

Ex-Post Evaluation System of Road Project in Korea

2012. 10. 29
CIHT, London

Dr. Namgeon Cho
Director, Infrastructure Research Division,
KRIHS

< Contents >

- I. Introduction
- II. Ex-Post Evaluation System
- III. Evaluation Items to Analyze
- IV. Evaluation Process
- V. Issue of Ex-Post Evaluation

I . Introduction

- **Evaluation Systems of Road Project in Korea**

- Pre-Feasibility Study
- Ex-Ante Evaluation (Feasibility Study)
- Ex-Post Evaluation



I . Introduction

■ General Stage of road project

- Plan → Pre-feasibility study
- → Feasibility Study (Public Hearing)
- → Basic Design (Public Hearing/Environment and Traffic Impact Assessment)
- → Execution Design and Compensation (Public Hearing)
- → Construction
- → Road Opening
- → Ex-Post Evaluation

I. Introduction

■ Background

- Introduced by the Execution Decree of Construction Technology Management Act at 2000 and Execution Guideline for Ex-Post Evaluation of Construction Work at 2001
 - Some road projects were cost too much due to the lots of design changes in the middle of the construction works
- Purpose
 - To apply lessons learnt from the road projects to similar road projects, and
 - To save public money through evaluation on the road projects

II. Ex-Post Evaluation System

- **Base Law**

- Construction Technology Management (CTM) Act and Enforcement Decree of the CTM Act

- **Supervising Ministry**

- Ministry of Land, Transport and Maritime Affairs (MLTM)

- **Execution Body**

- Contracting Authority

II. Ex-Post Evaluation System

■ Object

- A Road Project of which total cost exceeds £ 25m (50bn Korean won)

■ Evaluation body

- Evaluation Institution, Research Institutes, Engineering Company which are not related to the road projects in the process from planning to construction

II. Ex-Post Evaluation System

■ Evaluation Time

- Comprehensive Evaluation : within **5 years** after opening, and
- Simple Evaluation : within **1 year** after opening (Recently modified)

■ Evaluation Period

- Depended on the size of the project (Generally 10 months)

■ Evaluation Measures

- Same methods used in Ex-ante evaluation system

II. Ex-Post Evaluation System

■ Accomplished Evaluation Cases

- **Motorways** : 21 sections were evaluated from 2004 to 2011
- **National highways** : 179 sections were evaluated in 3years (between 2008 and 2010)
- The ex-post evaluation is carrying out by the contract authority such as **Korea Expressway Corporation** which covers the motorway, **5 Regional Construction Management Administration** under the Ministry of Land, Transport and Maritime Affairs which covers the national highway

III. Evaluation Items to Analyze

■ Evaluation Criteria

- **Work performance** : Evaluation on the efficiency and reasonability of cost, time, safety, changes etc
- **Work effectiveness** : Evaluation on the overall effectiveness through comparison of traffic demand and expected effects both of before and after the road project
- **Impacts** : Evaluation on the socio-economic impacts over the region and impacts of residents' lives by the road opening
- → These criteria are summarized in the **comprehensive table**

III. Evaluation Items to Analyze

■ Evaluation Contents

● On Construction

- Comparison and analysis of estimated construction **cost and time** with that of actually expended construction cost and time
- Number of **design changes**, and its reasons
- Costs of **land acquisition** and price difference
- **Information** occurred each work stage and its treatment
- **Performance of work** in case the work was done as turnkey project and alternative bidding

III. Evaluation Items to Analyze

■ Evaluation Contents

● On Traffic Forecast

- Comparison and analysis of estimated **traffic demand** at the planning of the road project with actual demand and **effects** of road project after completion
- **Economic Analysis** : Comparison of economic values including Benefit-Cost Ratio, IRR, and NPV between estimated **economic values** in the planning stage and re-estimated economic values after road opening

III. Evaluation Items to Analyze

■ Evaluation Contents

- On traffic demand
 - Major benefits in the economic analysis
 - Saving of Value of Travel Time
 - Saving of Vehicle Operating Costs
 - Saving of Fatalities of Traffic Accidents
 - Saving of Environmental Effects such as CO2

These saving are analyzed in monetary terms.

III. Evaluation Items to Analyze

■ Evaluation Contents

- On the **impacts** of the road project
 - **Responses** from the residents who are reside near the road
 - **Satisfaction** of road users who use the road
 - **Complaints** occurred before, during and after of road project
 - Changes of **Gross Regional Domestic Product** (GRDP)
 - Changes of **backwardness level**
 - Changes of **land prices**
 - Changes of number of **population, employee**

III. Evaluation Items to Analyze

- **Framework of report for post-evaluation**
 - Study Introduction, aim and scope
 - Changes of **socio-economic indicators** over the impact areas
 - Comparison of **Before and After items** to be evaluated
 - On Construction
 - On Traffic Demand
 - On Socio-economic impacts
 - **Lessons** to be learnt and recommendations to be applied to similar road projects

IV. Evaluation Process

- **Performance Evaluation of work(road project)**
 - **Evaluation** must be made when each stage of work completes
 - At the stage of feasibility study
 - At the stage of design
 - At the stage of work execution
 - The contracting authority must collect, manage the data and evaluate the performance of work **at the time of completion**
 - All information must be input at 'system for ex-post evaluation of work' within **60 days of completion** of each stage work

IV. Evaluation Process

■ Ex-post evaluation committee

- Members of the committee shall be appointed or commissioned among persons recommended by the Central Committee, Local Committee, relevant NGO and professionals in the relevant fields
- The committee provide **advice and suggestion** with respect to the propriety of the ex-post evaluation
- The committee **reviews** the results of examination and analysis of ex-post evaluation

IV. Evaluation Process

■ Ex-post evaluation committee

- The committee reviews on the **evaluation criteria** and the **comprehensive table** for the ex-post evaluation of road project
- The contracting authority must submit the **review comments** from the committee to the Minister of MLTM
- The contracting authority shall not apply the turnkey project to other similar road project afterwards in case the committee voted the turnkey project was insufficient after reviewing the ex-post evaluation table.

IV. Evaluation Process

■ Notice to the public

- The contracting authority must input a report of ex-post evaluation and comprehensive evaluation table into 'system for ex-post evaluation of work' which has constructed in portal of **construction CALS system** by February next year.
- The contracting authority must publish the **comprehensive ex-post evaluation table** in public through her home page or an official gazette when the information has inputted.
 - In reality, it is not allowed for the general people to access **construction CALS system** so far due to data management.

Performance evaluation on construction work per work stage

Evaluation Items		PFS	FS	BD	ED	C	E
Costs	Contracts money						
	Estimated costs					-	-
	Planned time	Yr m	Yr m	Yr m	Yr m	-	-
	Real costs						
Process of work	Contract time	Yr m	Yr m	Yr m	Yr m	Y m	Yr/m
	Real time					Y m	Yr/m
Change of design	Number of change						
	Change of costs						
	Costs to contractor of responsible						
Costs of re-work							

Comprehensive Evaluation Table

Class	Evaluation items	Evaluation criteria	Result of evaluation
Effectiveness of work	Traffic demand	Demand	Plan : 00 → Real : 00 (% of change)
	Estimated effects	B/C ratio	Plan : 00 → Real : 00 (% of change)
Performance of work	Construction costs	Rate of change in cost	Plan : £ 000m → Real : £ 000m (% of change)
		Rate of change in compensation cost	Plan : £ 000m → Real : £ 000m (% of change)
	Construction time	Rate of change in construction time	Plan : 0yr 0m → Real : 0yr 0m (% of change)
Impacts	(to be continue)		

Comprehensive Evaluation Table (continued)

Class	Evaluation items	Evaluation criteria		Result of evaluation
Impacts	Responses of residents and satisfaction of users	Complaints	Number	
			Dealt number	
		Faults	Number	
			Dealt number	
		Regional Economy	Population	
			Employee	
			GRDP	
			Land price change	
		regional society	Backwardness level	
		Environment	-	
Necessity of re-expost evaluation and its timing				Yes(), No(), year 00



V. Issue of Ex-Post Evaluation

- **Few application to other similar road projects**
 - **Few application case** is found so far although the Law regulates that contacting authority which wants to carry out a road project must check whether there are similar road projects by using the 'system for ex-post evaluation of work'.
 - Limited access to the **construction CALS system** failed to use the results of ex-post evaluation so far
- **How to apply the results from the ex-post evaluation to other similar road projects?**

V. Issue of Ex-Post Evaluation

■ One remarkable application case

- **Parking areas** for drivers' nap are emerging on the motorways after an ex-post evaluation had reported the problems on the **no service area** or long distance gap between **service areas**
 - No service area was on the **Seoul Ring Road** (128km) until the ex-post evaluation report was released
 - Some of the service areas were located in remote distance more than **60km on the motorway**
 - The report warned lacks of service areas would resulted in **sleepy driving and accidents**

Abbreviation used in the contents

- **PFS** : Pre-feasibility Study
- **FS** : Feasibility Study
- **BD** : Basic Design
- **ED** : Execution Design
- **C** : Compensation of Land
- **E** : Execution of work
- **GRDP** : Gross Regional Domestic Product
- **CALS** : Continuous Acquisition & Life-cycle Support

Thank you for attention

ngcho@krihs.re.kr