

The 14th
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Part 1: Country Report

Korean Economy and Construction Industry

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PART I

**Korean Economy and Construction
Industry**

1. Executive Summary

Korean economic growth remained generally moderate, following slowdowns since the first quarter of 2006. With a recent slowdown in global economy and uncertainty in the global financial market spreading, the Korean economy continues overall slowdown. The construction sector which is felt deeper impact from the nation's economic situation than any other industry, also remains sluggish. The sharp fall in the building construction led mainly by residential sector was culprit for worsening the construction business. To overcome the recession of construction business, raising of the construction productivity and enhancing the global competitiveness are most important than any other things.

2. Macro Economic Review and Outlook

2.1 Overview of National Economy

Recent Korean economy appears to slowdown, after having an expansionary period until late last year. It was mainly because domestic demand was contracted. Such depressed domestic demand is partly affected by instability in global financial market, but largely by the inflation resulting from high price of oil and raw materials. The further depreciation of the won is likely to amplify the exchange rate, leading to consumer price inflation. Inflationary pressures from the demand side had gradually expanded last year. The price hike of oil and raw materials caused the CPI inflation to rise above the target range (3.0±0.5%).

Faced with slowing global economy, Korea's export will be affected by worsening foreign demand, but the impact is expected to be limited. Korean economy is forecast to face limited scale of negative impacts, since it has consistently expanded toward developing countries, like china. In summary, the Korean economy, despite slowdown in domestic demand, is forecast to show only a moderate slowness in overall growth rate, while maintaining its steady growth in exports.

2.2 Main Economic Indicators

A. GDP

The GDP growth rate¹ in 2007 fell from the previous year's 5.1% to 5.0%, further more 4.8% in the second quarter of 2008. With a recent slowdown in global economy and uncertainty in the global financial market spreading, the Korea economy is expected to continue overall slowdown.

During the second quarter of 2008, manufacturing sector grew higher to reach 8.5%, but service sector fell to 3.3% the lowest level since 2005. Especially construction sector recorded negative

¹ All growth rates in this paper are on a year-on-year basis unless otherwise noted.

growth rates (-1.4%) in this period.

<Table 2.2> Main Macroeconomic Indicators (base year: 2000)

	2003	2004	2005	2006	2007	2008.Q2
GDP and Components						
GDP at real Prices (bill. Won)	662,654.8	693,995.5	723,126.8	760,251.20	798,057.0	206,827.1
% growth	3.1	4.7	4.2	5.1	5.0	4.8
GDP at current prices (bill. Won)	724,675.0	779,380.5	810,515.9	848,044.6	901,188.6	241,065.8
% growth	5.9	7.5	4.0	4.6	6.3	8.8
Agriculture, Forestry and Fishing						
% growth	-5.3	9.2	0.7	-1.5	1.1	4.4
Manufacturing Sector						
% growth	5.5	11.1	7.1	8.5	6.5	8.5
Services sector						
% growth	1.6	1.94	3.4	4.2	4.8	3.3
Construction sector						
% growth	8.6	1.8	-0.1	0.3	1.8	-1.4
Demographic Indicators						
Population	48,386,823	48,583,805	48,782,274	48,991,779	49,268,928	-
Population growth rate (%)	0.3	0.4	0.4	0.4	0.6	-
Total labor force(1,000 person)	22,139	22,557	22,856	23,151	23,433	23,871
Labor force growth rate (%)	-0.1	1.9	1.3	1.3	1.2	1.9
Unemployment rate	3.6	3.7	3.7	3.5	3.2	3.1
Financial Indicators						
Short term interest rate	4.31	3.79	3.65	4.48	5.16	5.37
Long term interest rate	4.55	4.11	4.27	4.83	5.23	5.52
Changes in consumer price index	3.5	3.6	2.8	2.2	2.5	4.8
Change against US\$	1,192	1,144	1,024	955	929	1,018

Source: Bank of Korea, National Accounts.

B. Exports and Imports

In 2007, exports increased by 14.1% to total 371.5 billion dollars, posting a double-digit increase

rate for the five consecutive years since 2003. This was largely attributable to the expansion of overseas demand brought about by the sustained rapid growth of the global economy and noticeable improvements in the quality competitiveness of main export items. By item, wireless communication equipment shifted to a decrease in exports and computers, home electronic appliances and textile saw sluggish export performance throughout the year, but machinery, precision equipment, petroleum goods, ships, semiconductors, steel and metals enjoyed high rates of export growth. Exports of chemical products and passenger cars saw a steady increase.

Imports also recorded a double-digit increase rate faster than export since 2005. By item, imports of raw materials centering on crude oil increased sharply owing to a surge in their prices.

<Table 2.2> Exports and Imports

(unit: USD bill., %)

	2003	2004	2005	2006	2007	2008-Q2
Exports (increase rate)	193.8 (19.3)	253.8 (31.0)	284.4 (12.0)	325.5 (14.4)	371.5 (14.1)	114.5 (23.2)
Imports (increase rate)	178.8 (17.6)	224.5 (25.5)	261.2 (16.4)	309.4 (18.4)	356.8 (15.3)	114.4 (30.1)
Balance of trade	15.0	29.4	23.2	16.1	14.6	0.1

Source: Bank of Korea.

C. Inflation Rate

Consumer prices (CPI basis) showed a relatively slowdown trend since 2004 to stand at 3% below (on an annual average basis). This was attributable to the continuation of the Korean won's appreciation against the U.S. dollar, the stable movement in the prices of agricultural, livestock and marine products and wages, which together offset the effects of the hike in the prices of international oil and other raw materials.

The consumer price in the second quarter of 2008 jumped to 4.8% from the previous year's 2.5%. The rise in inflation is mainly driven by the effect of Won depreciation on the price of imported-goods and industrial products, and the inflationary pressures from the robust domestic demand in last year.

D. Unemployment

There was little improvement in labor conditions because of the lackluster state of domestic demand and diffusion of labor saving production method.

The unemployment rate posted 3.7% in 2004. In 2005, there was some improvement in labor market conditions, but this was less than sufficient considering GDP growth. Despite the insufficient improvement in employment, the unemployment rate edged down from 3.7% to 3.5% in 2006 and to 3.2% in 2007, owing to a change in population structure in terms of labor supply. In the second quarter of 2008, the unemployment rate stood at 3.1%, a slight drop from the previous year's 3.2%.

3. Overview of Construction Industry

3.1 Construction Investment

The growth rate of the construction industry, contrary to other industries, accelerated sharply recording 7.9% in 2003 owing to brisk private construction amid buoyant housing business and a rise in the government's construction of roads and harbors. Since October in 2003, Korean government has strongly regulated the real estate market to stabilize the housing price in some speculative areas. As a result, the real estate market has been depressed and construction economy has also been adversely affected.

In 2004, the construction business experienced a large fall in its rate of growth compared with the previous year in response to the tightening of regulations on reconstruction, the series of measures to curb real estate speculation and the oversupply of buildings for commercial use, which combined to leave the construction of buildings being at low ebb. After the recession period until 2006, there has appeared a symptom of recovery in 2007 with a growth rate of 1.2%, but its overall condition still remains sluggish. Growth rate of construction investment registered -1.1% during the first half of 2008.

<Table 3.1> shows the sectoral trends of construction investments. According to this, the growth rate of the residential building investments has decreased since 2003, and shrunk from 9.0% in 2003 to -3.5% in 2006, and to -4.9% in the first half of 2008. However, the nonresidential building construction investment has increase since 2006. A growth rate of the non-residential building

investment was recorded to 5.6% in 2007, and 3.4% in the first half of 2008. The construction investment for the civil construction sector, mainly depending on the government expenditures, has not shown the persistent pattern during the years 2003~2007. It was recorded to -0.1% in 2004, 1.5% in 2005, 0.7% in 2006, 0.3% in 2007, and -1.6% growth rate in the first half of 2008. The government continues to encourage private participation into public infrastructure.

<Table 3.1> Construction Investment

(unit: billion won at 2000 year fixed price)

		Total	Residential	Nonresidential	Civil(SOC)
2003	Actual value	116,427.7	34269.2	34667.2	47491.3
	(change ratio(%))	7.9	9.0	14.2	3.0
	Current value	135,990.0	40,206.0	40,514.8	55,269.2
	(change ratio(%))	16.8	18.7	24.1	10.7
2004	Actual value	117,729.4	35881.6	34425.5	47422.3
	(change ratio(%))	1.1	4.7	-0.7	-0.1
	Current value	146,598.1	44,645.00	42,978.90	58,974.20
	(change ratio(%))	7.8	11.0	6.1	6.7
2005	Actual value	117,464.0	36664.5	32689.2	48110.3
	(change ratio(%))	-0.2	2.2	-5.0	1.5
	Current value	151,441.8	47,262.40	42,537.50	61,641.90
	(change ratio(%))	3.3	5.9	-1.0	4.5
2006	Actual value	117,347.3	35375.9	33525	48446.4
	(change ratio(%))	-0.1	-3.5	2.6	0.7
	Current value	155,624.4	46,832.60	44,844.80	63,947.00
	(change ratio(%))	2.8	-0.9	5.4	3.7
2007	Actual value	118,753.9	34748.9	35401.2	48603.8
	(change ratio(%))	1.2	-1.8	5.6	0.3
	Current value	162,852.9	47,587.60	49,105.60	66,159.70
	(change ratio(%))	4.6	1.6	9.5	3.5
2008.6	Actual value	58,656.6	16,648.6	17,873.0	24,135.0
	(change ratio(%))	-1.1	-4.9	3.4	-1.6
	Current value	85,989.6	24,323.80	26,512.60	35,153.20
	(change ratio(%))	6.7	2.5	11.8	6.1

Source: Bank of Korea, National Accounts

3.2 Construction Companies

As the government grip on the industry loosened from 1989, license began to be issued to eligible contractors, first in regular intervals and then now whenever upon request. Therefore, during the last decade the number of general contractors increased by more than sixteen fold numbering up to 12,914 firms in 2006, and likewise, specialty contractors increased almost 6 times to around 37,675 firms. As time goes on, inevitable competition inside the industry intensified. Average annual contractor amount of construction companies was 9,960 million won (about 10 million dollars) in 2007.

<Table3.2> Statistics of Construction Company

Year \ Classification	2003	2004	2005	2006	2007
Number of general contractor	12,996	12,988	13,202	12,914	12,842
Average contractor amount (100million won)	78.8	72.7	73.8	83.0	99.6

Source: Construction Association of Korea

3.3 Employees and Construction Labor

The number of workers increased steadily in the industry. For the year of 2007, more than 1.8 million employees were working in the construction field, 7.9% of total employment. The number of workers in first half of 2008 decreased slightly compare to previous year with construction business slowdown. Table 3.3b shows the number of employee in construction by job types. More then 66% of total construction employees were working in the Special trade construction fields, and the rest of the employee was General construction fields.

<Table 3.3a> Number of workers in Construction

Year \ Classification	2003	2004	2005	2006	2007	2008 Q2
Number of employee in construction (thousand person)	1,816	1,820	1,814	1,835	1,850	1,826

Source: Korea National Statistical Office

<Table 3.3b> Number of Employee in Construction by job types

	2002	2003	2004	2005	2006
Construction	1,524,562	1,719,074	1,737,166	1,718,181	1,716,837
General construction	503,539	588,767	562,206	571,327	578,672
Heavy construction	165,115	177,039	173,621	176,161	161,294
Building construction	338,424	411,728	388,585	395,166	417,378
Special trade construction	1,021,023	1,130,307	1,174,960	1,146,854	1,138,165
Engineering and building	407,469	485,333	503,951	475,268	482,399
Building installation	184,169	174,176	184,775	183,109	169,972
Electrical & communication works	258,671	254,707	255,861	252,120	246,429
Building completion	170,714	216,091	230,373	236,357	239,365

3.4 Productivity

3.4.1 Value-added per Employee

Value added product per employee in construction industry was dropped by 0.8% in 2006 compared with 2005. This rate is disappointing, since other industries show positive growth rates such as 10.2% in manufacturing and 1.6% in services in the same year. Value added product per employee is increased by 1.0% in 2007.

<Table 3.4.1> Value-added per Employee

Unit : million won per person at 2000 price

	2003	2004	2005	2006	2007
Construction	27.8	28.3	28.3	28.1	28.4
%change	4.5	1.6	0.2	-0.8	1.0
Manufacturing	41.7	45.4	49.3	54.3	58.5
%change	6.4	8.9	8.5	10.2	7.7
Services	23.8	23.6	23.8	24.2	24.7
%change	1.3	-1.0	1.0	1.6	2.2
Primary sector	12.7	14.8	14.9	15.0	15.7
%change	1.0	16.1	1.1	0.3	4.5

* NB: Primary sector includes agriculture, forest, fishing and mining etc.

3.4.2 Physical Measurement of Construction Productivity (production²)

Result of Construction Start (It refers to total built-up area) were recorded to 32.7 million m² of Dwellings construction, 25.2 million m² of commercial construction, 16.2 million m² of Factory construction in 2007. In the half of 2008, 8.0 million m² and 1.7 million m² are recorded in residential construction and commercial construction respectively. Due to the shrink of the demand of residential construction since 2006, share of dwellings was decreased from 33.9% in 2007 to 20.8% in the half of 2008.

<Table 3.4.2> Result of Construction Start (1000 m²)

	2003	2004	2005	2006	2007	2008.6
Dwellings	42,060	34,587	31,502	28,433	32,753	7,984
Commercial	38,270	27,244	21,764	20,971	25,176	12,745
Factory	13,212	12,909	13,720	15,080	16,165	8,596
Educational and Social	7,302	6,439	6,992	7,530	8,666	3,777
Others(By Structure)	8,122	10,101	10,208	12,857	13,899	5,296
Total	108,965	91,280	84,187	84,870	96,659	38,397

Source: Korea National Statistical Office

3.5 Construction Cost

3.5.1 Average construction Material Prices

The official prices of major construction materials are influenced by government guideline but actual transaction value changes according to the market conditions. The demand and supply of most of the construction materials more or less can be matched domestically. Shown as <table 3.5.1>, the price of the most construction materials is almost not changed during 2003-2008, except Steel bars. In Jun 2008, the price of Steel bar rose to about one million (Korean won per ton), almost twice, from the previous year 526, 500 won. Because the raw material of Steel bar mainly depended by import, and so the price was influenced by international market situation.

² We don't have the adequate data standing for physical measurement construction productivity, since there is no labor input data which is classified by construction types.

<Table 3.5.1> Average Construction Material Price

	Cement in bulk (won per 40kg)	Steel bars (won per ton)	20mm aggregates (won per m ³)	Concreting sand (won per m ³)	Common Bricks (won per thousand pieces)	RMC * kg/cm ³ (won per m ³)
2003	3,333	382,750	12,000	11,000	48,000	55,543
2004	3,404	515,917	13,000	12,250	46,000	53,827
2005	3,387	498,583	13,083	14,167	46,000	51,708
2006	3,370	455,667	13,250	11,333	45,000	49,080
2007	3,370	526,500	13,083	11,500	45,000	49,080
2008.6	3,370	1,011,000	12,000	12,500	45,000	51,970

* RMC : Ready Mix Concrete

Source: KPC (Korea Price Information Corp)

2.5.2 Construction Industry Salaries and Wages

For chief workers, the salary and wage has mildly increased since 2003. But special daily workers experienced negative wage growth due to decreased construction demand during the years 2003-2004. In the first half of 2008, the average wage per day for chief workers is 85,203 won (about 83.7 dollars), 81,596 won (about 80.2 dollars) for special daily wage, and 63,530 won (about 62.4 dollars) for normal daily wage.

<Table 3.5.2> Construction Industry Salaries and Wages (Korean Won)

	2003.	2004	2005	2006	2007	2008
Chief worker	69,644	70,184	73,402	78,124	81,700	85,203
Special daily wage	66,596	66,504	68,917	73,572	79,027	81,596
Normal daily wage	52,429	52,575	54,171	57,321	59,715	63,530

CAK (Construction Association of Korea)

3.6 Import and Export of Construction Services

3.6.1 Annual Import/Export of Construction Services

Total exports in construction were 39,788 million dollars in 2007. Among them, industrial construction exports (Plant) occupied the largest portion recording 25,268 million dollars. Architecture construction exports was 8,177 million dollars and infrastructure construction exports was 5,232 million dollars. No construction import has been recorded yet.

At present (September in 2008), Total exports in construction was already achieved the previous year's level.

<Table 2.6.1> Annual Exports of Construction Services

year	Total	Contract Amount by work type(million US\$)					
		Civil	Architecture	Plant	Electric	Telecomm	Engineering
2008.9	39,180	6,443	6,927	24,186	1,078	19	528
2007	39,788	5,232	8,177	25,268	690	41	381
2006	16,468	1,532	3,433	10,920	474	3	106
2005	10,859	836	1,226	8,263	374	13	147
2004	7,498	806	874	5,182	545	3	89
2003	3,668	402	532	2,491	192	8	43

3.6.2 Top Five Countries for Construction Export and Import

In 2007, U.A.E is the most important country in construction exports where 5,585 million dollars of construction service was exported. Libya (5,450 dollars), Saudi Arabia (5,055 dollars), Singapore (3,178 dollars), and Egypt (2,081 dollars) followed.

<Table 3.6.2> Top Five Countries for Construction Export

Rank	2006		Rank	2007	
	Country	Value (mil \$)		Country	Value (\$)
1	Saudi Arabia	3,623.6	1	U.A.E	5,585
2	Kuwait	1,982.1	2	Libya	5,450
3	Qatar	1,314.3	3	Saudi Arabia	5,055
4	Oman	1,266.9	4	Singapore	3,178
5	Vietnam	1,153.1	5	Egypt	2,081

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Part 2: Theme Paper

IMPROVEMENT OF THE PRODUCTIVITY OF THE CONSTRUCTION INDUSTRY

Public Works Performance Improvement Plan

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The logo for CERIK (Construction & Economy Research Institute of Korea) features the word "CERIK" in a bold, serif font. A small red dot is positioned above the letter "I".

Construction & Economy Research Institute of Korea

Executive Summary

Construction Industry has played a significant role in the age of development in Korea, and is still one of the largest industries in Korea representing more than 15% of GDP in 2007. However, the performance of public works in terms of cost and time is still challenging. Most public works experience cost overrun and fail to meet planned target completion date. Recently ministerial committee on construction industry has been launched. It is on the way to develop new improvement plan with the purpose of improving performance and adapting global standard. The committee deals with various aspects of construction industry by organizing 7 sub-committees including master plan, project delivery system, transparency, design & engineering, bonding, work classification, and public works. In this paper, the improvement plans on discussion for public works will be discussed. They are 1) Improving project owner's project management capability, 2) Establishing progress monitoring system, and 3) Improving performance management system.

1. Introduction

Construction industry in Korea is one of the pillars of domestic economy. The industry in its widest sense is likely to have an output of some 12 trillion KRW (about 12 billion dollars) in 2007, equivalent to roughly over 15% of GDP and employs around 1.9 million people. There is no doubt construction industry has significantly contributed economic growth in Korea. However, Korean construction industry is suffering with low productivity and poor performance in terms of cost and time, and low industry growth rate due to inefficient project management and over-excessive regulations those are quite different with global standards. To resolve these problems ministerial committee on construction industry has been launched in May. The committee is comprised of seven sub-committee including master plan, project delivery system, transparency, design & engineering, bonding, work classification, and public works.

In this paper, among the issues and related improvement plan those are currently being prepared, the issues and improvement plan for public works, the author is currently working on as a member of committee, will be addressed.

Public works is defined as construction projects, such as highways or dams, financed by public funds, sometimes by private funds in BOT etc, and constructed by a government for the benefit or use of the general public. Public works financed by government account for 25.4% of all construction investment in Korea in 2007.

Public's input on the process of public works and their demand on cost saving are increasing, and compared to other advanced countries, the cost invested and the time spent on the project is much higher and longer than those of similar projects in advanced countries. For these reasons, public's request to improve the performance of public works and to have systematic project management system has been emerged.

Production technology was key factor to have competency and to improve performance, but the gap between Korea and advanced countries in the area of production technology has been narrowed. Nowadays, process technology is more important factor to have global competency. However, process technology for domestic public works need to be improved. Most of all, the performance of public works should be improved to hold government accountable for taxpayers and use budget in efficient way.

2. Current Performance of Public works in Korea

There is no doubt public works have significantly contributed economic growth efficient land use, and public welfare. However, their performance is not so impressive. Among 196 public road construction projects completed after 2001, 155 (79%) projects experienced delay resulting in late completion. Ninety two projects out of 245 on going projects also are experiencing delay. The main reason of delay is insufficient budget. Half (47.5%) of all SOC projects have a problem of budget shortage. The cost occurred due to delay is 15.4% of total project cost. This cost includes increased overhead cost of both owner and contractor, escalation as project period gets longer, and loss of opportunity to use the facility to be built. Insufficient project budget keeps the project manager from planning and implementing in reasonable way. Ultimately, insufficient budget cause ineffective use of resource by causing schedule delay and increasing unit cost of facility to be built. There have

been significant efforts to improve the performance of public works. Korean government made comprehensive improvement plan for all the phase of public work process from planning to operation and maintenance phase in 1999. Some of them are effective, but some of them are not working.

3. Objective of Committee for Public Works Performance Improvement

The objectives of the committee for public works is to figure out factors affecting project performance by investigating current situation of public works and providing improvement plan to eliminate those factors or mitigate the impact of those factors. The goal of committee is to improve project performance by allocating proper budget, improving public owner's project management capability, and improving performance management system.

4. Improvement Plan

4.1 Public Owner's Project Management Capability Improvement

A. Background

In nearly all countries, central or local government, or acting through some public or semi-public organization, has an important influence on the construction industry. This occurs in a number of different ways, of which one of the most important is the effect of government actions to control the whole economy,

Among many parties involved in construction project, project owner is the key person (or organization) to lead the project success. Especially public construction project owner can lead not only the project but also construction industry. It is because public owner including central or local government, authorities, and agencies, are the biggest owner in construction industry with planning and implementing around 40% of domestic construction market, and have a power as rule maker in game.

According to recent survey on construction experts in Korea, owner's project management ability is not satisfactory and not enough to lead the project success. They scored 68 out of 100. There have been great efforts to improve the abilities of contractor, designer, and other parties in construction project. However, not much effort has been made on improving project owner's capability, even though owner is critical to project success. The target for innovation needs to be moved to owners by shifting the paradigm of innovation. Consequently, improvement plan should be focused on public project owner including government. Public project owner should be a driving force of innovation.

B. Improvement Plan on Discussion

○ *Clarifying owner's role and responsibility*

- Define owner's role and responsibility in every phase in public construction process and document it.
- Government provides guideline, then each project owner has a clause regarding to owner's role and responsibility in contract for specific project

○ *Developing Owner's capability assessment tool*

Identify what knowledge and performance competencies are needed to meet previously defined public project owner's role and responsibility, and develop a model to assess those capabilities in objective way.

○ *Regulation on public project owner's capability review in planning stage*

Implement public project owner's capability to determine if the owner has enough ability to handle the project efficiently and achieve the project goal before setting preliminary plan

○ *Periodic review of public project owner's capability in organization level by third party*

Implement third party review on public project owner's capability periodically and the owner develop improvement plan according to review result and recommendation

○ *Developing training program on project management for public project owner*

Establish a public project owner training center and provide an education and training program on project management with public project owner through the center

○ *Founding public project owner's association*

Establish public project owner's association and then provide follow activities;

- Hold spring and fall Leadership Conferences
- Network with owners and other construction industry experts, participate in open forum discussions, visit industry supplier exhibits, learn from educational seminars and breakouts and hear about the hottest issues affecting owners/suppliers.
- Standardize construction contracts and forms.
- Project Information Directory: A comprehensive database of owner member construction projects that help members locate colleagues that have had similar construction projects and experiences.
- Project Leadership Award: an annual awards program that recognizes Owners' excellence in project management.
- Issue an owner perspective magazine containing articles on the latest trends and issues for Owners.

○ *Improving construction management and program management*

Develop long-term plan to activate Construction Management to assist public project owners who does not have enough ability to handle a public project, for example, local government

○ *Flexibility for owner in selecting project management method*

Flexible use of project management method (direct PM by own workforce, hiring construction manager, or any other project management methods) depending on the public project owner's capability and project characteristics.

4.2 Process Improvement

A. Background

It is common sense planning stage is more important than construction stage for successful project. The planning and programming input to the plan should be developed using a wide range of analytic tools, with the collective integration and input from many sources. A basis in data and

understanding of the current situation including population, employment, and land use, and their effects is first developed. An assessment of external factors or those factors beyond the control of the project owner is also required to fully understand the current situation.

With the situation analysis completed, the focus turns to identifying the needs within 5-year, 10-year, and longer-term timeframes. Then evaluate available resources and optimize their utilization, to identify, evaluate and prioritize the projects and to assess the funding requirements and sources of funds available to finance the operating and capital costs of these projects, and to further identify alternative financing mechanisms to better utilize available resources to pay operating and capital costs.

Many policies have been implemented in planning phase so far such as pre-feasibility analysis done by budgeting authority, feasibility study by project owner, feasibility re-analysis by budget authority for inactive or poor progress projects, and comprehensive cost management regulation. However, there is still a problem resulting from poor analysis of feasibility of the project and prioritizing among projects or programs.

Recent publication "Analysis of case study on budget waste and guideline on avoiding those wastes" grouped factors resulting in waste of budget and analyzed the factors. Main factors which occur frequently are poor feasibility analysis, lack of comprehensive analysis of project needs, lack of consideration of changed environment or conditions, implementing low priority project rather than higher priority project, political pressure, over estimating project size, lack of plan for funding, and duplicated investments.

Another critical weak point of public process in Korea is that most regulation focuses on treatment behind trouble rather than managing the project in advance to achieve project goal that is set in planning phase.

B. Improvement Plan on Discussion

- *Improving the process*

Improve the public work process by Improving review system of the result of feasibility analysis, setting criteria on prioritization, and clarifying the process of budget allocation to prevent improper project from implementing

○ *Developing progress monitoring system (Gateway review system)*

- Progress monitoring system examines programs (or projects) at key decision point in their lifecycle. It looks ahead to provide assurance that they can progress successfully to the next stage. Through each gateway, the reviewer checks if the project fulfilled all tasks required in previous stage, still can meet project goal, and have enough resources to go to next stage.

- Criteria on selecting projects to be reviewed by Gateway review process

All public works are under Gateway Review Process in the U.K. Considering initial stage of adopting the process in Korea, a certain guideline is necessary in selecting a project which will be reviewed by gateway process review system. The criteria on selecting project is based on the result of potential risk assessment done by project owner, and then may be project size in dollar.

- (Tentatively) CIC (Construction Innovation Center)

Found CIC to implement progress monitoring system. It's role will be similar to that of OGC(Office of Government Commerce) in the U.K. CIC will develop a guideline for implementing progress monitoring system, find and disseminate best practice, and assist public project owner in implementing the system.

○ *Coordinating between existing policy and progress monitoring system*

Basic approach to this issue is to adopt the process of Gateway review process in the U.K based on integrating it with existing process and policy. The gate will be in each phase of project life cycle in planning, pre-feasibility analysis, choosing and review of project delivery system, decision making on investment, construction, and post-project evaluation.

4.3 Performance Management System Improvement

A. Background

The public expect government to implement programs that will provide critical national level services and produce meaningful results. The objective of performance management system is to ensure that taxes produce the greatest results possible. The system provides information on program performance to help the government make better, more informed decisions about the public works.

So far, government controls in terms of input or process rather than output or result. This kind of control by government reduces effectiveness of public works. Since advanced countries have focused on performance measurement and improvement, Korea also needs to have a strong performance measurement and management policy to improve performance of public works. Basic idea behind performance management is that government should be accountable for its performance, and taxpayers must have clear and candid information about the successes and failures of all public works.

Korean government adopted performance management policy for public funded project in 2003 and is driving performance-oriented management and emphasizing accountability of government to taxpayers. Based on this direction, Self-assessment system for public-funded project (2005), Depth evaluation system (2006) and Post-project evaluation system are adopted. But these systems have some problems in evaluation factor and weighting, and low concerns on key factors such as time and cost.

B. Improvement Plan on Discussion

○ The performance management policy will focus on performance in two principal ways:

- Improved Program Performance

The policy requires each public owner to identify opportunities to improve program management and design, and then develop and implement clear, aggressive plans to get more from tax every year.

- Greater Investment in Successful Programs

Although performance is not the only factor used to decide the size of a program's budget, budgeting authority can utilize information about a program's effectiveness and efficiency in

decision- making so that taxpayer moneys are invested in programs that provide the greatest return to the Nation. If poorly performing programs are unable to demonstrate improved results, then their resources may be reallocated to programs that can demonstrate greater success and returns to the taxpayer.

○ *Developing performance management system*

- Implement pilot project
- Expand projects under the system after analyzing the result of pilot project
- Develop project performance data base
- Establish organization to manage performance management system to provide guideline on performance management system and maintain the system.

5. Conclusion

All the improvement plans addressed in this paper are still on discussion by construction experts.

When these improvement plans are implemented, we can have an expectation as follows. Public can expect avoiding unnecessary cost due to delay by completing public projects on time without delay by setting criteria on prioritization, stable funding, and full-funding policy. Public project owner's project management capability assessment tool can provide public owners with an opportunity for public project owners to have self-assessment in objectively and figuring out what area they need to be improved and helping them develop improvement plan. Through this process public can expect that public project owner can not only managing the project well but also lead the industry. By monitoring progress and performance in phase, public project owner can take proper action not to deviate the project against specified goal. And providing taxpayers with clear and candid information about the successes and failures of all public works, government will be able to accountable for taxpayers.