-lateral sources.

: IRR for SPC is less than 11.5%
: Equity IRR less than 15%
: NPER is negative.

Project Name: NLEx-East & La Mesa Parkway

	PPP Modality						
	Pure BOT	BOT with Subsidy (50% of Construction Cost	Segment Dividing (70 : 30) GRP Segment's Lease Fee 100%	GRP Segment's Lease Fee 0%	Service Payment	Lease	
Project FIRR	2.50	2.50	2.50	2.50	2.50	2.50	
IRR for SPC	2.82	6.87	6.73 (4.97)	11.69	11.84	17.39	(9.02)
Equity IRR	Negative	4.95	5.12 (3.10)	11.70	12.00	17.39	(9.02)
NPER (Million PHP)	6,576	2,769	1,664 (7,202)	667 (5,859)	1,601	-351	(7,466)
Remarks				• Recommended • GRP segment needs to be increased, or facility level needs to be lowered to decrease construction cost.	• The service fee needs to be increased.		

Note: Figure in ( ) shows when GRP utilizes a soft loan from multi, bi-lateral sources.

: IRR for SPC is less than 11.5%
: Equity IRR less than 15%
: NPER is negative.

8.7 PPP PROJECT FINANCING

8.7.1 ADB's Financing Facilities for Private Sector

(1) Equity Investments

ADB may offer financing through equity investments, including direct equity investments and indirect equity investments using fund. In providing assistance to private sector, ADB also may provide equity investments such as ordinary equity, preferred stock and convertibles, but also mezzanine financing as well as subordinated loans. ADB will never take an equity stake larger than 25 % of total share capital or above $75 million, it will not be the largest single investor in an enterprise, and it will not assume responsibilities for managing an enterprise.

(i) Direct Equity Investments

ADB chooses to invest directly when

- A sector is being opened for private sector investment.
- It provides the opportunity for ADB to maximize policy leverage or gain detailed knowledge in a new sector.
- Developmental projects are progressing slowly due to funding shortfall.

(ii) Indirect Equity Investments

ADB channels its equity investments through funds if

- ADB believes that a qualified fund manager can better supply the expertise that ADB lacks in a particular sector.
- Several relatively small projects of similar characteristics require funding.

(2) Loans

ADB will never be the largest single investor in an enterprise, yet can support additional debt in the form of parallel financing with other financial institutions as necessary.
Basically, the cap of ADB's loans should be either, 25% of total project cost or $250 million, whichever is lower.

ADB offers its public and private borrowers a London Interbank Offered Rate (LIBOR)-Based Loans (LBL) with a floating or fixed rate based on 6-month LIBOR and an effective contractual spread. For private loans, the spread will depend on the credit and project risks of the loan.
In addition to loans with fixed-rate and floating rate, ADB can also provide options including interest rate cap and interest rate collar. An interest rate cap is an option to compensate excess amount of interest cost in case floating rate surpasses the cap rate although the borrowers should pay the premium in advance to use interest rate cap. As for interest rate collar, borrowers have no need to pay the amount of interest cost above cap rate, yet should pay the floor rate in case floating rate goes below the interest rate floor.

Generally, ADB offers traditional hard currency loans, but also can provide local currency loans for selected countries including Philippine.

TABLE 8.7.1-1 INDICATIVE TERMS AND CONDITIONS

Currencies:	US Dollar, Euro, Japanese Yen
Interest Rate:	Floating or Fixed
Benchmark:	LIBOR
Spread:	Market based
Commitment Fee :	0.50 - 0.75%
Front-end Fee:	1.0 - 1.5%
Maturity:	Up to 15 years

Source: http://www.adb.org/PrivateSector/Finance/loan_terms.asp

TABLE 8.7.1-2 INDICATIVE LENDING RATES FOR ADB LOANS UNDER THE LIBOR-BASED LOAN FACILITY

(as of 08 September 2010)

	Floating Rate	Fixed Swap Rate				
	6 month LIBOR/Euribor	3 year	5 year	7 year	10 year	15 year
USD	0.48875	0.990	1.620	2.130	2.600	3.020
JPY	0.43500	0.500	0.630	0.840	1.210	1.660
EURIBOR	1.13300	1.460	1.850	2.190	2.540	2.840

EURIBOR: Euro Interbank Offered Rate

Source: http://www.adb.org/Documents/Brochures/Libor/indicative_rates.pdf

TABLE 8.7.1-3 CAP/COLLAR PREMIUM FOR ADB LOANS WITH FLOATING RATE

(as of 08 September 2010)

	Cap				**Zero Cost Collar**					
	Strike	**Premium[1)]**			**3 year**		**5 year**		**10 year**	
		3 year	**5 year**	**10 year**	**Cap**	**Floor**	**Cap**	**Floor**	**Cap**	**Floor**
USD	**3.00%**	**0.22%**	**1.37%**	**7.27%**	**6.00%**	**0.23%**	**6.00%**	**0.64%**	**6.00%**	**1.50%**
	5.00%	**0.06%**	**0.50%**	**3.19%**						
	7.00%	**0.01%**	**0.20%**	**1.78%**						
JPY	**0.25%**	**0.74%**	**1.68%**	**7.84%**	**3.00%**	**0.06%**	**3.00%**	**0.19%**	**3.00%**	**0.72%**
	1.50%	**0.02%**	**0.25%**	**2.98%**						
	3.00%	**0.00%**	**0.09%**	**1.32%**						
EURO	**3.00%**	**0.27%**	**1.18%**	**5.25%**	**6.00%**	**0.66%**	**6.00%**	**1.07%**	**6.00%**	**1.59%**
	5.00%	**0.10%**	**0.46%**	**1.83%**						
	7.00%	**0.04%**	**0.18%**	**0.91%**						

1) Quoted as a percent of the principal amount of the loan outstanding to which the cap applies

Source: http://www.adb.org/Documents/Brochures/Libor/indicative_rates.pdf

ADB : AMOUNT OF LOANS

a. For loans and guarantees representing in effect the same risk as that of the loan:
   - $250 million, or
   - an amount equal to 25% of total project cost, in the case of a limited recourse project financing, or total assets of the relevant borrower, in the case of a corporate loan, provided that in the event project costs or total assets, as the case may be, are less than $50 million, the amount under (ii) shall be equal to 50% of such projects costs or total assets, respectively, whichever is lower;
   - up to $400 million, or
   - 70% of project cost or total assets, as the case may be, whichever is lower, provided that there is a guarantee from an entity with an international credit rating of A- or better for that class transaction.

Source: ADB's website

(3) Guarantees

ADB's guarantee instruments cover those risks that the private sector cannot easily absorb or manage on its own. Mitigating these risks can make a crucial difference in mobilizing debt funding for private sector projects.

ADB offers two guarantee products of Partial Credit Guarantee and Political Risk Guarantee, both of which are designed to mitigate the risk exposure of commercial lenders:

Eligible projects that ADB can grant guarantees are only those that ADB directly engages. Insurance fees are decided based on a market condition, and generally, it is supposed to be paid in advance.

TABLE 8.7.1-4 ADB'S GUARANTEES FACILITIES FOR PRIVATE FINANCING

Type	Detail
Partial Credit Guarantees	The Partial Credit Guarantee provides comprehensive cover for a specified portion of the commercial debt provided by co-financiers. In general, ADB's PCGs cover principal and/or interest for maturities that would be difficult to obtain from commercial lenders.
Political Risk Guarantees	The Political Risk Guarantees are designed to facilitate commercial co-financing by covering specifically defined sovereign or political risks. Coverage is available against any combination of these risks: -Currency inconvertibility and/or non-transferability (CI) -Confiscation, expropriation, nationalization, or deprivation of project assets (CEND) -Political violence -Breach of contract

Source: http://www.adb.org/PrivateSector/Finance/guarantees.asp

(4) B Loan (Complementary Financing Scheme)

ADB's B loan is available for private sector projects in which ADB is a direct participant. B loans are funded by commercial lenders with ADB acting as "lender of record". Although B loans do not provide co-financiers with recourse to ADB for debt service, such loans do enjoy the same privileges and immunities given to ADB direct loans. These include

- sharing of ADB's preferred creditor status
- access to ADB's projects appraisal and loan documentation to facilitate credit analysis and due diligence
- possible reduction in provisioning requirements in the co-financier's home country.

Rates and fees are decided by negotiating with financial institutions and borrowers.

(5) Case Study

(i) NLEX Rehabilitation and Expansion

The North Luzon Expressway (NLEX) Project is a concession for the rehabilitation, expansion, operation, and maintenance of the existing 84 km NLEX that connects Metro Manila to Central Luzon.

The concession agreement was signed in June 1998, and then it commenced operation in Feb 2005.

NLEx EXPANSION PROJECT OUTLINE

Project Outline	・the rehabilitation, expansion, operation, and maintenance of the existing 84 km NLEX
Concession Period	・**32 years** (1998 to 2030. It includes rehabilitation and expansion works. Operation commenced in 2005)
Public grantor	・**Toll Regulatory Board**
Project Company	・**Manila North Tollways Corporation (MNTC)** MNTC is a joint venture of following sponsors; －**METRO PACIFIC INVESTMENTS CORPORATION (MPIC)**; Infrastructure investment company in Philippine －**Philippine National Construction Corporation (PNCC)**; original operator and franchisee of NLEX and SLEX －**Egis S.A. of France**; worldwide toll road operator －**Leighton Asia Ltd. of Australia**; Australian construction company ⇒MNTC signed the O&M contract with Tollways Management Corporation (TMC).

Concession Agreement	○**MNTC's Oblications** MNTC will **put up the money (invest and borrow) on its own without government financial guarantee**. MNTC will build the tollway and **take full construction risk**. MNTC will **operate, maintain and manage the tollway** for 30 years (or until 31 December 2030) in accordance with government standards with **no funding support from the Government**. To recover the investment, MNTC will **collect tolls** thru the authorized toll rates and the approved adjustment formula.
	○**Government obligations** **The Project roads are owned by the Grantor** subject to the rights and privileges of MNTC. Gov. **provides right of way (ROW) at government cost**.

MAP: LOCATION OF THE PROJECT

Source: ADB "Case Study: North Luzon Expressway Project" 2008

TABLE 8.7.1-5 PROJECT COST OF NLEx REHABILITATION AND EXPANSION

Breakdown	Amount
Equity	USD116.9 million
Sub debt	USD14.9 million
Loan	USD252.2 million
TOTAL	USD 384 million

TABLE 8.7.1-6 BREAKDOWN OF INVESTMENT

Investors	Investment ratio	
	MNTC	TMC
METRO PACIFIC INVESTMENTS CORPORATION (MPIC) ※MPIC took over initial investor First Philippine Infrastructure Development Corporation (FPIDC)	67.1%	46%
Philippine National Construction Corporation (PNCC)	2.5%	20%
Egis S.A. of France	13.9%	-
Leighton Asia Ltd. of Australia	16.5%	-
Transroute Philippines, Inc.	-	34%

At first, loans were quoted in USD, yet some loans are now switched to local currency in part (quoted in peso) so as to reduce burden of exchange risk for MNTC.

TABLE 8.7.1-7 FINANCE TO NLEx (BEFORE)

	Lender	**Loans**	**Interest rate**	**Repayment Period**
International financial institutions	ADB Direct Loan	USD45 million	Fixed	2005-2014
	IFC Loan	USD45.4 million	Fixed and floating (6-monthLIBOR+spread)	2005-2014
	EFIC Loan	USD55 million	Fixed	2005-2014
Commercial Bank (B-loan et al.)	ADB CFS	USD25million	Floating (6-monthLIBOR+spread)	2005-2009
	MIGA Covered Loan	USD47.5 million	Floating (6-monthLIBOR+spread)	2005-2009
	COFACE Covered Loan	USD34.3 milllion	Fixed and floating (6-month LIBOR+spread)	2005-2009

TABLE 8.7.1-8 FINANCE TO NLEx (NOW)

	Lender	**Loans**	**Interest rate**	**Repayment period**
International Financial Institutions	ADB Peso Loan	597.96 million peso	Floating (6-month PHIREF ＋spread)	2009-2014
	ADB Complementary Loan	USD20 million	Floating (6-monthLIBOR+spread)	2006-2014
	EFIC Loan	USD15 million	Fixed (8.03%)	2006-2014
Commercial Bank (B-loan et al.)	COFACE Covered Loan	USD 14.95 million	Fixed (6.13%)	2006-2014
	USD Bank Facility	USD32.05 million	Floating (6-monthLIBOR+spread)	2006-2014
	Philippine National Bank	2.1billion peso	Fixed (7-yearPDSTF+spread) 9.61%	2009-2015
	Fixed Rate Corporate Notes	5.5 billion peso	Fixed (Loans with fixed annual rate of 9.75%)	2006-2013

According to 2009 annual report of METRO PACIFIC INVESTMENTS COPORATION, the interest rate of direct facility structured with fixed interest rate will be 8.03%-8.24% in 2009 (8.03%-8.25% in 2008). As for syndicate facility structured with fixed rate and floating rate, it is reported to be 4.0%-9.75% in 2009 (5.94%-9.75% in 2008). According to this report, following swaps are applied to MNTC in order to mitigate interest rate risk as well as exchange risk. Actual interest rate after application of interest swap will be approximately 10%.

TABLE 8.7.1-9 INTEREST SWAP APPLIED TO NLEx

	Payment to swap provider from MNTC (Quoted in peso, every 6 months)
COFACE	Principal（42 million peso）＋7.6%
ADB-CFS A	Principal（49.2 million peso）＋8.3%
ADB-CFS B	Principal（8.8 million peso）＋8.9%
USD Bank Facility	Principal（94.2 million peso）＋9.1%
EFIC	Principal（44.5 million peso）＋11.5%
ADB Direct Loan	9.4%

Source: 2009 annual report of METRO PACIFIC INVESTMENTS COPORATION

8.7.2 IFC (INTERNATIONAL FINANCE CORPORATION OF WORLD BANK GROUP)

(1) Eligible Project for Funding

To be eligible for IFC funding, a project must meet a number of criteria as shown below.

- Be located in a developing country that is a member of IFC;
- Be in the private sector;
- Be technically sound;
- Have good prospects of being profitable;
- Benefit the local economy; and
- Be environmentally and socially sound, satisfying IFC environmental and social standards as well as those of the host country.

(**Source:** IFC website)

(2) Government Cooperation

Although IFC is primarily a financier of private sector projects, it may provide finance for a company with some government ownership, provided there is private sector participation and the venture is run on a commercial basis.

Although IFC does not accept government guarantees for its financing, its work often requires close cooperation with government agencies in developing countries.
(Source: IFC website)

(3) Pricing & Financing Ceilings

To ensure the participation of investors and lenders from the private sector, IFC limits the total amount of own-account debt and equity financing it will provide for any single project.

For new projects the maximum is 25 percent of the total estimated project costs, or, on an exceptional basis, up to 35 percent in small projects. For expansion projects, IFC may provide up to 50 percent of the project cost, provided its investments do not exceed 25 percent of the total capitalization of the project company.

IFC seeks profitable returns; prices its finance and services in line with the market; and fully shares risks with its partners.
(**Source:** IFC website)

(4) Loans for IFC's Own Account: A-loans

IFC offers fixed and variable rate loans for its own account to private sector projects in developing countries.

Most A-loans are issued in leading currencies, but local currency loans can also be provided. The loans typically have maturities of 7 to 12 years at origination. Grace periods and repayment schedules are determined on a case-by-case basis in accordance with the borrower's cash flow needs. If warranted by the project, IFC provides longer-term loans and longer grace periods. Some loans have been extended to as long as 20 years.

It invests exclusively in for-profit projects and charges market rates for its products and services. Generally, A-loans range from $1 million to $100 million.
(**Source:** IFC website)

(5) Case Study

Here are the examples of financing with Bangkok Mass Transit System (BTS) in Thailand and rehabilitation project of SLEX in Philippines. There is no detailed information regarding these financing, yet loans of IFC is limited to approximately 3% of total project cost with Bangkok Mass Transit System. As for rehabilitation project of SLEX, proposed loans of IFC is approximately 20% of total project cost and its maturity is prospected to be 10 years.

TABLE 8.7.2-1 BANGKOK MASS TRANSIT SYSTEM (BTS)

Country	**Thailand**
Length	23.5km (23 stations)
Financial Closure	06/1995
Status	Operational
Project Company	Bangkok Transit System Corp (BTSC) Sponsored by - Tanayong Group (real estate developer in Thailand); Tanayong is required to retain 51% of the project company until the completion of the project. - Italian-Thai Corporation (civil contractor in Thailand); Italian-Thai is responsible for the construction of the base structure. ※ Siemens, a German EPC contractor, supplied electrical / mechanical systems in addition to Skytrain's rolling stock along with a short term (5 year) maintenance contract. ※ Credit Suisse First Boston (CSFB) that is an international financial firm eventually acquired both debt and equity investments in BTSC.
Scheme of PPP	Hybrid of BOT and BTO Base structure (e.g. bridge) was constructed under BTO, and Bangkok Metropolitan Administration (BMA) that is the city of Bangkok's contracting authority owns the ROW and tracks. BMA also contributed land and rights of way to the project. Procurement of cars etc was executed under BOT scheme.
Contract Period	30 years (up to 2025)
Investment commitments in physical assets	1,700 US$ millions; 100% financed by commercial banks and development institutions. Exact amounts and proportions are not public information.
Multilateral support	IFC invested in 1997 To Equity; 9.8 US$ millions To Loan; 59.8 US$ millions IFC made both equity and debt investments. KfW (Kreditanstalt für Wiederaufbau; (the German government's development bank) – debt only.
Allocation of major risks	100 percent of Treatment of demand / revenue risks allocated to BTSC.
Remarks	The commencement of operation was delayed due to the change of the site of rolling stock yard. The construction cost rose up than the original estimation due to the Asian Financial Crisis. The original fare rate settled less than the project company required. BTSC needed to bear the enormous non current liabilities, because BTSC took the commercial risk fully. The minimum fare had been adjusted THB10 to THB15 on March 2008, and then BTSC could make the surplus. The Central Bankruptcy Court had approved BTSC's rehabilitation plan that includes the establishment of the fund for repayment to lenders on 31 January 2007, and then the enormous non current liabilities was cancelled. However, net current liabilities increased, the financial problem is not solved yet.

TABLE 8.7.2-2 REHABILITATION, EXPANSION, OPERATION AND MAINTENANCE OF SOUTH LUZON EXPRESSWAY (SLEx)

Country	**Philippines**
Length	36.1km - the rehabilitation and widening of the 1.2-km Alabang viaduct; - the rehabilitation and widening of the 27.3-km expressway linking Alabang to Calamba in Laguna province; and - the construction of a 7.6-km extension from Calamba to Santo Tomas in Batangas province, linking SLEX with the Southern Tagalog Arterial Road or STAR
Financial Closure	02/2006
Status	Construction
Project Company	South Luzon Tollway Corporation (SLTC) - SLTC is owned 20% by the Philippine National Construction Corporation (PNCC) and 80% by MTD Manila Expressways, Inc. (MTDME). - MTDME is 100% owned by MTD Equity Sdn Bhd, a fully-owned subsidiary of MTD Capital Bhd, Malaysia's second largest toll road operator and one of the five largest construction groups in Malaysia.
Scheme of PPP	BOT
Contract Period	30 years (until 2036)
Investment commitments in physical assets	The total project cost is estimated at $214.6 million.
Multilateral Support	The proposed IFC investment consists of an a 10-year A loan of totaling 2.5 billion Philippine pesos (about $50 million equivalent) for IFC's own account. A consortium of banks led by Banco de Oro is expected to lend an additional 5.55 billion pesos ($111 million equivalent).

8.7.3 Domestic Bank's Loan (in the case of Development Bank of the Philippines)

(1) Types of Project Financed

Operations financed by Development Bank of the Philippines (DBP) includes industrial infrastructure, official operations, public utilities, agro-indsutrial, environmental infrastructure and logistics.

All the types of the operations to be financed are stated in **Table 8.7.3-1**.

TABLE 8.7.3-1 ELIGIBLE TYPES OF PROJECT FINANCED BY DBP

1. Industrial	a. Large manufacturing and non-manufacturing industries b. Small and medium manufacturing and non-manufacturing industries c. Industrial Estate Projects
2. Public Utilities	a. Land, air and water transportation b. Telecommunications c. Power generation and distribution d. Water supply and distribution
3. Community Development	a. Housing b. Hospitals c. Schools d. Infrastructure e. Eco-Tourism
4. Agro-industrial	a. Post harvest-facility b. Agri-business
5. Focused Lending Programs	a. Environmental - Pollution control and abatement - Waste minimization and recycling - Efficient use and/or management of natural resources - Occupational health & safety - Establishment of Environmental Management System (EMS) and certification under ISO 14000 b. Micro-financing c. Lending program for franchises d. Program towards obtaining ISO 9000 certification e. New and renewable energy (NRE) projects f. Technology development and commercialization g. LGU financing program h. Sustainable Logistics Development Program - Road/Roro Ferry Network - Bulk Grains - Cold Chain
6. Other Programs	a. Factoring b. Loans Against Hold Out on Deposit

(2) Debt-Equity Requirements

The debt-equity requirements of DBP would depend on the type of project to be financed taken in conjunction with the Bank's assessment of the risk factors for a particular borrower.

(3) Eligible Borrowers

Eligible Borrowers include those stated below.

Single proprietorships, registered partnerships, cooperatives, associations, private corporations, private financial institutions, local government units (LGU), non-government organizations.

(4) Lending Rates

The rate of interest and other charges for loans and other credit accommodations are generally market-based.

Lending Rate: Effectivity Date: As of August 3, 2009

Account Tagging	Lending Rate
Prime	6.05%
Non Prime*	8.05%

- Non-Prime - plus 1% Annual Service Fee payable on interest Payment dates.

(5) Loan Features

As for amount of loans, private sector finance is limited to 80% of total project cost. Repayment period, in case of construction work, is up to 15-year including 3-year grace period.

TABLE 8.7.3-2 TERMS AND CONDITIONS FOR DBP LOAN

1. Maximum Loan Amount	a. LGUs: 90% of total project cost b. Private: 80% of total project cost
2. Mode of Payment	Retail: (LGUs/Private Ventures) a. Civil Works: Maximum of 15 years (inclusive of 3 years grace period on principal repayment) b. Equipment: Maximum of 10 years (inclusive of 3 years grace period on principal repayment) c. Working Capital: Maximum of 5 years (inclusive of 3 years grace on principal repayment) Wholesale: (MFIs/Rural & Thrift Banks/Cooperatives & NGOs d. Up to 10 years (inclusive of 6 months to 2 years grace period on principal repayment)
4. Other Fees	a. Commitment Fee - 0.15% per annum on unreleased balance - Subject to payment of non-utilization fee and prepayment penalty.Non-utilization fee refers to the non-availment of the loan, after a loan drawdown request is made.
5. Loan Collateral/ Insurance	The loan shall be secured by any or a combination of the following: Deed of Assignment of specified portion of Internal Revenue Allotment (IRA) a. Real estate/ chattel mortgage b. Government guarantees c. Hold-out on deposits d. Assignment of project income, purchase orders, export receivables, other collateral acceptable to DBP

(6) Case Study：Southern Tagalog Arterial Road (STAR)

As for private sector section (Lipa through Batangas) in STAR project, Development Bank of the Philippines (DBP) and others are offering the financing. The conditions of DBP loans is shown as below.

OUTLINE OF CONDITIONS OF DBP LOANS WITH STAR PROJECT

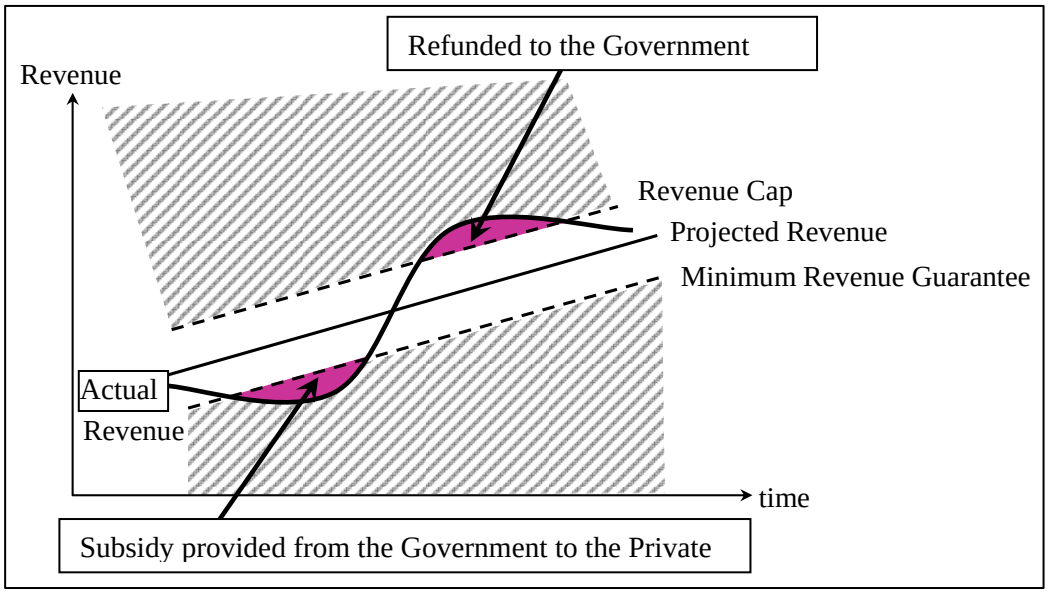
Interest Rate	9% for first 3 years, followed by PDST-F +3.5%
Repayment Period	10-year, repayment grace period of 2-year
Security	Total assets and cash flow of STA

※PDST-F: Abbreviation of Philippine Dealing System Treasury Fixing and it is a type of interest rate benchmark.

8.7.4 Case Study Concerning on Other PPP Projects of Transport Sector

(1) BTO project with Revenue Guarantee: Daegu-Busan Expressway, Korea (in Operation)

In Korea, support measures were introduced such as subsidy from the government and minimum revenue guarantee (MRG) upon enactment of The New Act on Private Participation in Infrastructure: PPI act in December 1998. In the case of Daegu-Busan Expressway, when actual revenue is more than 10% increase of estimated revenue agreed with the government, some contractual measures will be taken such as shifting the surplus revenue to the substitution for government financial assistance, lowering of toll rate, or shortening of the operation duration as well as reimbursement to the government. On the other hand, when actual revenue is less than 10% decrease of the estimated revenue, government shall pay the shortfall from the guaranteed minimum revenue to the project company. In case of Daegu-Busan expressway project, the effective duration of revenue guarantee is mere 20-year from the start of operation, which duration is approximately equivalent to the repayment period.



※Abolished on October 2009

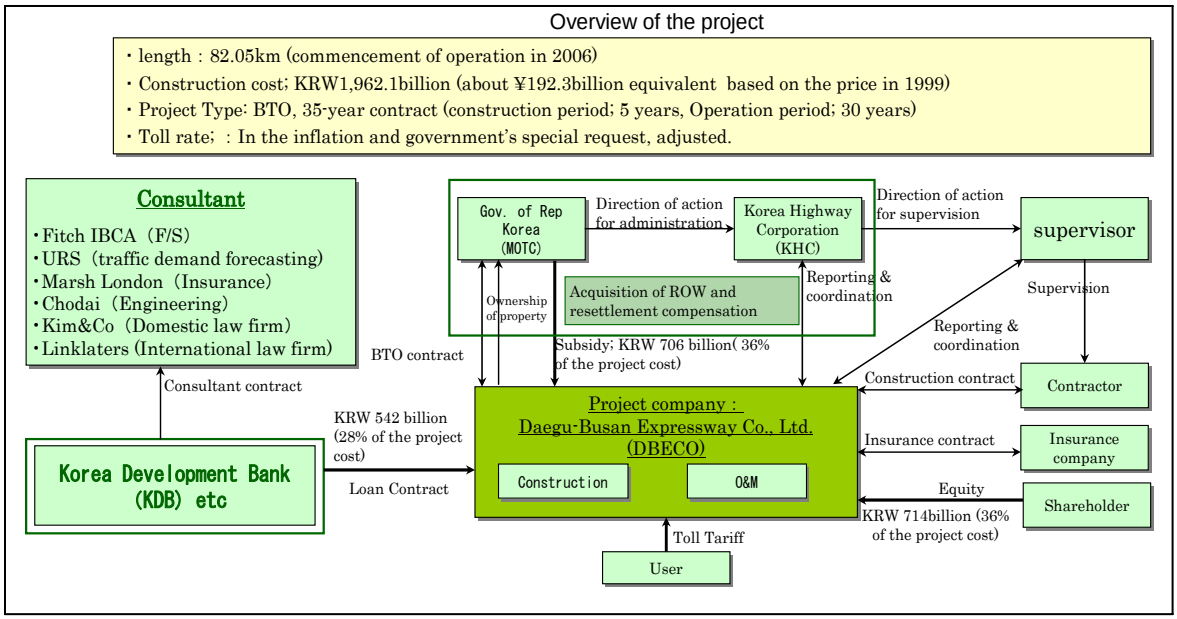
Source: Created based on Macquarie materials

FIGURE 8.7.4-1 CONCEPT OF MECHANISM OF MINIMUM REVENUE GUARANTEE IN KOREAN

After introduction of the MRG scheme, a criticism against the increased state liability along with this introduction got intensified, thus guaranteed minimum revenue had been lowered and penalty scheme was introduced for those proponents who had submitted inappropriate traffic demand forecast.

Upon PPI act amendment held in 2006, the MRG scheme had been abolished for unsolicited projects, and the criteria for application of MRG for solicited projects had been risen from 10% to 25-35%. In October 2009, the MRG scheme was wholly replaced by New Risk-Sharing Scheme that the government will guarantee the profitability almost equivalent to interest rate of government bond. The New Risk-Sharing Scheme is only targeting solicited projects and government financial burdens limited to a certain extent. To ensure the profitability of a project almost equivalent to the interest rate of government bond, government would provide the complement in case actual revenue is insufficient, and in case operating revenues surpass the estimation, on the other hand, government would be reimbursed within a same range as subsidy already paid.

The financing for the Daegu-Busan expressway project with a total of W1.1 trillion was successfully secured. The financial package included a W500 billion long-term infrastructure project bond issue, a US$100 million offshore tranche and a local syndicated loan facility for the remainder. To secure against exchange rate risk stemming from the offshore loan, KDB also provided the borrower with a long-term KRW/USD swap facility.
Source:KDB(Korean Development Bank)



Source: Based on Yoshihiko Ueno and Jin Sasaki (2003) "Case study of construction and O&M of expressway by private financed in Korea", KOSOKUDOURO TO JIDOUSHA; 1st Japan-Korea PFI promotion meeting

FIGURE 8.7.4-2 OVERVIEW OF THE DAEGU-BUSAN EXPRESSWAY PROJECT WITH BTO SCHEME

8.7.5 Other Example Cases of Revenue Guarantee Scheme

(1) Sydney Harbour Tunnel, in Australia

Sydney Harbour Tunnel project including the construction of an undersea tunnel was implemented to mitigate day-to-day congestion at Sydney Harbour Bridge. It was adopted as BOT project, where private sector took responsibility for the design, financing, construction and O&M of the tunnel. It began the operation in September 1992.

The project proponent can get the revenue from the toll tariff under the BOT scheme, however the project proponent itself does not take the demand risk as it receives the toll revenue guaranteed by the state government, as stated in agreement concluded between the government and the project proponent.

This revenue guarantee scheme is called “Ensured Revenue Stream”. The O&M cost of the tunnel and toll collection cost of the Sydney Harbor Bridge are first subtracted from the toll revenue of the tunnel as well as the bridge and then the amount of difference from contractual figure is paid to the project proponents as revenue guaranteed. The amount of subsidy paid to business proponents is calculated by the calculation formula stated below.

Amount payable = (ERS toll × projected volume × weighted Index) – (tunnel toll receipts + Bridge toll collection costs)

“ERS Toll” means:
(i) From 1st September, 1992 until 30th June, 1993 inclusive—$1.00;
(ii) From 1st July, 1993 until 30th June, 2015 inclusive—$1.03; and
(iii) From 1st July, 2015 until 31st August, 2022—88 cents.

Tunnel Toll Receipts” means the gross toll receipts of the Company paid into the Special Account from the operation of the Tunnel during the calendar quarter immediately preceding the date on which any calculation is made as certified by the Company’s auditors

“Bridge Toll Collection Costs” means the sum of $600,000 multiplied by a fraction the numerator of which is the CPI for the calendar quarter immediately preceding the calculation and the denominator of which is the CPI for the quarter ending 30th June 1986.

“Projected Traffic Volume” means during each of the periods set out in Schedule 1, one quarter of the figure set out in the right hand column
Source: Sydney Harbour Tunnel (Private Joint Venture) Act 1987 No 49 Current version for 30 September 2005 to date (accessed 27 August 2010 at 01:54) Schedule 5

The state government is responsible for both toll collection of the tunnel and the bridge. Toll tariff of bridge and tunnel during the operation period is raised depending on the traffic volume, yet the right to make decision of toll tariff belongs to the government.
When the traffic volume exceeds the prospected contractual figure, the state government can receive more toll revenue than the amount to be paid to the project proponent. On the other hand, the state government should compensate the amount equal to the shortfall of the revenue to the project proponent.

(2) Service Payment Scheme: DBFO project in UK

Under DBFO projects mainly seen in UK, project proponents would not gain the revenue through toll tariff paid by the roads users but gain service payment scheme that government should pay

service fee to the project proponents. There are various modes of service payments including shadow toll method, availability method and road safety performance based payment etc.

Under shadow toll method, the amount of service fee paid by government would depend on shadow toll level stated in contract and actual value calculated by number of vehicles multiplied by distance. Shadow toll level may vary by category range of the traffic volume. The toll level may get higher at category with lower traffic volume and the one at the category with the highest traffic volume would be set as “0”. With the service fee payment based on the lowest traffic volume category, project proponents should not be able to compensate all the dividends of equity investment, but it would set reasonable shadow toll level and traffic volume category at least for the debt repayment. Additionally, the amount of service fee paid by the government is limited by setting “0” of shadow toll level in the highest traffic volume category.

Under availability method, service fee payment would depend on the road availability including closure of traffic lanes. When the criteria of flatness of the roads are fulfilled in operation of private sector, service payment should be paid by the government; however the amount may vary by number of available lanes, duration of the closed lanes, and section where roads are closed.

Under the road safety performance based payment, when actual number of accidents were below the number of accidents set beforehand, the service fee payment may increase and when the number of the accident were above the number of accidents set, amount of payment would decrease.

For those cases in UK, the most payment mechanism is based on combination of such payment schemes. In initial DBFO operations in UK, shadow toll method was adopted as primary payment scheme, but it is shifted to availability method in recent years.

According to the website of the Highways Agency in UK, 80% of payment amount is paid to project proponents generally when permit is issued for opening of the roads, and full payment should be implemented when construction works are completed and its certificate is issued.
In many cases, when debt repayment is completed by the project proponent, government payment would be reduced. This is because excess revenue from service fee after debt repayment period finished is merely shifted to the dividend of the equity investment.

The variation of the ordinal service fee payment amount is indicated below in case of no adjustment of the amount by the traffic volume and the closure of the lanes etc. Based on calculation method stated in the agreement, the payment amount during operating period is to be increased.
Source: the website of highway agency in UK

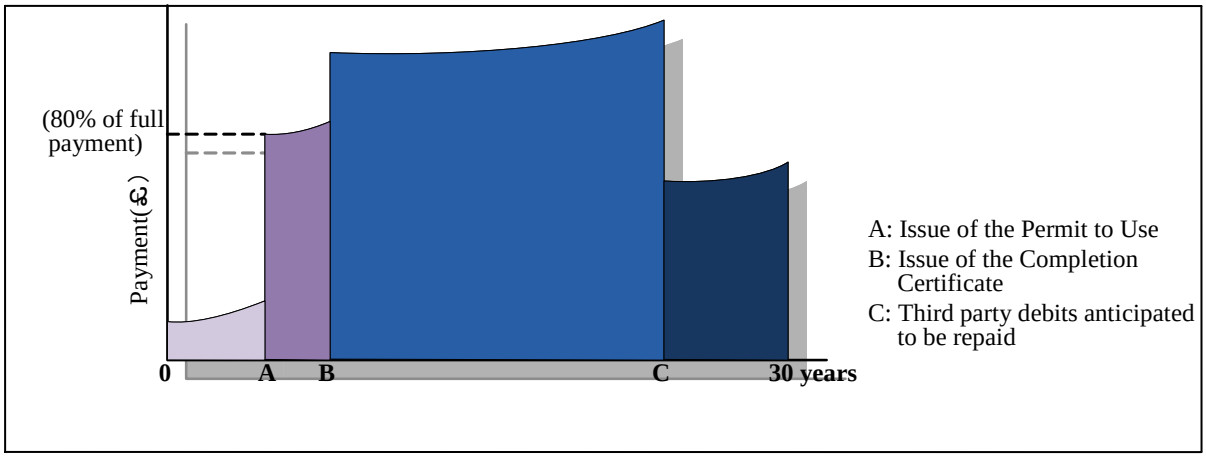
TABLE 8.7.5-2 PAYMENTS FROM BMCL TO MRTA DURING THE CONCESSION PERIOD

Table 20: Payments from BMCL to MRTA during the Concession Period

1. Payments for Fare Income (VAT included)	2. Payments for Operating Income (VAT included)
1) Payment (fixed) Total 43,567 million baht (exempt for 1–10 years following start of operation, pay for 11–25 years after start of operation)	1) Annual payment (fixed) · Total 930 million baht · FY payment: 10 million baht (1–8 years following start of operation) · FY payment: 50 million baht (9–25 years following start of operation)
2) Annual payment (income-linked) · 1% of annual income (1–14 years following start of operation) · 2% of annual income (15 years following start of operation) · 5% of annual income (16–18 years following start of operation) · 15% of annual income (19–25 years following start of operation)	2) Annual payment (income-linked) · 7% of annual income (1–25 years following start of operation: fixed percentage over entire period)

Source: BMCL Annual Report 2005, BMCL Annual Report 2006, and results of interviews at MRTA.

Source: JICA's website
http://www.jica.go.jp/english/operations/evaluation/oda_loan/post/2008/pdf/e_project09_full.pdf



Source: Based on UK Highways Agency's website

FIGURE 8.7.5-1 TYPICAL PAYMENT PROFILE IN DBFO PROJECTS

(3) Structure Dividing：Bangkok Metro Blue Line

Bangkok Metro Blue Line project in Thailand introduced “structure dividing” scheme, with which construction works such as tunnels were financed by yen-loans, and the rolling stocks, electric systems and O&M were financed by private sector. BMCL, the project proponent, should pay the amount stated in concession agreement to MRTA, the owner of the facilities. Payment structure is divided into two, the toll tariff income and the operating income gained from the sales of kiosk and advertisements. Payment amount is consisted of fixed part and variable parts which may vary depending on income amount. Payment condition may also vary depending on operation duration, and the payment amount would be lower at the initial stage of the operation.

Project Outline

Country	Thailand
Length	20 km, 18 stations
Status	Operation
Scheme of PPP	Construction work financed by Yen loan The procurement of Cars and electric system, and O&M financed by BOT
Facility Owner	MRTA (Mass Rapid Transit Authority of Thailand)
Project Company	BMCL (Bangkok Metro Company Limited)
Contract Period	25 years

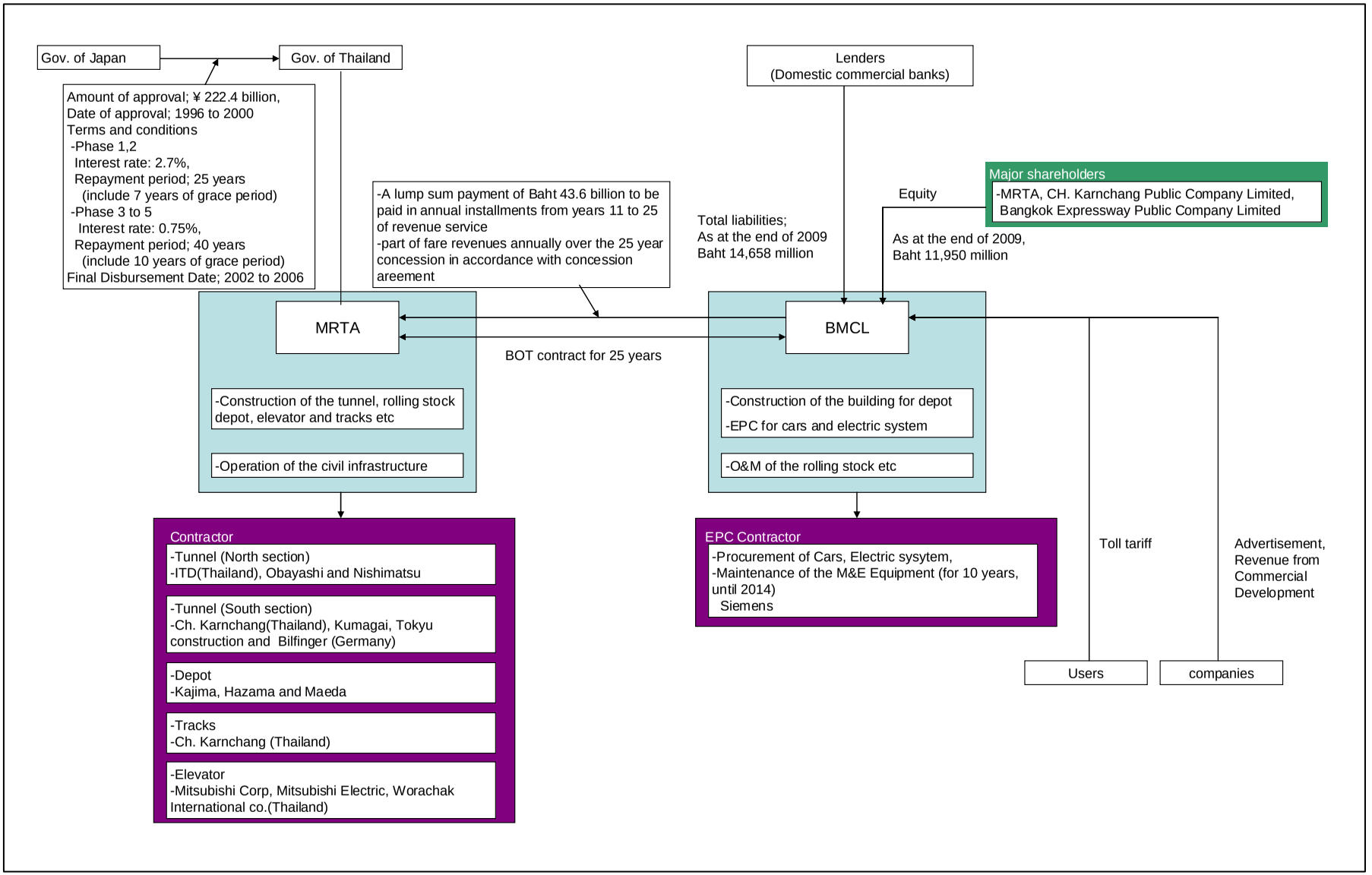


FIGURE 8.7.5-2 OVERALL FRAMEWORK OF BANGKOK METRO BLUE LINE PROJECT