THE POWER OF PUBLIC INVESTMENT MANAGEMENT

Transforming Resources into Assets for Growth

COUNTRY CASE STUDY

The Republic of Korea: PIM Reform after the Financial Crisis

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WORLD BANK GROUP

2012

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This case study is one of a number of country cases in the Public Investment Management Series. The country case studies accompany the volume, "The Power of Public Investment Management: Transforming Resources into Assets for Growth", World Bank (2014), and apply a common methodology to assess PIM systems globally.

KOREA

The financial crisis that hit the Republic of Korea in the second half of 1997 had a devastating impact on its economy, causing the worst recession since the Korean War era. To address the fundamental causes of the crisis and revitalize the economy, the Korean Government took bold, decisive steps to initiate comprehensive structural reforms. The major focus of reform in the fiscal and public sector was to adopt a series of initiatives for strengthening public investment management. The Government endeavored to instill a performance-oriented approach in the system, which implies management of public expenditure based on the principle of value for money. This chapter explains the institutional setting for public investment management (PIM) and the Korean Government's efforts to develop and manage a comprehensive PIM reform to further improve value for the money invested. The Ministry of Strategy and Finance played a leading role by implementing an effective appraisal and evaluation system to tighten the expenditure monitoring of total project cost and introducing a new budgeting system called the Medium Term Expenditure Framework. An initiative of the preliminary feasibility study (PFS), introduced in 1999 and conducted mainly by the Public and Private Infrastructure Investment Management Center, has been successful in handling the pass-or-fail bottleneck of the whole project selection process. The total project cost management system (TPCM), strengthened after the crisis, is working satisfactorily by discouraging the request frequency and the amount of TPC increases in line ministries. A reassessment study of feasibility is an innovative tool to control and keep the total project cost limit in the middle of TPCM. However, the performance monitoring and evaluation system on PIM still has room for improvement in Korea. A greater emphasis on program evaluation is being called for. with the Government currently establishing a performance-orientation, a greater use of performance contracts can be encouraged.

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The financial crisis that hit the Republic of Korea ("Korea") in the second half of 1997 had a devastating impact on its economy, causing the worst recession since the Korean War era. To address the fundamental causes of the crisis and revitalize the economy, the Korean Government took bold, decisive steps to initiate comprehensive structural reforms. The major focus of reform in the fiscal and public sector was to adopt a market-oriented focus and managerial strategies to increase efficiency and transparency. The Government endeavored to instill a performance-oriented approach in the system, which implies management of public expenditure based on the principle of value for money.

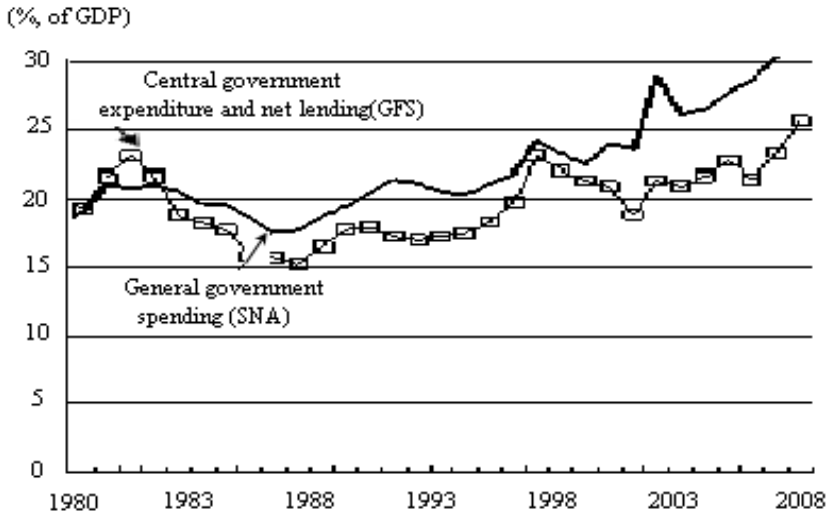
In the last decade, the Korean Government adopted a series of integrated (ex ante, intermediate, and ex post) quality control efforts for efficient management of its public investment program. The budget ministry established a strong and effective project appraisal scheme to provide oversight of the line ministries' project selection process. The reforms include a formal review process to ensure that funds are continually subjected to monitoring and evaluation. In addition, budgeting for public investment was simplified by reducing the number of special accounts and government funds. The Government in 2004 introduced the Medium Term Expenditure Framework (MTEF), with top-down budgeting for fiscal year 2005. The MTEF pointed to a need to enhance the capacity for planning and prioritizing public investment management (PIM) programs in the line ministries. It also emphasized the need to change the role of the budget ministry as well.

This chapter explains the institutional setting for PIM and the reform efforts of the Korean Government to develop and manage a comprehensive PIM program to further improve value for money invested. The first section provides a brief summary of public investment expenditure trends in Korea, followed by an outline of an institutional framework for public investment management. The major players in the budget process are described and the reform efforts to pass the MTEF as well as recent PIM initiatives are examined. Then an in-depth description focuses on how the public investment projects (PIPs) are selected, prioritized, and managed in the budget process, beginning with a description of how the project appraisal is carried out, up to the preliminary feasibility study. Next the design of the total project cost management system, from procurement implementation to performance management and the evaluation system are discussed. Finally, a summary presents challenges and recommendations for improving public investment selection, prioritization, management, and budgeting procedures.

Trends in Public Investment Expenditure

The Korean Government increased public investment expenditure rapidly in response to the growing demand for public services, along with rapid economic development. As a result, general government (local and central) spending rose from 18 percent of GDP in 1987 to 30 percent in 2009 (figure x.1). Central Government expenditure and net lending showed similar growth.

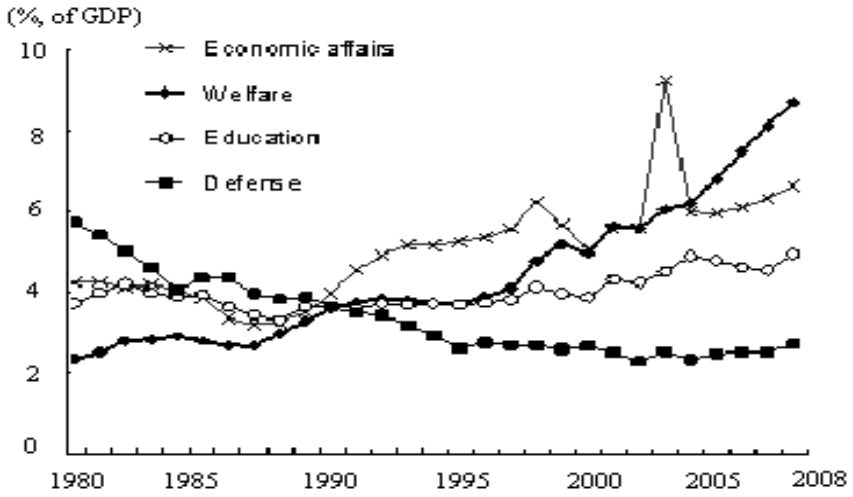
Figure x.1 General and Central Government Spending, 1980–2008



Source: System of National Accounts, Bank of Korea (http://ecos.bok.or.kr); Government Finance Statistics, Ministry of Finance and Strategy (http://www.mosf.go.kr).

Figure x.2 depicts the general growth rate of public expenditure by sector; it shows a notable increase in welfare expenditure and a continuous decrease in defense expenditure. The state welfare expenditure increased with the 1977 introduction of National Health Insurance (NHI) for firms with 500 or more employees. After a series of expansions, the NHI came to cover the entire population in 1989, and government expenditures increased accordingly.[1]

Figure x.2 General Government Spending by Function, 1980–2008



Source: Bank of Korea (http://ecos.bok.or.kr).

Note: Welfare spending includes social protection, health, and housing and community services.

In addition to the increase in welfare spending, spending on economic affairs grew rapidly in the early 1990s with the launch of infrastructure improvements: construction of roads, subways, dams, and water supplies.2 Traditionally, economic affairs and education accounted for about 40 percent of total government spending, the former being a slightly larger share. Spending on economic affairs contributed to the fast expansion of economic infrastructure, while spending on education supported the rise in enrollment rates, which are currently close to 100 percent for primary and secondary education; private as well as public schools depend heavily on Central Government funding. (Colleges and universities are funded mainly by tuition).Table x.1 distinguishes consolidated fiscal expenditure and net lending of the Central Government, which provides detailed information on expenditure of economic affairs. Spending on the transportation and communication sectors accounts for the largest part of expenditures on economic affairs, while agriculture, forestry, fishing and hunting and mining, manufacturing, and construction hold the second and the third rank, respectively. Judging whether such fiscal allocation is reasonable and whether the expenditure size is feasible are both difficult tasks.

Table x.1 Consolidated Fiscal Expenditure and Net Lending by Central Government, by Function (% of total)

Government Function	Central Government Expenditure			
	1980	1990	2000	2008
General public services	4.0	4.2	5.2	6.9
Defense	30.6	20.0	11.4	14.9
Public order and safety	4.6	4.3	4.6	6.4
Education	14.6	17.0	15.3	21.2
Health	1.0	1.7	0.7	1.3
Social protection	5.7	8.1	15.3	28.2
Housing construction and community amenities	2.5	10.1	5.3	8.4
Recreation, culture, and religion	0.7	0.5	0.8	1.3
Economic affairs	26.0	20.4	25.2	26.0
Fuel and energy	2.1	0.6	0.7	3.3
Agriculture, forestry, fishing, and hunting	5.9	10.2	6.2	6.8
Mining, manufacturing, and construction	7.4	2.0	2.6	1.6
Transportation and communication	6.7	6.1	9.9	10.6
Other economic affairs	3.9	1.4	5.8	3.7
Other expenditures	10.4	13.7	16.2	22.1
Total	100.0	100.0	100.0	100.0

Source: MOSF (each year)
Note: Redemption of public funds (KRW 12 trillion) for year 2004 excluded.

Examination of the transport sector—the largest part of spending in economic affairs—shows a constant increase in facility stock (table x.2). Road length has more than doubled from 1980 to 2008. Considering that these data do not reflect the increase in number of lanes, road facilities in reality have expanded even further. Indices for port load/unload capacity and capacity for airport facilities show rapid increases as well. Transport facilities, therefore, do not appear to be a serious economic problem in Korea, except for discussions on the need to increase investment in the railway sector.

Table x.2 Trend of Facility Stock by Transport Sector

Year	Road length		Expressway length		Railway length		Port load/unload capacity		Capacity for airport facility	
	(km)	relative index[a]	(km)	relative index	(km)	relative index	(million ton)	relative index	(thousands of flights)	relative index
1980	46,951	1.00	1,225	1.00	3,135	1.00	82.3	1.00	1,006	1.00
1990	56,715	1.21	1,551	1.27	3,091	0.99	224.3	2.73	1,331	1.32
2000	88,775	1.89	2,131	1.74	3,123	1.00	430.4	5.23	2,025	2.01
2008	104,236	2.22	3,447	2.81	3,381	1.08	758.6	9.22	2,222	2.21

Source: Korea Development Institute 2004; Ministry of Land, Transport, and Maritime Affairs, *Statistics on Land, Transport and Maritime Affairs*.

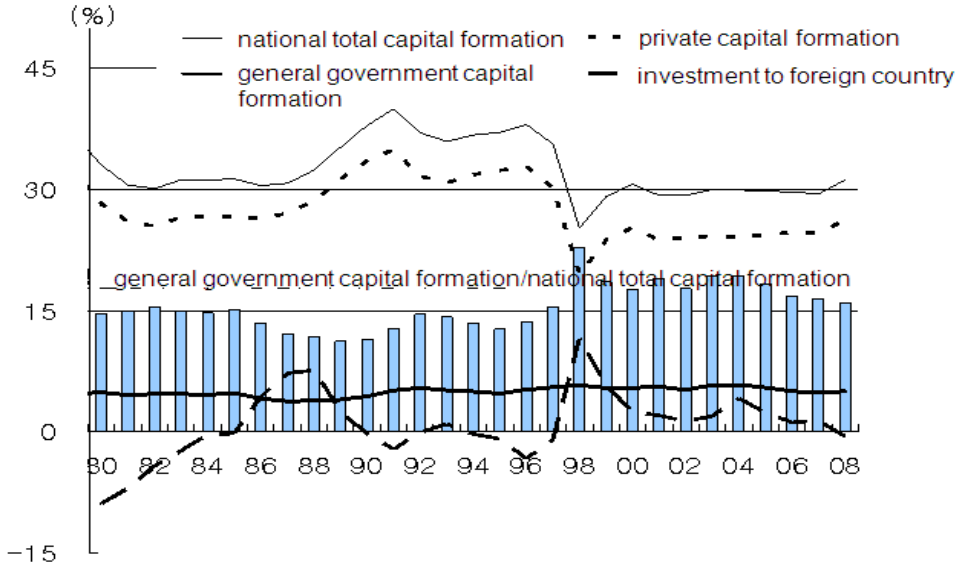
Note: a. Relative index according to 1980 stock level.

Figure x.3 shows that public investment expenditure by the Government in areas such as transport has taken an important role in total domestic investment. Since 1970 the gross domestic investment ratio (which equals national total capital formation/gross national disposable income) has been maintained at around 30 percent and the general government investment ratio (the general government capital formation/gross national disposable income) at around 5 percent, with the general government taking up about 15 percent of total investment. General government public investment has increased since 2000, when the gross domestic investment ratio saw a slight decrease. If public enterprises are included in the figure, representation of investment by the public sector would far outweigh that of the general government.

The Government has not focused only on infrastructure facility expansion in the process of economic development. It has also more directly intervened in the market in order to resolve market failure, especially failure of the financial markets. One method used was fiscal lending. Figure x.4 examines the size of fiscal lending using two indices: lending by the general government, as indicated in *Flow of Funds* from the Bank of Korea (Bank of Korea, var. years), and loan

repayment by the Central Government, as indicated in *National Statement for Current Bonds* (MOSF, var. years) announced by the financial authority. Fiscal lending has reached a sizable amount: the housing sector takes the biggest part, and the small- and medium-sized enterprise (SME) sector and agricultural sector follow, respectively.

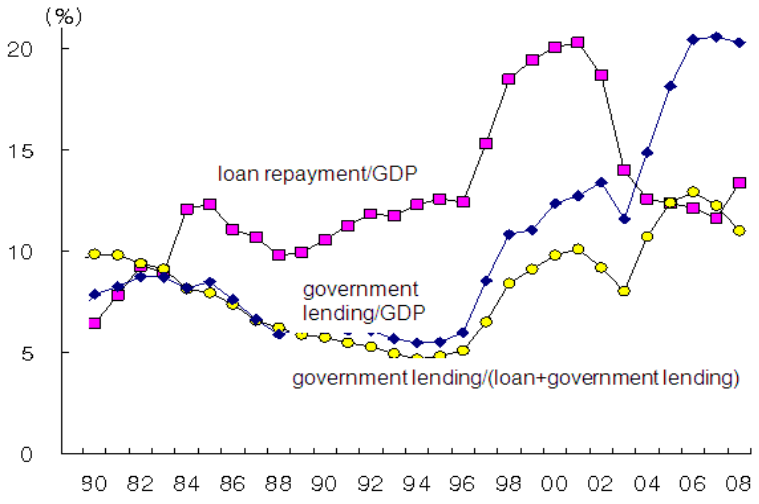
Figure x.3 Capital Formation Trends by Sector, 1980–2008, % of GNI



Source: MOSF internal data; Bank of Korea Economic Statistics System (http://ecos.bok.or.kr)

Note: Capital formation and investment to foreign country as ratio to gross national disposable income

Figure x.4 Size of Government Fiscal Lending (as of balance), 1990–2008 % of GDP



Source: MOSF internal data; Bank of Korea Economic Statistics System (http://ecos.bok.or.kr).

Note: Government lending and loans as of 1968 System of National Accounts (SNA) before 2001, and as of 1993 SNA after 2002.

Institutional Framework for PIM

Major players in the budget process include the Ministry of Strategy and Finance (MOSF) and the Board of Audit and Inspection (BAI) (see table x.3). The MOSF is responsible for preparing the draft budget based on revenue forecasts of the Tax and Customs Office in the MOSF. When the budget is authorized by the National Assembly, the MOSF prepares the quarterly budget implementation plan, usually within a month, and allocates funds to line ministries. The Treasury Bureau of the MOSF then prepares the monthly cash plan and releases cash to line ministries. The Treasury Bureau keeps track of cash flows into and from the treasury single account held in the Bank of Korea. It is also responsible for issuing government bonds and managing government assets and liabilities.

An important issue concerning the interplay among various players is fiscal discipline. The budget process has generally taken a highly centralized, strategic dominance-based approach to maintaining fiscal discipline.[3] The MOSF plays a central role in budgeting, as well as in preparing and implementing public investment programs. Often the main budgeting decisions are made in bilateral negotiations between the budget authority and the spending ministry.

The MOSF exercises tight control on public expenditures in the implementation stage. Ministries are required to spend within the limits set in the quarterly budget implementation plan. When deemed necessary, the MOSF can postpone or block part of the expenditures. All limits on expenditures are imposed in cash terms. Transfers across appropriation accounts are prohibited unless authorized by the National Assembly or by the MOSF.

The Treasury Bureau of the MOSF also has a tight grip on cash outflow. All cash disbursements are made strictly within the limits set in the monthly cash plans. Before the 1997 crisis, it was not uncommon for the Treasury Bureau to delay disbursements to line ministries when there was not enough money left in the treasury account due to the seasonality of tax collection. This was the case despite the fact that they could issue short-term debt instruments within the limit set by the National Assembly to bridge the gap between tax collection and cash needs. In addition, the revenue forecasts prepared by the Tax and Customs Office were often very conservative, with the actual tax collection overshooting the forecast by substantial margins.

Table x.3 Major Players in Korea's Budget Process

Players	Roles
Ministry of Strategy and Finance (MOSF)	• Compiles budget bids and prepares the draft budget • Allocates funds to spending ministries (apportionment) • Approves the transfers of funds between line items (virements)
Treasury Bureau of the MOSF	• Releases cash to spending ministries • Manages the treasury single account held in the Bank of Korea • Issues treasury bonds and manages assets and liabilities • Collects ministerial financial reports, prepares the whole-of-government financial reports, and sends them to the BAI • Produces the government financial statistics
Tax and Customs Office of the MOSF	• In charge of tax policy • Prepares revenue forecasts • Oversees the National Tax Service and the Customs Service
Line ministries	Execute the budget and prepare financial reports
Board of Audit and Inspection (BAI)	• The supreme audit institution in Korea, whose head is nominated by and reports to the President. The National Assembly can also request audits on specific issues to the BAI • Checks the regularity of ministerial activities • Prepares and tables the financial report to the National Assembly
National Assembly	• Deliberates and votes on the budget • Approves the transfers of funds between programs • Reviews and approves audit reports

Some changes were observed in cash management and revenue forecast practices after the 1997 financial crisis. Pressured to stimulate the economy, and in particular to back up the front-loading[4] of annual spending that has been popular since 1999, the MOSF resorted more and more to short-term debt instruments to bridge the gap between tax collection and cash needs. The downward bias in revenue forecasts was also reduced. In 2004, there had actually been a large shortfall in tax collection, which was partly blamed on an overly optimistic assumption on the economic growth, which was in turn claimed by some to have been politically motivated. Now the democratization of Korean politics and the devolution of budgetary power to line ministries became an unavoidable trend.

Recent Change from Bottom-Up to Top-Down Budgeting

The Korean Government's budget process has undergone a significant change, beginning when the Government introduced the Medium Term Expenditure Framework (MTEF), together with top-down budgeting in 2004 for fiscal year 2005.[5] The reform was intended to address several defects found in the previous budgeting practice. Prior to the introduction of the MTEF, budgeting

was centered on the next single budget year and lacked a medium-term perspective. The MOSF and the National Assembly gave little consideration to the out-years beyond the budget year. Line ministries had little information on the extent of the resources that would be available to them in the future, and their medium- to long-term planning function was severely limited. It was also difficult for the MOSF to identify and cope with the trend towards increased public expenditure. Without a long-term view on the appropriate level of the tax burden, the MOSF would simply allow ever-increasing public spending to accommodate rising demands from various sectors.

Before the introduction of the top-down process, budgeting relied exclusively on a bottom-up approach. At the initial stage of budget preparation, the MOSF made rough estimates of the total size and the sectoral allocation of the next year's budget. But the estimates were not transmitted to line ministries and therefore could not guide them in preparing their budget requests. When reviewing the ministries' budget requests, the MOSF focused on the microscopic spending control of individual public investment programs. The sectoral allocation and the total size of the budget were determined at the last stage of budget preparation by aggregating the expenditures on individual programs. As a result, control of inputs assumed major significance in budget discussions and little attention was paid to outputs or outcomes. The accountability and autonomy of line ministries in preparing and managing their budget was also severely limited. Line ministries usually requested an unrealistically large amount of the budget, and massive cuts were inevitable.

With the introduction of the MTEF and top-down budgeting the process changed. Now the annual budgeting exercise starts with a discussion on fiscal management over the next five years, including the current year, the budget year, and three out-years. Following this discussion, the MOSF transmits spending ceilings for sectors and programs to line ministries.[6] These ceilings encompass the general and special accounts and funds. Line ministries are now asked to prepare their budget requests within these ceilings. When reviewing the ministerial budget requests, the MOSF places less emphasis on the microscopic control of line items and more on the strategic alignment of budget requests with overall policy directions.

New Initiatives in Public Investment Management

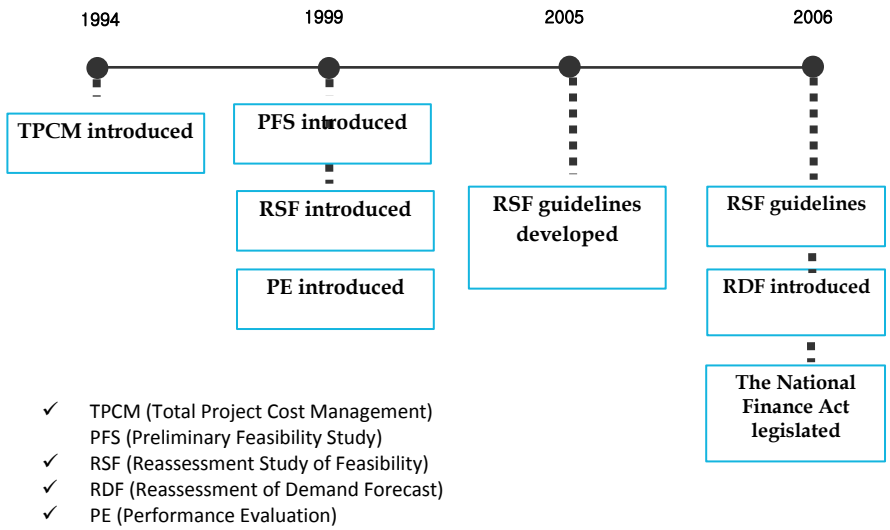
In order to enhance the efficiency of PIM, the Korean Government in 1999 organized a cross-ministerial task force to develop an action plan. The task force was jointly headed by Ministry of Planning and Budget[7] (now MOSF) and the Ministry of Construction and Transportation (MOCT) (now Ministry of Land, Transport, and Maritime Affairs, MLTMA). The MOCT issued "A Comprehensive Plan to Enhance Efficiency of Public Investment" in July 1999 (MOCT 1999). Various policy measures were introduced to tackle the weaknesses of the existing public investment management system.

One of the features of the new PIM system was to intensify the monitoring system of the project implementation process by the budgeting agency. For example, the MOSF now takes charge of the Preliminary Feasibility Studies (PFS), the results of which are reflected in the budget appropriation. This arrangement represents a compromise between the MOSF, which tried to take over the feasibility study function from the line ministries, and the line ministries, especially the

MLTMA, which were resistant to the idea of transferring ownership of the feasibility study to the MPB. Thus, the PFS was "invented" as a settlement to relieve the resistance from the line ministries.

The Total Project Cost Management System (TPCM), in which the budget ministry checks the cost increase from the baseline throughout the project life, was also strengthened. Introduced in 1994, the TPCM was established as an effective measure of government expenditure management after the financial crisis. Under the TPCM System, the Reassessment Study of Feasibility (RSF) and Reassessment of Demand Forecast (RDF) were introduced in 1999 and 2006, respectively. RSF and RDF reformulate feasibility studies and demand forecasts on projects under design, development, or construction, and decide whether the project may continue. The RSF guidelines and RDF system were developed and introduced after the PFS system was established. The guidelines of RSF and RDF adopt the same analytical methodology as that of the PFS. Figure x.5 shows a brief chronology of PIM system evolution.

Figure X.5 Chronology of New Initiatives in Korea's PIM System

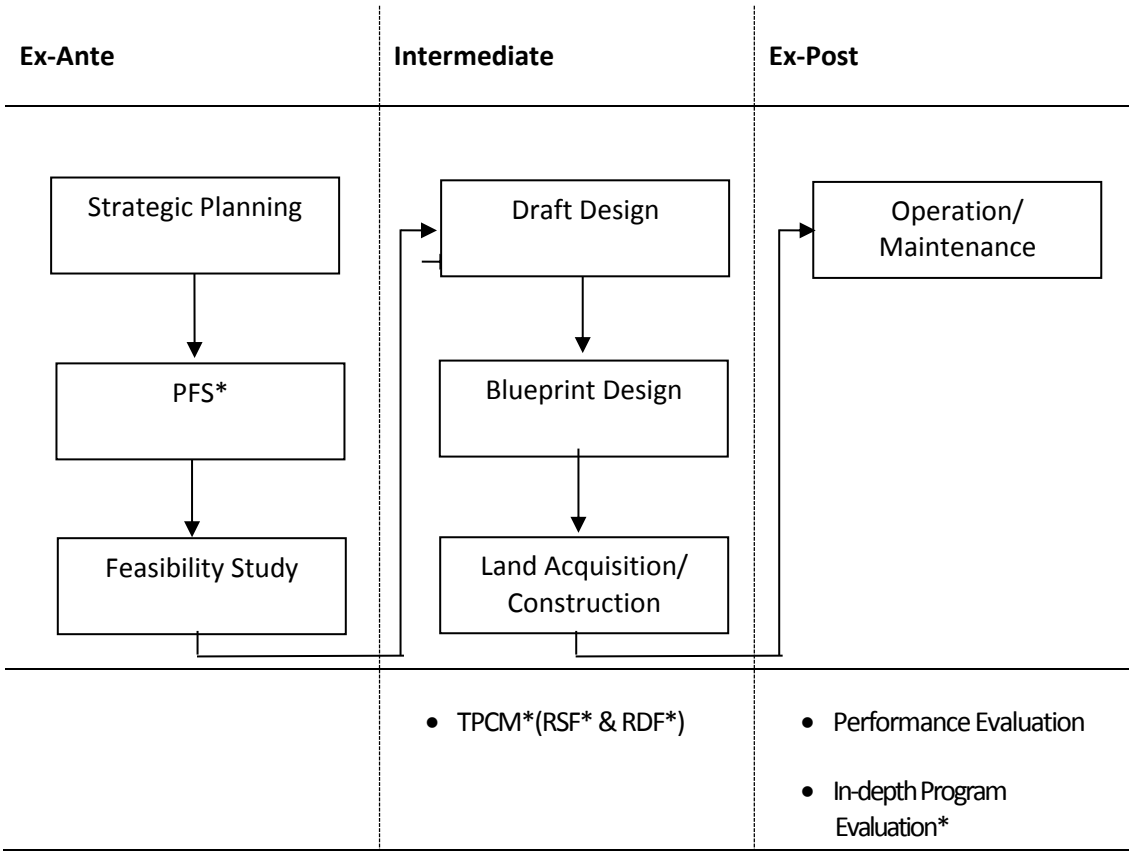


For line ministries, the Government introduced the ex-post performance evaluation system in 1999. According to the MOCT Comprehensive Plan, the line ministries were supposed to evaluate the performance of the project within three years after construction work is completed. In 2000 the MOCT amended the Enforcement Decree of the Construction Technology Management Act to incorporate the initiatives included in the Comprehensive Plan. The legal ground of PFS and TCPM resides in several laws, their enforcement decrees, and administrative guidelines, such as the Budgeting and Accounting Act and the Fund Management Act. In 2006 the National Finance Act, combining several fiscal-related acts, was legislated to stipulate diverse policy measures of PIM.

With the establishment of a legal framework for public investment, the PIM project was to be implemented in accordance with the process shown in figure x.5. Throughout the process, the MOSF produces information necessary for decision-making on budgeting through PFS, FSF, RDF,

and in-depth program evaluation. In the past, line ministries provided selective information to procure more of the budget, leading the MOSF to cut project budgets, but not always on a reasonable basis. New devices investigating the projects in detail made it possible for the MOSF to manage public investment more effectively.

Figure X.6 Implementation Process of Public Investment Management



Note: *The bulleted items are under the aegis of MOSF.

Project Appraisal by Preliminary Feasibility Study

Improvement of a project appraisal system at the ex ante level is very important for ensuring sound public expenditure. As discussed, the Ministry of Strategy and Finance introduced the preliminary feasibility study (PFS) to enhance efficiency in the early decision-making process of major infrastructure investment projects. Throughout the project cycle—such as the stages of identification, preparation, implementation, evaluation, and so on—the MOSF is interested in improving the methods of ex-ante appraisal at the preparation stage.

Initiative for a Preliminary Feasibility Study

The PFS is a brief evaluation of a project to produce information for a budgetary decision. A critical change is that the PFS is owned by the Ministry of Strategy and Finance (MOSF). Under the new procedure, the MOSF established the Public Investment Management Center (PIMA) within the

Korea Development Institute (KDI), with the mandate to conduct research and take an operational managing role in implementing the PFS procedures.[8]

The PFS is conducted by a multi-disciplinary research team organized by PIMA (now PIMAC, Public and Private Infrastructure Investment Management Center), typically consisting of economists, transportation researchers, and civil engineers. The mix of specialists from different backgrounds and organizations helps to provide diverse ideas for the appraisal and improve the transparency and objectivity of the decision-making process. The PFS Review Committee is organized by the MOSF with members of staff from the budget and line ministries, PIMAC, and field specialists. Open discussions are held regularly on the PFS mid-term and final reports.

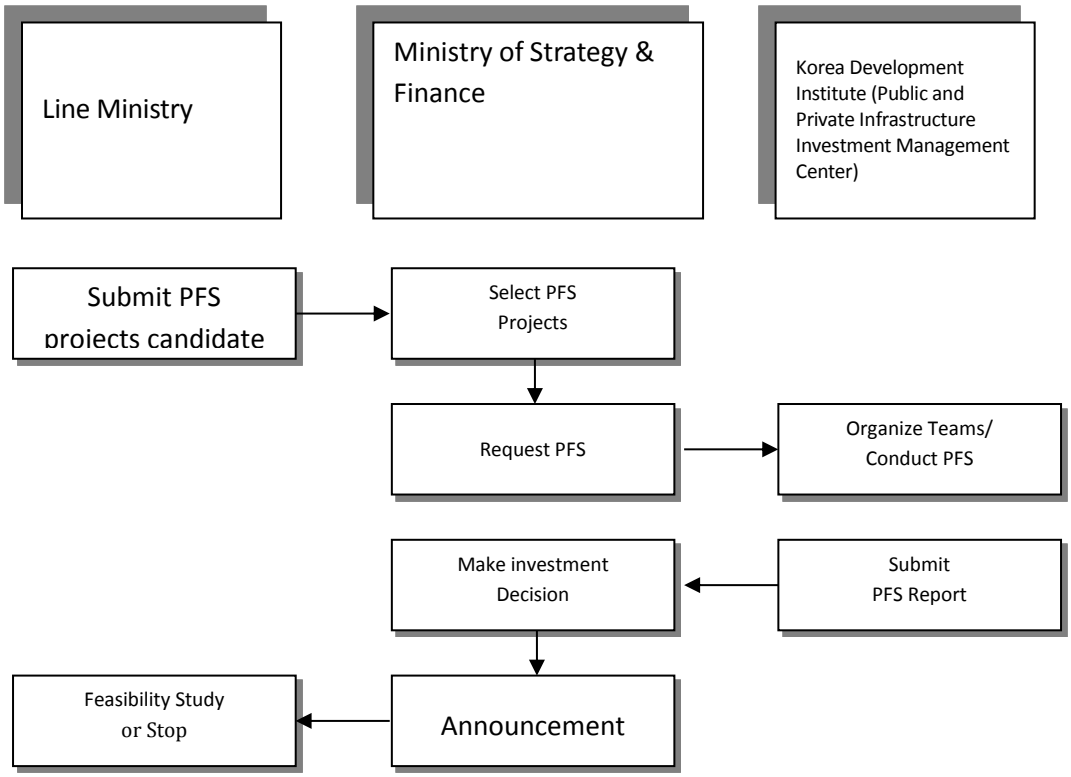
The PFS process aims to enhance fiscal productivity by launching large-scale public investment projects based on transparent and objective ex-ante project evaluations. The meaning of "preliminary" is twofold: first, it means "provisional" evaluation, a short and brief examination; second, it is an evaluation that precedes a (detailed) feasibility study. The National Finance Act of 2006 provides the legal framework of PFS.[9] Before that legislation, PFS was based on the Enforcement Decrees of the Budgeting and Accounting Act and the Fund Management Act; these two laws were merged into the National Finance Act in 2006.

The coverage of PFS is so extensive that it has made notable changes to the PIM system since its inception. All new large-scale projects with a total cost of KRW50 billion (about US$50 million) or more are subject to the PFS. With the National Finance Act, the scope of the PFS was expanded to non-infrastructure projects (for example, R&D). Local governments and PPI (private participation in infrastructure) projects are also subject to the PFS if the Central Government subsidy exceeds KRW30 billion.

The following types of projects are exempted from the PFS: typical building projects such as government offices and correctional institutions; legally required facilities such as sewage and waste treatment facilities; rehabilitating projects and restoration works from natural disasters; projects implemented by international accords and by a South–North Korea exchange and cooperation program; and military facilities and projects related to national security.

In every budget cycle of public infrastructure projects, the PFS procedure is conducted as follows. At the first stage, a concerned line ministry submits a list of PFS candidate projects to the MOSF, and the MOSF selects the PFS projects and requests PFS to PIMAC at KDI. PIMAC organizes the research team, conducts the PFS, and submits the final PFS reports to the MOSF (figure x.7). In the middle of conducting the PFS and making a final decision, the PFS Review Committee takes charge of the whole review process.

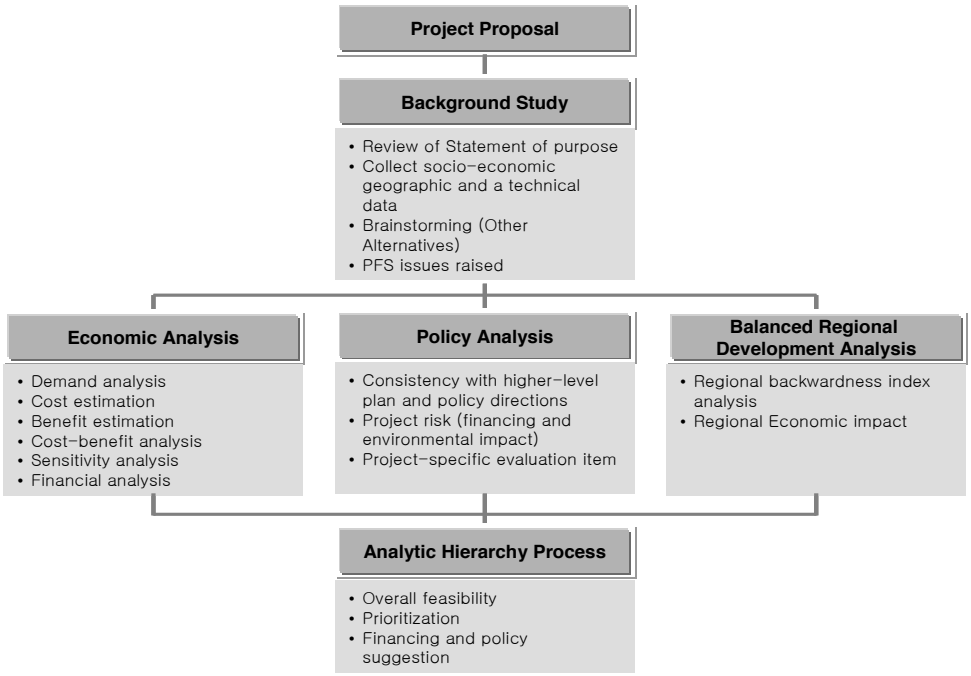
Figure x.7 Preliminary Feasibility Study Procedures



Contents of PFS

The PFS is conducted in three phases: background study, main analyses, and synthesis. The background study reviews the statement of purpose and collects background data on socio-economic, geographic, and technical aspect of the project. In addition, key agendas for the main analyses are discussed in the background study through brainstorming.

Figure x.8 Outline of PFS Procedures and Contents



The main analyses in the PFS process are economic analysis, policy analysis, and balanced regional development analysis. The backbone of the economic analysis is the cost-benefit analysis. The economic benefit and economic cost of a project are estimated based on the forecasted demand. The criteria of cost-benefit ratio, NPV (net present value), and IRR (internal rate of return) are calculated based on the stream of annual benefit and cost. As of 2007, a social discount rate of 5.5 percent in real terms is applied to the analysis based on the trend of risk free interstate rate in Korea.

Policy analysis examines the potential effects of the projects in qualitative and quantitative terms, including, consistency with higher level policy, possible project risk, and other project-specific considerations. In the consistency category, the attitudes of the project owner and local residents toward the project and the level of preparedness of the project proposers are examined. In the project risk category, the risk of funding availability and the environmental risk of the project are evaluated.

Balanced regional development analysis is an evaluation of the project from a regional perspective. The regional backwardness index, a composite index of eight characteristics for local entities, was developed by the PFS guidelines. The regional economic impact analysis is also conducted through the MRIO (Multi-Regional Input-Output) model.

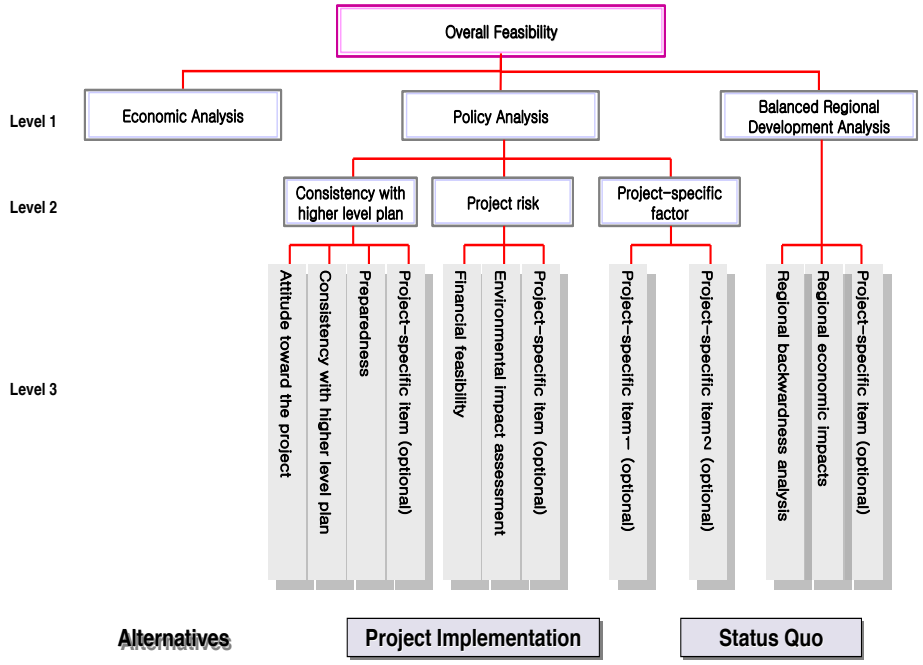
To synthesize the results of these economic, policy, and balanced regional development analyses, the AHP (Analytic Hierarchy Process) technique is applied in the PFS. AHP is a multi-

criteria, decision-making approach that enables user to combine quantitative and qualitative analyses into a decision through a hierarchical structure. AHP is unique in providing a hierarchical framework to a complex problem by establishing major/minor factors and examining the importance of each factor through pair-wise comparison. AHP enhances objectivity of decision-making by analyzing and managing the entire process of decision-making in steps, and it ensures the consistency of weights derived from pair-wise comparison, guaranteeing the robustness of decision-making.

As a group decision support system, AHP also enables the user to synthesize decisions of multiple decision makers. Thus PFS team members, comprising seven or eight experts from different organizations with different specialties, rate the feasibility of a project through the AHP technique. Diverse views on the level of feasibility are synthesized into a single score, which results in a final decision on feasibility of a project.

Figure x.9 shows how AHP guides the synthesis of the analytical results of a project. The PFS team sets the weight of each criterion through pair-wise comparison of each criterion against the others. At the bottom level of the hierarchy are the two alternative judgments: "Project Implementation" or "Status Quo" (which means "Not-Implementing the Project"). The score of the two alternatives are scaled to be summed up to 1. Hence, if the Project Implementation alternative gets a score above 0.5, the project is evaluated as feasible.

Figure X.9 Structure of AHP in PFS



PFS Evaluation Guidelines

PFS is based on three pillars of quality: objectivity, consistency, and transparency. In order to improve the objectivity of the evaluation and secure consistency among projects, PIMAC developed evaluation guidelines. PFS guidelines are detailed descriptions of methodology and procedures of PFS implementation. PFS guidelines cover the following sectors: roads, railways, ports, airports, dams, and cultural facilities. The guidelines stipulate that the same methodology is applied and the same or a similar dataset is used for different projects in the same sector. For example, the KT_DB (Korea Transport Database) should be used for all the road and railroad projects for consistency in evaluation results. These guidelines are continuously revised through academic research. The PFS guidelines for road and railroad projects, in its fifth edition in 2009, provide specific procedures for assessing road projects (see box x.1).

Box x.1 How a Road Project Is Assessed in PFS

- **Methodology: cost-benefit analysis**
  - Criteria: B/C, NPV (Net Present Value), IRR (Internal Rate of Return)
  - Social Discount Rate: 5.5 percent (real term)
  - Duration: Roads, railways and seaports (30 yr.); dams and water supply facilities (50 yr.)
  - Tax is excluded but salvage value is included
- **Benefit of road project**
  - Valuation of changes in route and travel speeds due to the project
  - Savings in travel time, vehicle operation costs, traffic accidents, and environmental costs (air and noise pollution)
- **A multi-criteria decision-making approach by AHP (Analytical Hierarchy Process)**
  - Combines quantitative and qualitative criteria for decisions under a hierarchical structure
  - A group decision support system
  - Hierarchical structuring
  - Pair-wise comparison

Performance of PFS

Based on the PFS results, only a project that has been assessed and meets the investment criteria can be approved and implemented. Table x.4 shows the number of PFS conducted from 1999 to 2009. A total of 437 projects were evaluated, among which, road (188 projects) and railway projects (79 projects) were dominant; totals included 27 seaport projects, 32 culture and tourism projects, 34 water supply projects, and 77 other projects. Other projects included construction projects for welfare facilities, airports, and industrial complexs, among others.

Table x.4 Number of PFS Submitted by Sector, 1999–2009

Sector	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Sum
Road	11	11	20	9	11	24	11	27	30	12	22	188
Railway	2	7	14	8	7	13	6	10	5	2	5	79
Seaport	1	5	1	2	3	1	2	5	1	4	2	27
Culture and Tourism	3	2	5	2	5	2	1	5	2	3	2	32
Water Resources	1	1	0	5	5	3	3	1	1	2	12	34
Others	1	4	1	4	2	12	7	4	7	15	20	77
Sum	19	30	41	30	33	55	30	52	46	38	63	437

Source: Internal data (1999–2009) from PIMAC, KDI.

Table x.5 shows the proportions of feasible projects: 256 projects, or 58.6 percent of 437 projects, were evaluated as feasible. The proportion of feasible projects for the road sector is 56.4 percent. The highest rate of feasibility was for seaport projects at 77.8 percent, and the projects in the culture and tourism sector had the lowest feasibility rate at 43.5 percent.

Table x.5 Proportion of Feasible Projects by Sector, 1999–2009

	% of Submitted Projects Rated Feasible													
Project Sector	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total Projects (A)	Total Feasible Projects (B)	(B)/(A) (%)
Road	45.5	27.3	30.0	33.3	72.7	87.5	36.4	63.0	63.3	75.0	50.0	188	106	56.4
Railway	50.0	57.1	35.7	75.0	71.4	53.8	83.3	40.0	25.0	100.0	80.0	79	44	55.7
Seaport	100.0	80.0	100.0	50.0	100.0	100.0	100.0	40.0	100.0	100.0	50.0	27	21	77.8
Culture and tourism	100.0	-	40.0	-	-	100.0	100.0	40.0	50.0	100.0	-	32	14	43.8
Water resources	100.0	100.0	-	-	60.0	66.7	66.7	100.0	100.0	50.0	91.7	34	23	67.6
Others	100.0	75.0	-	75.0	50.0	66.7	71.4	50.0	42.9	46.7	78.9	77	48	62.3
Average	63.2	50.0	34.1	43.3	60.6	74.5	63.3	53.8	56.5	68.4	67.7	437	256	58.6

Source: Internal data (1999–2009) from PIMAC, KDI. ***Note***: —: not applicable.

Tables x.6 and x.7 show the results of PFS in terms of B/C ratio and AHP score. Until 2002 no technique was employed to combine B/C ratio and the results of policy analyses. Thus the overall PFS result was that a proposed project was announced as feasible or non-feasible, along with the B/C ratio. During 1999–2002, nine projects were evaluated as non-feasible, despite the fact that their B/C ratios were greater than 1. The reasons were mostly their potential negative environmental impacts and difficulties in funding availability for local government projects. On the

other hand, 10 projects were evaluated as feasible, with B/C less than 1. The most important reason was a consideration of balanced regional development.

Table x.6 Feasible/non-feasible Projects according to B/C Ratios (1999–2002)

Year	Project numbers rated feasible or non-feasible						
	B/C ≥ 1		B/C < 1		Total (A)		
	Feasible	Non-feasible	Feasible	Non-Feasible		Feasible (B)	(B)/(A) (%)
1999	8	1	5	6	20	13	65.0
2000	14	3	1	12	30	15	50.0
2001	12	2	2	25	41	14	34.1
2002	11	3	2	14	30	13	43.3
Total (%)	45 (37.2)	9 (7.4)	10 (8.3)	57 (47.1)	121 (100.0)	55	45.5

Source: Internal data (1999-2009) from PIMAC, KDI.

Table x.7 shows the PFS results during 2003–09. In 2003 the AHP technique was officially employed to synthesize the economic and policy analyses. From then on, the PFS results were announced in terms of B/C and AHP score. Over that period, 202 projects, or 63.9 percent of 316 projects, were evaluated and rated as feasible. Five projects with B/C greater than 1 received AHP scores of less than 0.5 and eventually were deemed non-feasible. On the other hand, 61 projects with B/C less than 1 received AHP scores greater than 0.5.

The PFS has contributed to enhance the fiscal efficiency of the PIM project selection process by preventing non-feasible projects from being launched. During 1999–2009 a total of 437 PFS evaluations were conducted, and the projects deemed non-feasible saved taxpayers funds that could be allocated to other uses.

Table x.7 Feasible/non-feasible Projects according to B/C Ratios and AHP Scores (2003–2009)

Project numbers rated feasible or non-feasible

Year	B/C ≥ 1		B/C < 1		Total (A)		
	AHP≥ 0.5	AHP< 0.5	AHP≥ 0.5	AHP< 0.5		Feasible (B)	(B)/(A) (%)
2003	18	0	2	13	33	20	60.6
2004	27	1	14	13	55	41	74.5
2005	15	1	4	10	30	19	63.3
2006	21	2	7	22	52	28	53.8
2007	19	0	7	20	46	26	56.5
2008	16	0	10	12	38	26	68.4
2009	25	1	17	19	62	42	67.7
Total (%)	141 (44.6)	5 (1.6)	61 (19.3)	109 (34.5)	316 (100.0)	202	63.9

Source: Internal data (1999-2009) from PIMAC, KDI.

Procurement and Capital Budget Implementation

Procurement and capital budget implementation on public investment programs and projects has been managed mostly by a budget management system called the Total Project Cost Management System (TPCM) in the Ministry of Strategy and Finance. TPCM aims to enhance fiscal productivity and to ensure a high quality of public construction work by properly adjusting and managing total project costs (TPC) throughout the implementation stages of a project. The MOSF established the TPCM in 1994 and revises the "Guidelines for Total Project Cost Management" on an annual basis.

TPCM Manages PIP Construction Budgets

According to the National Finance Act, the following types of construction projects are subject to the TPCM system:

- Projects implemented by the Central Government or its agents, or by local governments or private institutions relying on Central Government funding;
- Projects with a construction period exceeding two years; and
- Civil engineering projects whose TPC exceeds KRW 30 billion (USD 30 million), or architectural projects whose TPC exceeds KRW 10 billion (USD 10 million).

The TPC includes all cost items accrued throughout the life of the project, including design, land acquisition, and construction costs, regardless of whether the source of funding is the Central Government, local governments or private institutions.

Project costs should be managed by construction phase and by construction unit, in reference to total construction cost. The construction costs are not arbitrarily interchangeable between project

phases or between construction units. When increases in construction size or costs are expected and even inevitable, the minister in charge of the project must consult with the MOSF about adjusting the TPC.

TPCM by Project Phase

The TPCM guidelines of the MOSF describe in detail how the rules and regulations of project management are carried out by project phase.

Project conception phase. The minister in charge of the project should make an appropriate estimate of the total cost and duration of the project and ask the MOSF for a PFS if the estimated total cost in the project conception phase is KRW 50 billion or more. For local government projects, the minister in charge should ask MOSF for a PFS if the funding of the project relies on a Central Government subsidy of KRW 30 billion or more.

Phases of PFS and a (detailed) feasibility study. The minister in charge should report on the project size, TPC, and project duration to MOSF for all the projects that have been evaluated as feasible by PFS and should ensure that the budget is drawn up by the end of January. Detailed feasibility studies should cover the life cycle cost of the projects resulting from all technological, environmental, social, and financial aspects, as well as from land acquisition.

Draft design phase. The project management should ensure that enough money and time is spent on the draft design to prevent significant and frequent design modifications in the following construction phases. The design team should collect various opinions from target citizens, interests groups, and related government authorities, in order to minimize public discontent expected in the construction phase. The minister in charge should consult value-engineering (VE) experts at least once before the end of this phase to prevent overestimation of costs and excessive construction.

Blueprint design phase. Size of the construction should not be modified significantly in this phase. When it appears that a design modification or change in construction size is inevitable, the minister in charge should discuss the matter with the MOSF. The minister should also consult value-engineering experts at least once before the end of this phase to prevent overestimation of costs and excessive construction.

Contracting phase. MOSF informs the Administer of the Office of Supply Administration of the total construction cost, after discussing it with the minister in charge. When the contract cost exceeds the informed cost, the Administer of the Office of Supply Administration should discuss the matter with the Minister of Strategy and Finance.

Construction phase. The minister in charge should try to minimize cost increases, except when new construction techniques or new equipments are to be introduced to enhance the quality of the product substantially. When an increase in costs, change in construction size or change in construction duration are inevitable, the minister in charge should submit a written explanation and discuss it with the Minister of Strategy and Finance.

The line ministry is allowed to set construction contingencies for up to 8 percent of the contract price of a project to cope with inevitable design modification and amendment of the law and so on. The line ministry can use its own discretion to change the TPC within the limit of these contingencies. Contingencies apply only to the construction phase of a project.

In general, an increase in construction size through design modification is not allowed, except for inevitable cases. The base cost for a TPCM system is the contract cost determined by bidding, not the cost estimate at design phase. "The indicator adjustment formula" set by the Office of Supply Administration is applied to recalculate project costs incorporating inflationary effects.

When a project under implementation violates the TPCM guidelines, the Minister of Strategy and Finance can cut off or withhold budget allocation for the project. The minister in charge can impose sanctions prohibiting invitation to tendering of construction projects on design teams when their work has resulted in a substantial cost increase due to unsatisfactory performance or when they intentionally or unintentionally fail to estimate the appropriate construction costs or sizes. The minister in charge can petition the Minister of Strategy and Finance for changes in costs and project duration at any time through the Budget Information Management System when necessary.

Reassessment Study of Feasibility and Reassessment of Demand Forecast

The Reassessment Study of Feasibility (RSF) aims to check unnecessary cost increases by re-affirming the feasibility of projects under implementation and scrutinizing the adequacy of the cost increase. The MOSF conducts the RSF on a project if the PFS has not been conducted, although it falls under the PFS coverage, or if the TPC has increased by more than 20 percent (excluding inflationary effects and increase in land acquisition cost) of the cost confirmed by the Minister of Strategy and Finance at the previous phase of the project. Also, according to the amendment of the National Finance Act in 2009, the Board of Audit and Inspection is entitled to request that the MOSF conduct an RSF if there is a need.

The line ministries conduct the RSF on a project with miscellaneous changes in construction costs and report it to the Minister of Strategy and Finance. The RSF guidelines suggest that the RSF should include, but should not be limited to, the following components:

- Outline of a project
- Analysis of background data and project issue raised
- Analysis on adequacy of the plan including size of the project
- Economic analysis including cost-benefit analysis
- Policy analysis
- Overall assessment including judgment on whether or not to continue a project and if the TPC increase is adequate.

Based on these analyses, the RSF team makes an overall assessment including a judgment as to whether or not to continue a project and if the TPC increase is adequate. While the PFS focuses

on evaluating the feasibility of a project, RSF puts relatively more emphasis on finding alternatives to cut down the size and cost of a project. The MOSF reflects the RSF results in adjusting the TPC. When the RSF results show that a project has turned out to be unfeasible, the RSF team works on curtailing project size, with the intent of improvinh its feasibility. When no alternative way to secure the feasibility of the project is found, the MOSF decides whether to stop implementing the project.

Reassessment of demand forecast (RDF) is a device that verifies the adequacy of the demand forecast for a public investment project conducted in the past with the latest information. By minimizing inevitable forecasting error, RDF aims to improve the efficiency of expenditure and to prevent squandering of financial resources by managing demand fluctuation of large-scale, long-term infrastructure projects throughout the phases of a project.

The transportation facilities, including roads, rail, airports, and ports, that are subject to TPCM are also subject to RDF if required. The RDF is to be conducted during any of the following phases when the requirements for the reassessment are met: (1) before or during completion of the basic plan or feasibility study; (2) before or during completion of draft design; (3) before or during completion of detailed design; (4) during the construction period; and/or (5) when it is deemed necessary by the Minister of Strategy and Finance or the head of Central Government agency, either of whom may request a RDF before or during a feasibility study or design development.

The RDF shall be conducted when there are substantial changes in demand forecasts, as stipulated in the following: (1) when the RDF is deemed necessary because a significant decrease of demand is anticipated due to material changes in the premises on which previous demand forecasts had been made or errors had been made during implementing the methodology for demand forecasts; (2) when the RDF is deemed necessary because a project has been converted to a PPP project from a conventional government procured project; (3) when more than five years have passed since the latest demand forecast had been conducted; and/or (4) when it is deemed necessary by the Minister of Strategy and Finance or the head of line ministry.

The RDF virtually belongs to the MOSF. In order to ensure objectivity and transparency during the RDF process, the Minister of MOSF or the minister of the line ministry responsible for the RDF may contract a specialized institution(s) to conduct the RDF. When the RDF is completed, the Minister of MOSF notifies the minister of line ministries of the results. When it is identified that the demand forecast for a project has decreased by 30 percent or more, however, the MOSF begins RSF and notifies the minister of line ministries in accordance with RSF guidelines.

Performance of TPCM, RSF, and RDF

Table x.8 shows the total number of Total Project Cost Management System (TPCM) projects and the projects in which the total project costs (TPC) were adjusted during 1994–2005. The total number of TPCM projects increased sharply in 1999 when the PIM system was established in a rigorous way. The proportion of projects for which TPC were required shows an increase from 54.0 percent in 2002 to 71.8 percent in 2005. However, the percentage of projects for

which the TPC rose by more than substantially decreased from 11.9 percent in 1996 to 3.7 percent in 2004.

Table x.8 Number of Projects with Substantial Change in TPC

Year	No. Projects under PCM (A)	No. Projects that TPC adjusted (B)	B/A(%)	No. Showing Increase in TPC by over 20% (C)	(C)/(A) (%)
1994	218			-	-
1995	207			19	9.2
1996	159			19	11.9
1997	189			20	10.6
1998	183			17	9.3
1999	459			15	3.3
2000	483			24	5.0
2001	602			26	4.3
2002	602	325	54.0	10	1.7
2003	667	392	58.7	15	2.2
2004	698	493	70.6	26	3.7
2005	760	546	71.8		

Source: Internal data from the Ministry of Strategy and Finance.

Table x.9 shows that line ministries in charge of the projects requested an increase of KRW 1.96 trillion, and about half (49.5 percent) of the requested amount (KRW 0.97 trillion) was adjusted into the TPC. While 95.7 percent of requests for TPC increase due to miscellaneous design change were accepted by the MOSF, only 43.2 percent of requests due to substantial design change were adjusted into the TPC.

Table x.9 Sources of in Total Project Cost Adjustment

	Value of miscellaneous design changes, KRW, billions	Value of substantial design changes, KRW, billions	Sum, KRW, billions
Request for TPC increase (A)	233.1	1,732.0	1,965.1
Projects that TPC adjusted (B)	225.3	748.0	973.3
(B)/(A) (%)	96.7	43.2	49.5

Source: Internal data from the Ministry of Strategy and Finance.

Note: Miscellaneous design changes include changes due to factors of traffic safety and unexpected ground conditions; substantial design changes include changes in route, change in type of bridges and tunnels, and an increase in quantity to incorporate request by local government or local citizens.

Table x.10 shows the trend of requests for TPC increase in terms of percentage of TPC. During 1996–99, the line ministries requested an increase of 26.4 percent of TPC, and 42.1 percent of the requested amount was adjusted into the TPC. During 2000–03, however, the requests dropped to as low as 4.4 percent of TPC, and the acceptance rate also decreased to 22.7 percent.

Table x.10 Trend of Requests for TPC Increase

TPC	% Increase requested	
	1996–99	2000–03
Request for TPC increase (A)	26.4	4.4
TPC adjusted (B)	11.1	1.0
(B)/(A) (%)	42.1	22.7

Source: Internal data from the Ministry of Strategy and Finance.

Table x.11 shows the number of RSF studies conducted by sector during 2003–09. Road projects take up the largest share in the sectoral distribution of RSF. The RSFs on buildings (museums and tourism) takes up 17.7 percent in terms of the total number of RSFs conducted.

Table x.11 Number of RSF by Sector, 2003–09

	2003	2004	2005	2006	2007	2008	2009	Sum
Road	2	2	6	10(2)	9(1)	9(3)	28(7)	66
Railway	0	1(1)	0	0	2(1)	2	1	6
Port	0	0	0	0	3	2	3	8
Buildings (museums and tourism)	2	3	3	4	1	6(2)	1	20
Water resources (dam)	0	0	0	5	0	1	2	8
IT/R&D	0	0	0	0	0	0	1(1)	1
Others	0	0	0	1	3	0	0	4
Total	4	6(1)	9	20(2)	18(2)	20(5)	36(8)	113(18)

Source: Internal data from the Ministry of Strategy and Finance.

Out of 113 projects, 18 were suspended as a result of RSF evaluations. The results show higher percentages of feasible projects relative to PFS because, while PFS focuses on evaluating the feasibility of a project, RSF puts relatively more emphasis on finding alternatives to cut down the size or cost of a project.

Table x.12 shows the change in TPC by RSF. The sum of initial TPC for projects conducted in 2003–09 was KRW 27.3 trillion, and the line ministries requested a total of KRW 42.4 trillion. So the RSF results suggested adjusting the total TPC to 34.7 trillion, implying that KRW 7.7 trillion, or 18.1% of TPC requested were cut through the RSF.

Table x.12 Results of RSF (change in total project costs, KRW, billions)

	Initial TPC (A)	TPC requested (B)	TPC by RSF (C)	(D) =(C)-(B)	(D)/(B) (%)
2003	1,587	6,137	5,491	–646	–10.5
2004	291	711	613	–97	–13.6
2005	842	1,511	1,039	–472	–31.3
2006	3,954	6,826	3,788	–3,039	–44.5
2007	4,141	4,801	4,040	–761	–15.9
2008	10,569	13,579	11,998	–1,581	–11.6
2009	5,936	8,859	7,762	–1,097	–12.4
Total	27,320	42,424	34,731	–7,693	–18.1

Source: Internal data from the Ministry of Strategy and Finance.

Until 2009, only two RDFs have been conducted since the RDF was introduced in 2006: the fourth section of the Hamyang-Ulsan Expressway and Kyungin Cannel project. Based on the results of RDFs, the MOSF decided to reduce the total cost limits on both projects.

Performance Management and Evaluation of Completed Projects

Three-tier systems of performance management and evaluation of completed projects were simultaneously introduced within the Ministry of Strategy and Finance: (1) Performance Monitoring System, (2) S elf-Assessment System, and (3) In-Depth Evaluation System. Table x.13 explains the main features of these systems.

Table x.13 Systems of Performance Management and Evaluation

	Performance Monitoring	Self-Assessment	In-Depth Evaluation
Method	Establish objectives and indicators and use the results in government budget operation (Prepare performance report).	Provide a check list of projects for review and keep track of which projects are operated properly and which are making progress, and so on.	Apply scientific evaluation methods to each project to analyze, spot problems, and provide an alternative (Prepare evaluation report).
Main responsible body	Each ministry (Budget Division)	Each Ministry (Budget division) and budget authority	Each Ministry (Project Management Division)
Applicable project	All policies and programs	20–30% of all	Individual programs and projects
Merits	An overall progress report can be completed but not enough information can be given on individual project basis.	Trade-off between Performance Monitoring and Program Evaluation	Detailed information can be given on an individual project basis, but due to excessive time and costs, this method is not suitable for all projects.
Application	Used in management of performance of an organiza-tion, as reference material for setting budget, and in preparation of performance budget report.	Used in improvement of project operating method, and as (deliberation) reference for setting budget.	Used in improvement of project operating method.

Source: Ministry of Strategy and Finance.

Performance Monitoring System

The Performance Monitoring System (PMS), which started in the spring of 2003, requires line ministries to set up performance goals and indicators, prepare annual performance plans and performance reports, and submit them to the MOSF at the start of the annual budget cycle. The MOSF is in charge of ensuring the system is in place by examining the status of PMS in line ministries, coordinating the implementation, and feeding the results back to resource allocation.

PMS covers only part of the ministries' investment programs, as those activities not involving large sums of expenditure (such as pure policy-making) are excluded from performance monitoring. In addition, activities for which the benefits of performance monitoring are expected to be small (such as wages and salaries, "basic program" expenditures,[10] and general administrative expenses) are excluded as well.

A performance report describes in a systematic way the degree to which program goals have been met. It should list performance goals and indicators as originally set out in the performance plan, describe the level of performance in terms of these goals and indicators, explain the reasons for any poor performance, summarize the assessment, and describe future plans. Optionally, it can include audit results by the Board of Audit and Inspection and summarize findings of program evaluations.

PMS will provide one source of information for budget allocation across sectors and programs. Line ministries should present performance information when requesting budgets, and the MOSF will utilize it when preparing the medium term National Fiscal Management Plan and drafting the budget.

The PMS, like its pilot project, has not been very successful so far. It received only lukewarm support from the top management in the MOSF. Line ministries also showed little enthusiasm for the PMS. In most cases, performance indicators prepared by line ministries were not derived from ministerial missions in a systematic fashion. Most importantly, performance reports were not open to the public, giving little incentive for line ministries to think seriously about the exercise.

Program Review System: Self-Assessment of Budgetary Programs

The Program Review System for Self-Assessment of Budgetary Programs (SABP) was introduced in 2005 by the MOSF to enhance links between performance evaluation and budget allocation. It was designed after the Program Assessment Rating Tool (PART) of the U.S. Government. This program requires line ministries to assess their own programs with spending levels above a certain threshold. The assessment was intended to cover all ministerial programs in a cycle of three years. The assessment is based on 14 questions common to all types of programs and a few additional questions specific to different types of programs.[11] Table x.14 shows the contents of checklist for the SABP.

Table x.14 Contents of Checklist for the SABP

Classification (% points, weight of rating)	Checklists
Design and planning (30)	• Program purpose • Rationale for government spending • Duplication with other programs • Efficiency of program design • Relevance of performance objectives and indicators • Relevance of performance targets
Management (20)	• Monitoring efforts • Obstacles of program implementation • Implementation as planned • Efficiency improvement or budget saving
Results and accountability (50)	• Independent program evaluation • Results • Satisfaction of citizens • Utilization of evaluation results

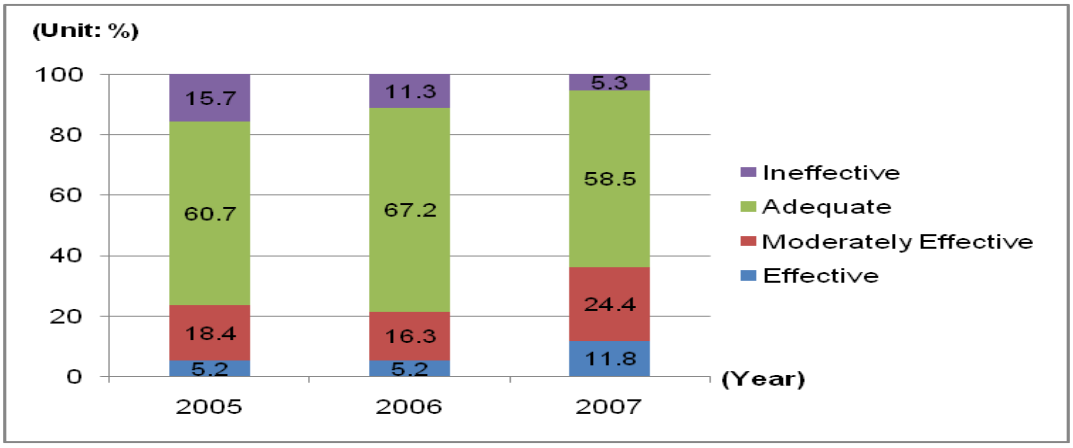
Source: Park (2008).

A pilot SABP for government-financed projects was introduced in 2005 with input from various ministries and experts, and a guideline for SABP was then distributed to each ministry. Each ministry was to execute a self-evaluation and submit the results to the MOSF within two

months. The evaluation took place within 40 departments of the relevant ministries for 555 projects budgeted at a total of KRW 35 trillion in project costs. While the MOSF reviewed the results, the relevant ministries were allowed to submit any questions or objections at two different intervals and these were reviewed again.

The results of the SABP for 2005–07 are shown in figure x.10. During the period, a total of 1,716 sub-programs were assessed for performance in fiscal years 2004, 2005, and 2006. The figure shows the distribution of the total scores across the programs. In 2005 the proportion of sub-programs in different departments in the ministries that were rated as ineffective was 15.7 percent, and 5.2 percent of the programs were rated as effective. The distribution of sub-program ratings did not change much between 2005 and 2006, but it improved in 2007. The proportion of ineffective programs dropped to 5 percent and that of effective sub-programs doubled. This change in sub-program ratings in 2007 is attributed to the improvement of sub-program performance and agencies learning from a couple of years' experience with SABP.

Figure x.10 Result of Self-Assessment of Budgetary Programs, 2005–07, % of total ratings



Source: Park (2008)

Table x.15 explains the linkage between SABP results and budget allocation in 2007. The programs rated as ineffective went through a 53 percent budget cut compared to the 2006 budget. The main reason for this linkage between SABP results and budget allocation is that MOSF encouraged ministries to make use of assessment results in their budget requests, announcing that a 10 percent of budget cut would be imposed on the programs rated as ineffective.

Table x.15 Linkage between SABP results and Budget Allocation, 2007, KRW, millions

	2006 Budget (A)	2007 Budget (B)	(B)-(A)	(B-A)/(A) (%)
Effective	889	887	-2	–0.2
Moderately Effective	3,316	3,565	249	7.5
Adequate	29,718	28,997	-721	–2.4
Ineffective	1,143	538	–605	–52.9
Total	**35,066**	**33,987**		

Source: Park (2008).

Program Evaluation System: In-Depth Evaluation Program

Under the current legal and administrative framework, two methods of performance evaluation of public infrastructure investment are available. One is performance evaluation as stipulated by the Enforcement Decree of Construction Technology Management Act. The other one is In-depth Evaluation of Budgetary Programs (IEBP) under the Performance Management System.[12] IEBP analyzes the different factors that at different stages contribute to the performance of a government program by using scientific and systematic techniques. The IEBP results are applied to improve and reform the system of operating programs.

The Enforcement Decree of the Act requires the spending agency to file a performance evaluation report for construction projects whose total costs are KRW 50 billion or more. In accordance with the Act, MLTM established "Guidelines for Performance Evaluations of Construction Projects," effective as of 2001. The guidelines outline the necessary details including the timing and methodologies for conducting performance evaluations required by government agencies. These guidelines suggest that the performance evaluations be based on the Design and Implementation Evaluation Report and the Project Completion Report, while comprehensively referring to all related materials including the (Pre-feasibility) Feasibility Study results.

Despite the stipulation of the Enforcement Decree of the Construction Technology Management Act that requires the spending agency to file a performance evaluation report within three years of completion, only a small number of performance evaluations were conducted until 2009. One reason is that there was no sanction against violation of the decrees, thus the spending agencies have no incentive to implement these self-evaluations. To draw lessons learned through the evaluation, it is necessary to find some problems during the implementation process of the project. The line ministry, which is supposed to coordinate the evaluation, did not take an active interest in this new system. The other reason for slow progress in performance evaluation is that no clear framework for evaluation had been established. A performance evaluation tracks whether a project or program achieves its objectives and secures the expected outcome. The basic questions to be determined are what and how to evaluate. However, many projects have no clear concept of performance to be achieved by public investment. For example, many road construction projects under the national highway system have been regarded as just "natural." It is not rare to find a statement of purpose for a road construction project that requires more than hundreds of billions

of KWS written in a single line: "To relieve traffic congestion!" Since the basic concept of performance evaluations is to assess whether a project or a program achieves its objectives, unless there is a clear target for a project or a program, any assessment is going to be difficult.

Under IEBP, from 2005 to 2009, a total of 45 programs were evaluated, initiated, and controlled by the MOSF team. With a wide coverage of areas for IEBP programs, the MOSF seemingly tended to distribute the programs relatively evenly across line ministries. Budgetary size was not considered as an essential criterion, since half of the selected programs had an annual budget of less than KRW 100 billion. The period of program implementation varies from program to program; half of the programs had been in operation from four to ten years before being evaluated. Although, in principle, IEBP was established for a single program, eight programs containing three or more unit programs had been evaluated.

IEBP still has a lot of trouble with implementing and feeding back results. Since the availability of its database was strictly limited, only 20 percent of the evaluation studies were subject to empirical analysis. Data for evaluation analysis often does not exist, and even when it does, government officials in line ministries and agencies have given little attention to it. The selection process for each IEBP has sometimes proved to be a tricky process, since different purposes and approaches were taken by the MOSF and line ministries.

Lessons Learned and Challenges Ahead

The period after the economic crisis in 1997 witnessed many reform efforts intended to enhance efficiency and transparency in developing and managing public infrastructure investment programs in Korea. The MOSF has played a leading role in implementing an effective appraisal and evaluation system, tightening the expenditure monitoring of total project cost, and introducing a new budgeting system called the Medium Term Expenditure Framework (MTEF). In the past, line ministries had ownership of the feasibility study process, while the finance ministry used it to cut project budgets, although not always on a reasonable basis. With the reforms, MOSF now makes the final decision on the project appraisal and determines the budget for it, while the line ministries are responsible for identifying, designing, prioritizing, and forecasting the effects of the project. MOSF established a separate PIM Department responsible for the PIM reforms of PFS, TPCM, and RSF, and these systems now mitigate information asymmetry between the finance ministry and line ministries and lead to better decision-making.

The preliminary feasibility study (PFS), begun in 1999 and independently conducted mainly by the PIMAC at KDI, seems to have been successful in handling the pass-or-fail hurdle of the project selection process. An independent review of PFS by PIMAC used some help from policy analysts to make judgments on project desirability, and their judgments were respected in most Government decision-making. If policy analysis played merely a symbolic role and politicians and bureaucrats had disincentives to use this policy analysis, such an independent judgment could not be made.

The total project cost management system (TPCM), strengthened after the crisis, appears to be working satisfactorily by limiting the frequency and amount of TPC increases in line ministries. A reassessment study of feasibility (RSF) has been introduced as an innovative tool to control the total project cost limit in the middle of TPCM, although there have been a few projects cancelled by RSF. However, the introduction of the performance monitoring and evaluation system is still lagging behind in Korea. A greater emphasis on program evaluation is needed. Once the Government adopts a performance orientation, it can then encourage a greater use of performance contracts.

Initiation of PFS in 1999 was a first step in the reform of PIM system in Korea, which gave the Government the impetus to produce an effective sequencing of reforms in parallel with the project cycles, with RSF and RDF coming later, and then implementing performance evaluation last. In order to improve the objectivity of the evaluation and secure consistency among projects, standard evaluation and decision-making guidelines and manuals have been developed and published by the MOSF and PIMAC. Sector guidelines and manuals in line ministries apply the same methodology and use the same or similar datasets for different projects in the same sector.

The new PIM process and its capital budgeting has rooms for improvement. The capacity for planning and prioritizing public investment programs in line ministries should be enhanced. The planning and budget divisions of individual line ministries should play a greater role in the coordination of ministerial policies and budget requests, unlike in previous years when they would simply compile budget requests from program divisions and send them to the MOSF with little modification. The role of the MOSF should be changed as well. As a central coordinator of government policies, the MOSF should strengthen its capacity for policy analysis and long-term forecasts. It should put less stress on input control and pay more attention to outputs and outcomes.

Notes

1. Other social insurance programs—Industrial Accident Insurance (1964), National Pension (1988), and Employment Insurance (1995)—were introduced and expanded in a similar fashion, but their impact on total spending has been rather limited until recently.
2. [1] Examples include the West Coast Expressway, Seoul-Busan High-speed Railroad, and Incheon International Airport. Even though such infrastructure investment takes the lion's share of the spending on economic affairs, it should be noted that the latter also includes subsidies to producers (farmers, small and medium-sized enterprises, and so on) and other, possibly unproductive, spending.
3. [1] von Hagen and Harden (1996) described two approaches to budgeting. Under *a target-based approach*, the Government collectively negotiates a set of binding numerical targets for the budget. The budget process starts with negotiations among concerned parties over binding limits on the spending total or budget deficits. Once these limits have been agreed upon, they must be observed during the remainder of the budget process. On the other hand, under a *strategic dominance-based approach*, the budget process vests the budget authorities with special strategic powers.
4. [1] In front-loading exercises, the MOSF would allocate more funds than usual to the first half of the year and urge line ministries to spend the allocated funds as early as possible. When necessary, that is, when growth is slower than expected despite front-loading, the MOSF would consider introducing supplementary funds in the latter half of the year.
5. [5]Potter and Diamond (1999), Schiavo-Campo and Tommasi (1999), and World Bank (1998) provide a useful guide on the reform in this direction.
6. [1] Ceilings are set for 14 spending areas, such as social infrastructure, agriculture, education, and environment, then disaggregated into 56 programs; for example, social infrastructure has seven programs, including roads, railways, subways, ports, airports, housing, and water resources. Separate ceilings are also set within each program for the general account and various special accounts and funds.
7. \The former body of MPB was the Board of Planning and Budget, which merged with the Office of National Budget to create MPB in May 1999. Subsequently merging with the Ministry of Finance and Economy, the MPB became the MOSF in 2008.
8. In January 2005 the Government of Korea passed an amendment to the 1999 Act on Private Participation in Infrastructure establishing the Public and Private Infrastructure Investment Management Center (PIMAC) as a new unit. PIMAC is a merger between Private Infrastructure Investment Center of Korea (PICKO) of Korea Research Institute for Human Settlements established in 1999 and PIMA of KDI.
9. The hierarchy of the legal framework in Korea is as follows: Constitution–Act–Enforcement Decrees–Ministerial Ordinance.
10. In Korea, programs with small and recurrent costs are designated as "basic programs," after negotiation between line ministries and the MOSF. Others are designated as "major programs."
11. Types of programs are infrastructure investment, procurement of large-scale facilities and equipment, provision of direct services, capital injection, subsidies to private entities, grants to local governments, and R&D.

12. As was pointed out, Korea introduced the three-tier system for performance management and evaluation of budgetary programs: performance monitoring, program review, and program evaluation. IEBP is a core part of program evaluation.

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