Knowledge Sharing Program

2017/18 Knowledge Sharing Program with Indonesia (III):

Improving Efficiency and Effectivity of Infrastructure Spending by Enhancing Public Investment Management

Ministry of Economy and Finance

KDI Korea Development Institute

2017/18 Knowledge Sharing Program with Indonesia (III)

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Preface

Knowledge is a vital ingredient that determines a nation's economic growth and social development. Its true value was brought to light by the advent of the knowledge economy and a key question policymakers now face, especially in developing countries, is how an environment can be established that encourages and facilitates the creation and dissemination of knowledge across the nation. This need has led many countries to engage themselves in active policy dialogue to share their development experiences and benefit from mutual learning.

Korea's development has also depended heavily on knowledge. Its remarkable transition from a predominantly agrarian economy to an industrialized country was made possible by its well-rounded and extensive understanding of technology, management, public policy, and other diverse issues acquired from domestic and foreign sources and through trial and error. Building on these rich experiences, the Korean Ministry of Economy and Finance (MOEF) launched the Knowledge Sharing Program (KSP) in 2004 to assist partner countries to improve their policymaking. KSP, as implemented by Korea Development Institute (KDI), focuses on providing solutions customized to each country's economic, social and administrative settings, building capacity for effective policymaking and strengthening global networks for development cooperation. In 2017/18, KSP policy consultations were organized with 31 partner countries, with Mekong River Commission joining the partnership for the first time.

The 2017/18 KSP with the Indonesia (III) was undertaken by the MOEF and the Ministry of Finance of Republic of Indonesiato support the formulation of the "Improving Efficiency and Effectivity of Infrastructure Spending by Enhancing Public Investment Management." To that end, the KDI research team and the Indonesian counterpart made a range of collaborative efforts by exchanging development experiences, conducting joint studies and designing a policy action plan in line with the country's development targets.

With that, it is with great optimism for the future of Indonesia that the results of the 2017/18 KSP are presented. I firmly believe that KSP will serve as a stepping stone to further elevate the mutual learning and economic cooperation between the two countries and hope it will contribute to Indonesia's sustainable development in the future.

I wish to convey my sincere gratitude to Senior Advisor Dr. Sung Jin Kim, Principal Investigator Prof. Ji Woong Yoon as well as project consultant Dr. Jung Wook Kim for their extensive contributions to the successful completion of the 2017/18 KSP with Indonesia. I am also grateful to Executive Director Dr. Youngsun Koh Project Manager Dr. Kyoung Doug Kwon, Project Officer Ms. Jinee Lee and all members of the Center for International Development for their hard work and dedication. Lastly, I extend my warmest thanks to the Ministry of Finance of Indonesia and related Indonesian agencies for their active cooperation and great support.

Jeong Pyo Choi
President
Korea Development Institute (KDI)

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Chapter 2

2017/18 KSP with Indonesia (III)

Jinee Lee (Project Officer, Korea Development Institute)

In spite of being the world's 10th largest economy, Indonesia needs to improve its infrastructure for sustainable development, based on The Global Competitiveness Index. Indonesia's Infrastructure ranked 52 out of total 137 countries (2016). The Indonesian government recognized this and put the policies regarding infrastructure development as its top priority and allocated approximately USD 22.9 billion of its budget toward it in 2016.[1)]

Furthermore, addressing infrastructure development, the Indonesian government spent its budget efficiently and development funding as an alternative solution for the backlog of funding, such as using the Public-Private-Partnership (PPP).

In this context, the Ministry of Finance submitted the demand survey form to tackle the above-mentioned issues for the Knowledge Sharing Program (KSP) partnership. The 2017/18 KSP between Indonesia and Korea was launched under the title "Improving efficiency and effectivity of infrastructure spending by enhancing public investment management." The specific sub-topics were as follows:

1) The World Bank (2017), Indonesia: Basing infrastructure investment on more solid ground.

〈Table 1〉 2017/18 KSP Consultation Team and Topics

Project Title: Improving Efficiency and Effectivity of Infrastructure Spending by Enhancing Public Investment Management
Senior Advisor: Dr. Sung Jin Kim (Former Head of the Public Procurement Service)
Project Manager: Dr. Kyoung Doug Kwon (Director, Division of Policy Consultation, CID, KDI)
Principal Investigator: Prof. Ji Woong Yoon (Kyung Hee University)

Sub-topics	Researchers
Improving Efficiency and Effectiveness of Infrastructure Spending by Enhancing Public Investment Management System in Indonesia	Dr. Jung Wook Kim (KDI) Ms. Soo Jung Kim (KDI)
Developing Monitoring and Evaluation System for Infrastructure Development Programs in Indonesia	Prof. Ji Woong Yoon (Kyung Hee University)

The Korean researchers and experts were advised by Senior Advisor Dr. Sung Jin Kim, former Head of Public Procurement Service, and were supported by Project Manager Dr. Kyoung Doug Kwon, Director of the Division of Policy Consultation, CID, KDI.

During the first stage of the 2017/18 KSP with Indonesia, the Korean delegation headed by Dr. Sung Jin Kim visited Jakarta for the KSP Launching Seminar and High-Level Meeting from February 18 to 22 in 2018. The launching seminar was conducted on February 19 at MOF and was attended by representatives of the Indonesian government. Presentations were made concerning the current situation of Indonesia's Infrastructure budget planning and Korea's PPP policy and process. The Korean delegation had a meeting with Marwanto Harjowiryono, MOF, to identify high-level policy demands and requests for KSP. In addition, Korean researchers identified the local infrastructure spending and public investment management system through in-depth interviews with relevant agencies such as the Ministry of Finance, BAPPENAS, PTSMI (PT SARANA Multi Infrastruktur), PWC and the Coordinating Ministry of Economic Affairs. Lastly, local consultants with high levels of expertise in relevant fields were selected to conduct joint research throughout the project.

During the second stage, the Korean delegation, headed by Prof. Ji Woong Yoon, visited Jakarta from April 23 to 26, 2018, for an in-depth study of local circumstances in regards to the research topic. On the day of their arrival, the delegation met with local consultants to discuss the details of the research and to clarify specific responsibilities stipulated in the terms of reference (ToR) with local consultants. Over the following days, the Korean delegation conducted interviews with relevant government and private organizations. The Korean delegation reviewed the current

situation and policy priorities. In addition, the researchers interviewed relevant government departments to hear about the opinions and policies of the current situation. For the KSP Policy Seminar, the local consultants presented the local circumstances, and the Korean experts gave feedback.

During the third stage, the Indonesian delegation headed by Ms. Wiwing Handayaningsih, the director of the Treasury System, the Ministry of Finance (MOF), visited Korea from July 15 to 20, 2018. A total of six representatives visited and attended lectures from the Department of Treasury System, Budget Execution and Research and Development and Institutional Cooperation, the Ministry of Finance. During the Interim Reporting Seminar held on July 16, the Korean researchers and their Indonesian counterparts presented their interim research findings to share views and exchange feedback on consolidating their KSP research. In addition, the Indonesian delegation attended lectures, made site visits such as to the Seoul Belt Highway Corporation, Incheon Bridge and Korea Development Bank, and met with the Korea Public Finance Information Service and Ministry of Economy and Finance.

For the final wrap-up, the Final Reporting Workshop and Senior Policy dialogue was held in Jakarta, Indonesia from August 19 to 23, 2018. The Senior Policy dialogue and The Final Reporting Workshop was initiated with the opening remarks from Dr. Kyoung Doug Kwon, followed by the remarks in reply from Mr. Rudy Widodo, Director of State Cash Management, and Ministry of Finance. The Final Reporting Workshop was attended by around 150 participants, including government representatives from Ministry of Finance and other related ministries. The workshop presented final research findings of Korean and Indonesian experts, who received feedback on the research from local consultants, policy practitioners, and other relevant stakeholders. Moreover, KDI interviewed policy practitioners and local consultants to evaluate the whole process from the planning stage to the project's output for the end-of-project evaluation. Based upon trust and commitment, each phase of 2017/18 KSP with Indonesia was successfully completed.

During the project, KSP focused policy consultations on one thematic area, and this change positively contributed to more in-depth and sector-specific studies and intimately connected policy recommendations among the three sub-topics. KDI hopes that the policy recommendations provided by this project contribute to enhancing the infrastructure spending and public investment management system in Indonesia in the mid- to long-term. To this end, KDI is grateful for the kind cooperation from MOF for the facilitation of this project.

Executive Summary

Ji Woong Yoon (Kyung Hee University)

1. Improving Efficiency and Effectiveness of Infrastructure Spending by Enhancing Public Investment Management System in Indonesia

In line with the "Indonesia Mid- and Long-term Economic Development Basic Plan (MP3EI)", the Indonesian government has implemented related policies to expand infrastructure investment in economic infrastructure, for example, roads, electricity, and energy, order to boost economic growth, to reduce regional disparities, and to improve global competitiveness. However, given the budget constraints and infrastructure gaps in the country, the revitalization of public-private partnership (PPPs) projects has been recognized as an alternative option to deliver an adequate level of infrastructure by inviting resources and expertise from the private sector. The necessity of strengthening the management and evaluation of fiscal expenditures in the infrastructure sector has been raised at the same time.

Under these circumstances, this study is expected to tackle issues such as infrastructure supply and demand, prioritization of infrastructure projects, and key infrastructure projects in Indonesia. Along with that, this research provides policy recommendations on budget allocations and management on the infrastructure, as well as the selection of financing methods among various resources on a specific project by sharing institutional arrangements with Korea. The policy recommendations are as follows:

First, it is necessary to enhance the role of the budget ministry on the selection of projects and their type of financing. Recently, the Indonesian government set a target to expand infrastructure by increasing its budget on the infrastructure sector to boost economic growth, as well as to reduce regional disparities in the country. However, the role of the budget ministry is relatively limited during the project development process at the ex-ante and ex-post level, since there are a wide range of stakeholders on the project implementation, including role of KPPIP for selection of priority targets of infrastructure and BAPPENAS as a planning agency.

On the other hand, Korea has a centralized budget system, whereby most of the budgeting and planning functions are given to the budget ministry, the Ministry of Economy and Finance. For example, in order to provide budgetary information, PFS is conducted to prioritize large scale infrastructure projects under the supervision of MOEF, and the type of financing is reviewed at the ex-ante level.

Granting too much authority to a single ministry may cause difficulties in coordination among relevant ministries, but the unified management on prioritization and financing methods on a project may lead to improved monitoring and evaluation systems on project implementation. From this perspective, for example, based on the analysis of project, if the project is viable and bankable, the budget ministry may consider financing options either through government-finance with a mixture of central and local budgets or PPPs. On the other hand, if the project is viable but not bankable, the projects need to be implemented by SOEs, local governments, or by inviting the private sector. In this regard, the role of the budget ministry should be expanded in order to apply unified criteria for prioritizing projects and determining the type of financing.

Second, strict and rigorous economic analysis is a key component to objectively and transparently selecting a project. Institutional arrangements, including the legal system, should be conduct strict economic analysis for the budgetary decision making process. Since the introduction of new frameworks for project assessment is quite a big issue among various stakeholders, it is recommended to conduct pilot studies on the actual infrastructure investment project, as well as to provide capacity building programs for officials in relevant ministries. To do so, reference studies and developing a database would be an important process. During this process, working with BAPPENAS would be advisable in developing analytical tools and conducting assessments, given its expertise in project planning and development.

The need for solid economic analysis is not limited to a specific infrastructure project but should be applied to a grand infrastructure plan such as National Infrastructure Plan. The collection of nation-wide projects should be selected based upon rigorous economic analysis, which addresses the economic impact on the

national economy, along with consideration of the economic development phase in the targeted region. As large scaled projects incur huge costs in implementation, feasible and viable financing vehicles should be examined in a clear way.

Lastly, there is a wide spectrum for financing infrastructure from pure, public-financed projects to private infrastructure. PPP projects and SOE invested projects can contribute in infrastructure implementation, while, from a financial aspect, it is necessary to assess Bankability and Viability of a project. When a project is bankable and viable both in economic and financial aspects, PPP can work as a good implementation method.

In the long term, tax reform or the establishment of special accounts for infrastructure could be considered. Sustainable resources are needed for infrastructure implementation, which requires more revenue with tax reform, especially when budget allocation toward more infrastructure expenditure by decreasing spending in other sectors is not feasible. A special or earmarked tax can be utilized to establish special accounts for infrastructure financing.

2. Developing Monitoring and Evaluation System's for Infrastructure Development Programs in Indonesia

Indonesia is an archipelago country that consists of 17,504 islands and a population of around 258.7 million people, 58% of which lives in Java Island. As an archipelago country, issues in infrastructure and connectivity are significant in reducing logistic costs and stimulating all regions to grow. However, although the Indonesian economy has been continuously growing, and the GDP of Indonesia has reach US $1 trillion in 2018, the level of infrastructure is still too low to meet the demand. For example, the seaport in Tanjung Priok has a dwelling time that currently takes up to 7 days, which is longer than Thailand (5 days) and Singapore (1.2 days).

Hence, by setting the National Medium-Term Development Plan 2015–2019, the government of Indonesia plans to enhance the infrastructure investment to improve inter-island connectivity and at within the island, which will have a direct impact on reducing logistics costs in Indonesia, so as to be able to compete in the global economy. In addition, the government has enacted various reforms to accelerate infrastructure provisions, especially in the fiscal, institutional, and regulation areas. These include setting up organizations, such as KPPIP and LMAN, changing laws for fostering private-public partnership (PPP) investment, tax-incentives, and land acquisition.

Due to these efforts, the level of infrastructure investment has improved to some extent. However, the level of investment progress is still not meeting the planned and expected schedule. Note that the overall ranking of the Logistic Performance Index (LPI) by the World Bank in 2018 showed that Indonesia is below Malaysia, Singapore, and Thailand in all dimensions of key criteria, such as international shipments, tracking and tracing, and timelines.

In this regard, this study identifies the issues and provides policy suggestions that can improve the monitoring and evaluation system of the government investment, which is crucial for increasing the efficiency and effectiveness of such investments. In particular, four issues are identified and policy directions are suggested for each issue, based on the benchmarking of the Korean government's experiences.

First, in order to foster sustainable infrastructure investment, there needs to be an integrated and strong legislation for monitoring and evaluation system. Note that the Indonesian government has been making efforts to set up a sound institution for infrastructure investment throughout the years. In particular, the Indonesian government has been running a monitoring and evaluation system, with BAPPANAS conducting planning and the Ministry of Finance taking care of implementation and performance management. However, the process and system of monitoring and evaluation were not managed in an integrated manner, and the indicators were not clearly set up.

To overcome this issue, the Indonesian government considered establishing a law called "The basic initiative for monitoring and evaluation for fiscal investment," which includes the articles specifying the criteria and process of monitoring and evaluation of the government's fiscal infrastructure investment. The monitoring and evaluation scope should include an ex-anti planning stage, as well as implementation, performance, and feedback stages. Note that the Korean government experienced a hard time managing fiscal investment schedule in the early stages of its economic development. In order to overcome this difficulty, the Korean government set up a monitoring and evaluation system for all stages through the "National Finance Act" and "Act on the Management of Public Institutions". In these acts, the scope of monitoring and evaluation includes ex-ante and ex-post stages of public investment.

Secondly, an effective M&E coordination mechanism among the ministries and governments must be operated. In particular, there has to be a mechanism in the monitoring and evaluation system for coordination, not just between the central government ministries, but also between the central government and the provincial or local governments. Indonesia is a country that has a very distributed authority system. In other words, the local governments have strong autonomy, where the central government cannot arbitrarily make decisions on infrastructure investment

issues related with provincial or local governments. This has pros and cons. One of the pros is that local properties are protected by the local government's authority, while one con that the central government sometime cannot achieve a certain level of infrastructure investment without the consent of the local government.

One way to overcome this issue is to make a M&E coordination planning process in which all the stakeholders participate in the process of the infrastructure investment project. The local representatives initially participate in the ex-ante feasibility study stage and monitor the project implementation through all the stages. For example, in Korea, the PFS, an ex-ante evaluation method, requires submission of a list of stakeholders participating in planning the project report. In this project planning committee, various types of stakeholders participate in the committee.

Thirdly, developing a training program for establishing and operating a M&E system is necessary. Note that human resources specialized in the M&E system can provide solid planning and feasibility studies for infrastructure investment projects that will be pursued by the Indonesian government. To do so, there needs to be government-wide support for training and educating Indonesian government officials and experts to get the expertise for developing and operating M&E systems in Indonesia.

In Korea, there were decades of efforts to acquire expertise in the M&E the government investment programs. For example, In January 1977, a new department dedicated to developing an investment review system was created within the Economic Planning Bureau (EPB), and, in the mid-90s, the Planning and Budget Committee of the Korean government established the Public and Private Infrastructure Investment Management Center (PIMAC), a specialized agency, at the Korea Development Institute (KDI).

Fourth, making an effective M&E tools and system for financial investment project is crucial. Note that the Indonesian government needs more financial resources for sufficient infrastructure investment. The Indonesian government has been using various channels and methods, such as PPP, for investments. However, there were less systematic tools for monitoring and evaluating the investment projects, including PPP projects, for efficient and effective investments Indonesia.

In Korea, the Ministry of Strategy and Finance entrusted KDI to conduct M&E for all fiscal investments, including PPP projects. To do so, KDI developed M&E tools and methods to efficiently and effectively conduct its role. Benchmarking this case, it may be crucial for the Indonesian government to develop an Indonesian version of M&E tools for infrastructure investment to efficiently and effectively use financial resources.

2017/18 Knowledge Sharing Program with Indonesia (III):
Improving Efficiency and Effectivity of Infrastructure
Spending by Enhancing Public Investment Management

Chapter 1

Improving Efficiency and Effectiveness of Infrastructure Spending by Enhancing Public Investment Management System in Indonesia

Improving Efficiency and Effectiveness of Infrastructure Spending by Enhancing Public Investment Management System in Indonesia

Jungwook Kim (Korea Development Institute)
Soojung Kim (Korea Development Institute)
Wahyu Indrawan (Ministry of Finance, Indonesia)
Eko Agus Rianto (Ministry of Finance, Indonesia)

Summary

In line with the "Indonesia Mid- and Long-term Economic Development Basic Plan (MP3EI)", the Indonesian government has implemented related policies to expand infrastructure investment in economic infrastructure, for example, roads, electricity, and energy, in order to boost economic growth, to reduce regional disparities, and to improve global competitiveness. However, given the budget constraints and infrastructure gaps in the country, the revitalization of public-private partnership (PPPs) project has been recognized as an alternative option to deliver an adequate level of infrastructure by inviting resources and expertise from the private sector. The necessity of strengthening the management and evaluation of fiscal expenditure in the infrastructure sector has been raised at the same time.

Under these circumstances, this study is expected to tackle issues such as infrastructure supply and demand, prioritization of infrastructure projects, and key infrastructure projects in Indonesia. Along with that, this research provides policy recommendations on budget allocation and management on infrastructure, as well as selection of financing methods among various resources on a specific project by sharing institutional arrangements with Korea. The policy recommendations are as follows:

Keywords: Public Investment Management, Infrastructure Investment, PPP, Investment Resources, Transportation Facility

First, it is necessary to enhance the role of the budget ministry on the selection of projects and their type of financing. Recently, the Indonesian government set a target to expand infrastructure by increasing its budget on the infrastructure sector to boost economic growth, as well as to reduce regional disparities in the country. Given the budget constraints and infrastructure gaps in the country, however, improving efficiency and effectiveness of infrastructure spending are recognized as key issues for the budget ministry, and in order to make infrastructure spending more effective, one of the options for the ministry is to enhance the monitoring and evaluation system on infrastructure investment projects in Indonesia. However, the role of the budget ministry is relatively limited during the project development process at the ex-ante and ex-post level, since there are a wide range of stakeholders on the project implementation, including the role of KPPIP for selection of priority targets of infrastructure and BAPPENAS as a planning agency. For example, the Ministry of Finance and the National Development Planning Agency (BAPPENAS) have co-authority in formulating the Resource Envelope as funding of the Government Action Plan. However, in terms of determining financing schemes (whether using State Budget, PPP or using loans) for a specific project, the authority is given to BAPPENAS and Line Ministries in most cases.

On the other hand, Korea has a centralized budget system, whereby the most budgeting and planning functions are given to the budget ministry, the Ministry of Economy and Finance. For example, in order to provide budgetary information, PFS is conducted to prioritize large scale infrastructure projects under the supervision of MOEF, and the type of financing is reviewed at the ex-ante level. Granting too much authority to a single ministry may cause difficulties in coordination among relevant ministries, but unified management on the prioritization and financing method of a project may lead to improved monitoring and evaluation systems on project implementation. From this perspective, the budget ministry needs to be central to select the project, as well as to determine the type of financing. For example, based on the analysis of a project, if the project is viable and bankable, the budget ministry may consider financing options either through government-financing with a mixture of central and local budget or PPPs. On the other hand, if the project is viable but not bankable, the projects need to be implemented by SOEs, local governments, or by inviting the private sector. In this regard, the role of the budget ministry should be expanded in order to apply unified criteria for prioritizing projects and determining the type of financing.

Second, strict and rigorous economic analysis is a key component to objectively and transparently select a project. Institutional arrangements, including legal systems, should be preceded by strict economic analysis for the budgetary decision making process. Since the introduction of a new framework for project assessment is quite a big issue among various stakeholders, it is recommended to conduct pilot

studies on the actual infrastructure investment project, as well as to provide capacity building programs for officials in relevant ministries. After conducting several reference studies on the infrastructure project, it will be more evident which aspects should be supplemented or revised to review the project in a more strict way. For this effort, reference studies and developing a database would be an important process. During this process, working with BAPPENAS would be advisable in developing analytical tools and conducting assessments, given its expertise in project planning and development.

The need for solid economic analysis is not limited to a specific infrastructure project but should be applied to a grand infrastructure plan, such as the National Infrastructure Plan. First of all, a grand infrastructure plan aims to identify and prioritize among a collection of candidate projects and considers feasible financing solutions over the mid- to long term. This collection of projects should be selected based upon rigorous economic analysis, which addresses the economic impact to the national economy, along with consideration of the economic development phase in the targeted region. As large scaled projects incur huge cost in implementation, feasible and viable financing vehicles should be examined in a clear way.

Lastly, there is a wide spectrum for financing infrastructure from pure, public-financed projects to private infrastructure. PPP projects and SOE invested projects can contribute to infrastructure implementation, while, from a financial aspect, it is necessary to assess Bankability and Viability of a project. When a project is bankable and viable both in economic and financial aspects, PPP can work as a good implementation method. If a project is viable economically but not bankable, then SOE's participation and investment become attractive, or government support should be used to enhance the bankability of the relevant project. When the project is neither bankable nor viable but socially desirable, the government should implement the project with public budget allocations. Rigorous and objective assessment for a candidate project is essential in deciding the best financial solution.

To facilitate the financing procedure, high-level political willingness is considered desirable because line ministries prefer to receive a fixed amount of budget from the government. Thus, political willingness plays a role in leading a solid consensus on using a wide range of financing mechanisms for infrastructure.

In the long term, tax reform or the establishment of special accounts for infrastructure could be considered. Sustainable resources are needed for infrastructure implementation, which requires more revenue with tax reform, especially when budget allocation toward more infrastructure expenditure by decreasing spending in other sectors is not feasible. A special or earmarked tax can be utilized to establish special accounts for infrastructure financing. Of course, tax

reform or shifts in budget allocation should be preceded by elaborate and detailed consideration.

1. Introduction

The Indonesian government has established the "Indonesia Mid- and Long-term Economic Development Basic Plan (MP3EI)" and has invested 189.9 Rupiah in implementing related policies to expand infrastructure investment in roads, electricity, and energy. In line with the MP3EI, the Indonesian government has implemented related policies to expand infrastructure investment in economic infrastructure, such as roads, electricity, and energy in order to boost economic growth, to reduce regional disparities, and to improve global competitiveness. However, given the budget constraints and infrastructure gap in the country, the revitalization of public-private partnership (PPPs) projects has been recognized as an alternative option to deliver adequate level of infrastructure by inviting resources and expertise from the private sector. The necessity of strengthening the management and evaluation of fiscal expenditure in the infrastructure sector has been raised at the same time.

Against this backdrop, this study is expected to tackle the issues of infrastructure supply and demand, prioritization of the infrastructure projects, and implementing key infrastructure projects in Indonesia. Along with that, this research will provide policy recommendations on budget allocation and management on the infrastructure, as well as the selection of financing methods among various financing vehicles on a specific project by sharing institutional arrangements with Korea.

2. Infrastructure Expenditure in Indonesia

2.1. Overview of Current Infrastructure Budget

- Jokowi's administration focuses national budget on infrastructures, reallocating fuel subsidy to infrastructure spending

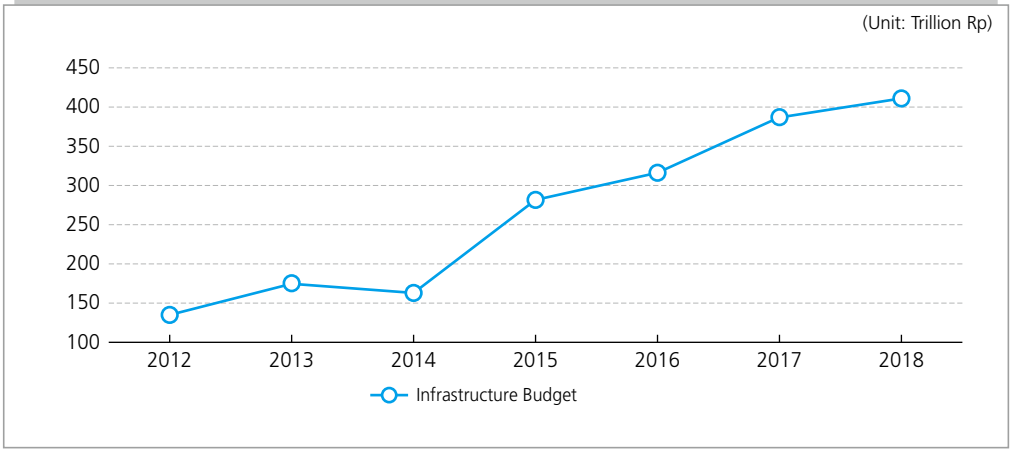
The Indonesian government, especially in Jokowi's administration (2014–2019), has focused its national budget on infrastructure expenditure in order to boost economic growth, to reduce regional disparities, and to improve global competitiveness. The government has an optimistic target in infrastructure development, and budget allocation for infrastructure has been multiplied since the budget year of 2015, when Indonesia started a fuel subsidy reform. The reform reallocated the fuel subsidy spending into a more effective form of spending, in particular infrastructure

spending. As a result, the infrastructure spending jumped in 2015 and kept increasing for the following years.

- Trend in infrastructure spending in last 5 years and outlook for 2018 and beyond

Budget expenditure with a focus on infrastructure can be clearly seen as having a positive upward trend for the last five years. Moreover, after Jokowi's administration took place in the end of 2014, there was a dramatic increase in infrastructure spending (almost doubling in 2015 at Rp 281.7 trillion compared to Rp 163.2 trillion in 2014). Afterward, infrastructure spending has maintained a positive trend. Detailed information can be seen in the line chart and table below.

[Figure 1-1] Infrastructure Trend and Outlook for 2018



Source: www.kemenkeu.go.id (accessed on May 28).

In addition, in the budget year of 2019, the government plans to set infrastructure as one out of five focuses in the Government's 2019 Annual Development Plan. Budget allocation on infrastructure in 2019 is expected to reduce regional disparities by enhancing connectivity and the maritime sector (Minister of Planning 2018). However, the exact amount of infrastructure spending is still being finalized by the government and will be proposed to the House of Representatives.

- Structure of current infrastructure spending

Starting from budget year 2015, infrastructure spending has become a specific sub-chapter in Indonesia's Financial Note for the State Budget. For the record, before budget year 2015, infrastructure spending was comprehensively discussed in each Line Ministry's allocation. The current structure of infrastructure spending can be

classified into three groups of spending: (i) economic infrastructure spending; (ii) social infrastructure spending; and (iii) infrastructure support spending.

The first group of infrastructure spending, which is classified as economic infrastructure spending, in Indonesian State Budget consists of Line Ministry spending, non-line ministry spending, regional transfer spending, and financing schemes. Line Ministry spending indicates infrastructure spending that is disbursed by the Line Ministries. Those ministries have authorities and obligations to provide basic infrastructure for the society, such as, public road, mass transportation, dams, irrigation, and water treatment services. In contrast, non-line ministry spending refers to infrastructure spending that is not allocated to any specific Line Ministries. Instead, the spending itself is allocated to the State Treasurer Unit under the control of the Minister of Finance. This spending includes the Viability Gap Fund (including reserve for this fund) for enhancing financial viability of PPP Projects and grants for infrastructure. Furthermore, regional transfer spending is classified as specific allocation for provincial or municipal government in order to reduce regional disparities and/or to fund some government affairs that have been decentralized or delegated to the regional government. Meanwhile, financing schemes by accounting definition are more properly classified as below-the-line items, since they do not fit the criteria for budget expenditures. Financing schemes are more likely part of the government's investment. So, infrastructure financing schemes are mostly observed as capital injection from the government, either for State Owned Enterprises (SOEs) in the infrastructure sector or Public Service Agencies, so-called LMAN (State Asset Management Unit), that are in charge of land procurement for national strategic infrastructure projects.

On the other hand, in terms of amount, economic infrastructures outnumber other infrastructure categories in the budget year of 2018. It reaches Rp 396.5 trillion, 96.6% of total infrastructure spending. Further, most economic infrastructure spending is allocated to regional transfer spending and line ministries spending. For instance, in 2018, regional transfer spending (including general allocative fund, projected village fund for infrastructures, and projected general transfer fund for infrastructure) are Rp 181.4 trillion or 45.7% of total economic infrastructure spending. Also, spending of line ministries received a significant amount of allocation in 2018. For instance, the Ministry of Public Works and Housing received Rp 104.7 trillion, and the Ministry of Transportation received Rp 44.2 trillion, While the Ministry of Agriculture, Ministry of Energy and Mineral Resources and the Ministry of Communication and Information shared around Rp 7 trillion. Moreover, as much as Rp 48.1 trillion in financing schemes were allocated to finance infrastructure delivery. Lastly, non-line ministry spending received Rp 3 trillion for infrastructure spending.

The second group of infrastructure spending, social infrastructure spending, is infrastructure spending that is allocated for providing social infrastructure, such as school buildings. This spending is disbursed by Ministry of Education and Culture for general public school and Ministry of Religion for religious-based public school. Allocation for these spending is almost Rp 9 trillion in budget year 2018 which can be disaggregated to Ministry of Education and Culture as much as Rp 5.7 trillion and to Ministry of Religion as much as Rp 2.9 trillion.

The last group of infrastructure spending is well-known as one for infrastructure support. Such spending basically does not link to the direct infrastructure development. Instead, it provides support or facilitates procedures to assure that infrastructure development is running well. For instance, allocation of infrastructure support in the Ministry of Agrarian and Spatial Planning is dedicated to provide a mechanism that ensures clean-and-clear land or areas for infrastructure development. More details in the structure of infrastructure spending are displayed in table below.

〈Table 1-1〉 Infrastructure Spending (2017–2018)

(Unit: Trillion Rp)

No	Description	2017 State Budget	2018 State Budget
I	Economic Infrastructures	377.8	396.5
1.	Spent by Line Ministries:	153,7	161.3
eg.	33. Ministry of Public Works and Public Housing	98.0	104.7
	22. Ministry of Transportation	42.1	44.2
	18. Ministry of Agriculture	2.7	1.0
	20. Ministry of Energy and Mineral Resources	3.6	3.1
	59. Ministry of Communication and Information	2.7	3.0
2.	Spent by Non-Line Ministry (Special Unit)	2.6	3.0
eg.	1. Viability Gap Fund (including reservation for VGF)	0.3	1.2
	2. Grant spending	2.2	1.4
3.	Spent by Transfer to Regional Government	183.7	181.4
eg.	1. Special Allocation Funds	32.3	33.9
	2. Special Otonomy Fund for Infrastructures in Papua and West Papua	3.4	1.4
	3. Projected Village Fund for Infrastructures	24.0	24.0

〈Table 1-1〉 Continued

(Unit: Numbers)

No	Description	2017 State Budget	2018 State Budget
	4. Projected General Transfer Fund for infrastructure	124.0	122.1
4.	**Spent through Financing scheme**	37.8	48.1
eg.	1. Liquidity facility	9.7	2.2
	2. Government guarantee for Coal-Generated Electricity Project	-	
	3. Government Capital Injection for SOEs	7.2	6.1
	4. Government Injection for LMAN	20.0	35.4
II	**Social infrastructure**	5.5	8.9
eg.	23. Ministry of Education and Culture	4.2	5.7
	25. Ministry of Religion	1.2	2.9
III	**Infrastructure Support**	4.1	5.0
eg.	56. Ministry of Agrarian Sector and Spatial Planning	0.1	2.8
	19. Ministry of Industry	0.6	0.2
	Total Amount	387.3	410.4

Source: Adapted from Financial Notes of State Budget for the Year 2018.

2.2. Infrastructure Supply and Demand

- **Need of infrastructure funding in Medium Term Development Plan for 2015–2019**

〈Table 1-2〉 Infrastructure Plan (2015–2019)

Category	Quantity
Road	2,650 Km new road 1,000 Km toll road 46,770 Km road maintenance
Air Connectivity	Construction of 15 new Airports Procurement of 20 Pioneer Aircraft Airport Development for Air Cargo service at 6 Location

〈Table 1-2〉 Continued

Category	Quantity
Sea Connectivity	Construction of 24 new Ports Procurement of 26 Pioneer Ships Procurement of 2 Livestock Ships Procurement of 500 units of People Vessels
Railway	3.258 km railway track in Java, Sumatra, Sulawesi and Kalimantan (2.159 km Inter City and 1.099 km Urban Train)
Water Resources	Construction of 49 New Dams and 33 Hydroelectric Power Plant Construction of 1 Million Ha Irrigation Network Rehabilitation of 3 Million Ha Irrigation Network
Housing	Development of 5.257 Twinblok Flats (for 515.711 households) Handling slum area 37.407 Ha Facilitation of housing loan for 2.5 Million low income households
Telecommunication	Broadband coverage in 100% municipal/city
Energy	35 GW power plant Construction of 2 oil refineries 2x300 thousand barrel

Source: https://bappenas.go.id/index.php/download_file/view/16611/4981/ (accessed on May 31, 2018).

As the above table indicates, the government of Indonesia set the infrastructure development plan and the government estimates for at least 5,519.4 trillion rupiah in order to meet the infrastructure targets indicated by above plan. This huge amount cannot be financed only by the central government budget. Therefore, the government expects that local governments, State Owned Enterprises (SOEs), and private sectors can also provide their contributions in funding infrastructures. Estimated funds for infrastructure are detailed in the table below.

〈Table 1-3〉 Estimated Fund for Infrastructure Plan

(Unit: Trillion Rp)

Sector	Central Government Budget (APBN)	Local Government Budget (APBD)	SOE	Private and third Party	Total
Road	340.0	200.0	65.0	200.0	805.0
Railway	150.0	-	11.0	122.0	283.0
Sea Connectivity	498.0	-	238.2	163.8	900.0
Air Connectivity	85.0	5.0	50.0	25.0	165.0

〈Table 1-3〉 Continued

(Unit: Trillion Rp)

Sector	Central Government Budget (APBN)	Local Government Budget (APBD)	SOE	Private and third Party	Total
Bus and Ferry Transportation	50.0	-	10.0	-	60.0
Urban Transportation	90.0	15.0	5.0	5.0	115.0
Power Plant	100.0	-	445.0	435.0	980.0
Energy (Oil and Gas)	3.6	-	151.5	351.5	506.6
Information and Communication Tech	12.5	15.3	27.0	223.0	277.8
Water Resources	275.5	68.0	7.0	50.0	400.5
Waste and Sewerage Installation	227.0	198.0	44.0	30.0	499.0
Housing	384.0	44.0	12.5	87.0	527.5
TOTAL Infrastructure	2,215.6	545.3	1,066.2	1,692.3	5,519.4
Percentage	40.14%	9.88%	19.32%	30.66%	100.00%

Source: https://bappenas.go.id/index.php/download_file/view/16611/4981/ (accessed on May 31, 2018).

- Limited state budget for infrastructure

Based on the Infrastructure Spending table indicated in subchapter 2.1, State Budget Spending for infrastructure during 2015–2018 reached 1.398,9 Trillion Rupiahs. There is a gap between estimated funds and infrastructure spending needs. Therefore, the Government has developed various policies to address relevant problems, such as:

– Increasing private roles and accelerating Public Private Partnership schemes in infrastructure development

– Promoting participation of SOEs in Strategic Infrastructure Projects and providing capital injection for those SOEs

– Providing Land Availability Guarantee for infrastructure projects financed or developed by private sectors or SOEs

- Complexities in developing infrastructure in Indonesia

Infrastructure development is prioritized to ensure availability of basic infrastructures for the society to improve welfare, to reduce logistic costs in distributing goods and services, and to increase national product competitiveness. For three years, in the implementation of the RPJMN (Medium Term National Development Plan) 2010–2014, the proportion of budget allocation for infrastructure to GDP continued to increase (from 3.4% in 2010 to 4.1% in 2012). Thus, it is expected that the number can account for at least 5% of GDP. Infrastructure development is also financed by the Public Private Partnership (PPP) scheme. The value of PPP investment in the RPJMN 2010–2014 is estimated at around Rp344.6 trillion.

Infrastructure development until 2012 faced problems, for instance:

1) Land acquisition for the projects had very complex procedures
2) Weak coordination and cross-sectoral synergy among institutions
3) Implementation of PPP scheme is not yet optimal, i.e. lack of capacity and commitment of the responsible unit of Project Cooperation (PJPK) in Line Ministries.

2.3. Current State of Infrastructure Development

- Recent infrastructure policy and prioritized infrastructure sector/projects

One of President Jokowi's top agendas in his administration is to improve citizens' productivity and competitiveness in the international market. In doing so, infrastructure development has become a theme for three years of the Government's Annual Development Plan (2015–2018) in order to achieve the following objectives:

1) to boost a better quality of economic growth;
2) to reduce regional disparities;
3) to provide a basic service for the society;
4) to boost improvement in connectivity, logistic distribution, transportation, and electricity.

With those objectives achieved, Indonesia is expected to improve its competitiveness and productivity, as well as to gain an efficient economy.

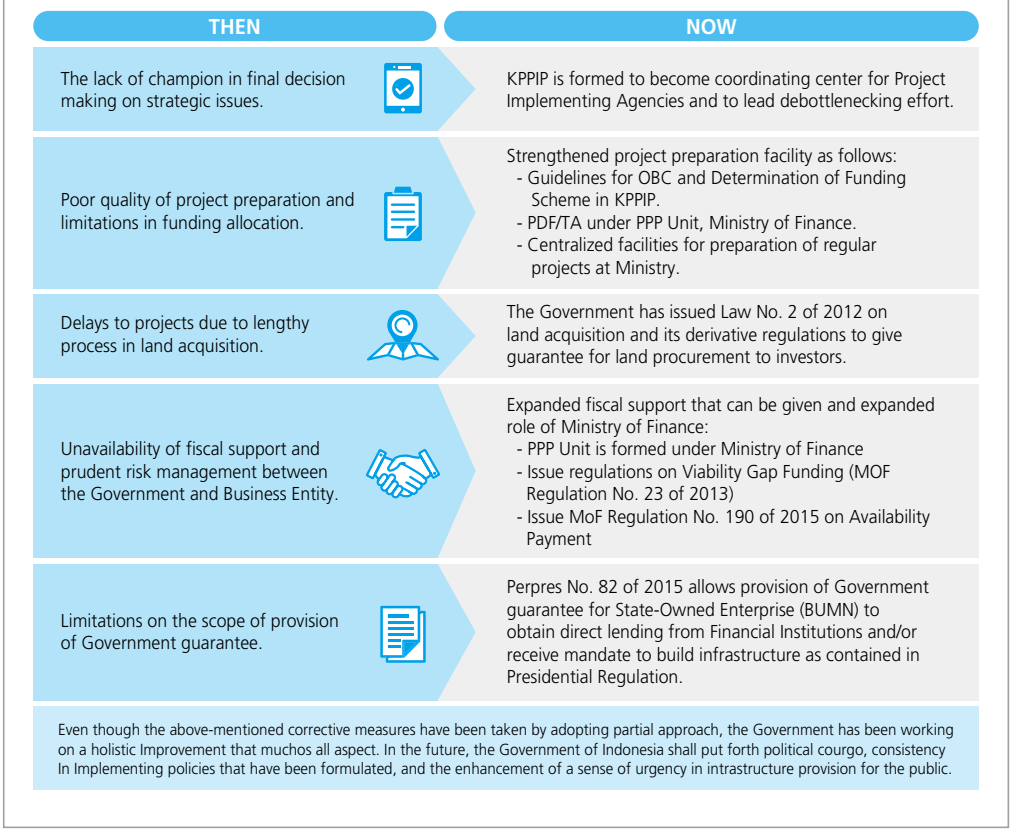
In Indonesia's Medium Term Development Plan 2015–2019, infrastructure development policy is focused on infrastructure and connectivity that:

1) accelerate development of multi-mode transportation system;
2) accelerate development of transportation for supporting domestic industry, national logistic system and national connectivity; so that, Indonesia can be a central for global maritime;
3) balance national-oriented transportation and local-based transportation;
4) develop an integrated transportation system and network to support investment in Economic Corridor, Special Industry Zone, Industrial Complex and other economic centers beyond economic corridor;
5) develop an eco-friendly infrastructure of transportation;
6) improve fair and professional customer-oriented services;
7) increase the capacity and quality of human resource units;
8) transform universal service obligations in the communication and information sector into broadband ready
9) boost broadband access development and broadband infrastructure in the border areas;
10) eliminate disparities in electricity demand and supply.

Moreover, the government has locus-based infrastructure development that focuses on less-developed regions, villages, border areas, and outer islands. Jokowi frequently emphasizes that current infrastructure development is no longer focusing on Java-centris; instead, it is targeted to Indonesia-centris.

However, the Government finds that there are several obstacles and challenges in developing infrastructures. Overcoming these obstacles, the Government has conducted a lot of improvements in regulatory, fiscal, and institutional aspects. These improvements that present an increasing support for the development of infrastructure in Indonesia are summarized below.

[Figure 1-2] Improvements Made by Government to Increase Support for the Infra Development



Source: https://kppip.go.id/en/about-kppip/progress-of-infrastructure-development-in-indonesia/ (accessed on May 31, 2018).

- Priority targets of infrastructure

The government realizes that demands for infrastructure are huge, but the financial resources are limited to fulfill all of the demands. In overcoming this challenge, the government has initiated mechanisms to prioritize infrastructure delivery considered to be strategic and have great urgency to be realized within a short period of time. The government has established the Committee for Acceleration of Priority Infrastructure Delivery (KPPIP), which is authorized to select the list of projects considered to be prioritized or strategic and have great urgency, as well as provide facilities for the convenience of project development.

Doing its authority, KPPIP develops different criteria as an assessment tool to analyze infrastructure project lists. According to Presidential Regulation Number 75 year 2014, there are five criteria for infrastructure project that can be designated as priority infrastructure projects:

1) Have an alignment to the National or Regional Medium Term Development Plan and strategic plan of infrastructure development;

2) Have an alignment to the Regional Spatial Plan;

3) Have a cross-sectoral and cross-regional linkage;

4) Have strategic roles for the economy, social welfare, as well as national defense and security;

5) Require government support and/or guarantee in providing for priority infrastructure projects using PPP scheme.

Further, KPPIP classifies three phases of project prioritization (source: KPPIP Semester I-2015 Report) in order to determine annual prioritized infrastructure projects from thousands infrastructure project proposals. In the first phase, KPPIP shortlists infrastructure project proposals under required following criteria:

1) Accordance to those five criteria;

2) Having total investment value more than Rp500 billion and less than Rp50 trillion;

3) Have excluded maintenance and procurement projects, as well as existing power plant projects.

The second phase is developing a scoring and ranking model on shortlisted projects that are examined by the first phase. This model assesses, evaluates, and ranks using following criteria that have been agreed by stakeholders:

1) Objective (s) of the project;

2) Ease level of project implementation, including identification of obstructing factors;

3) Socio-economic impacts, including contribution to GDP, GDRP and manpower utilization;

4) Project impacts on environment.

The last phase is discussion on the results from the second phase with stakeholders. Those stakeholders conduct in-depth discussions concerning issues, as shown below:

1) Diversity of project geographic locus, the projects should be spread among various islands in Indonesia;

2) Diversity of infrastructure project types;

3) Readiness level of the project implementation.

On the other hand, concerning Presidential Regulation Number 58 year 2017, KPPIP sets up three criteria to assess whether a project can be set as a national strategic project. Firstly, the basic criterion assesses the alignment of projects with the medium-term national development plan and spatial plan. Secondly, strategic criterion assesses whether the projects have a strategic impact on the economy and on social welfare, as well as on national security; whether they have links to other type of infrastructures or to inter-regions; and whether they balance development level in western areas and in eastern areas. Lastly, operational criterion evaluates more specific and administrative requirements, such as existence of pre-feasibility study and having a project value more than Rp 100 billion.

Based on these criteria, KPPIP proposes to the President a list of strategic projects that have been evaluated from project lists in the Medium Term Development Plan. Until now, according to Presidential Regulation No. 58 of 2017 concerning on Amendment to Presidential Regulation No. 3 of 2016 concerning Acceleration of National Strategic Projects Implementation, there have been 245 National Strategic Projects, (PSN) plus 2 programs (electricity and airplane industry). These projects are estimated to finance resources around Rp 4,197 trillion, which is expected to be financed using the State Budget Rp 525 trillion, employed State-owned Enterprises (national or regional) Rp 1,258 trillion, and funded by Private Sector Rp 2,414 trillion (summary of the projects and their location are illustrated below).

[Figure 1-3] National Strategic Projects

Source: https://kppip.go.id/en/national-strategic-projects/ (accessed on May 31, 2018).

- Government's efforts to bring in new sources of financing for infrastructure

As previously described, the financial resources for National Strategic Infrastructure Projects are very enormous. Further, the government is not only responsible for strategic and/or priority projects, but also for basic infrastructures and "non-strategic" projects, such as preserving and maintaining existing infrastructures. Therefore, infrastructure requires much more money. Regarding limited resources for public funding in the State Budget, infrastructure development should be supported not only by the central Government, but also by other parties, such as regional governments, State-Owned Enterprises, and the private sector.

The government has introduced at least four different financing schemes for infrastructure development and delivery. The first scheme is increasing budget allocation for Line Ministries, which have authorities in infrastructure development or support. Currently, sources of allocation for infrastructure development in Line Ministries are classified as general funds from tax, foreign loans and grants, and project-based sukuk (Islamic bonds). Islamic bonds are a relatively new financing scheme in Indonesia. They were introduced in 2008 and, since then, have become one of the financing schemes for infrastructure development in Indonesia. In

2018, project-based sukuk provided Rp 22.53 trillion for financing economic and social infrastructure, such as road maintenance or road widening projects. Second, increasing the role of regional governments in infrastructure provision is proposed by adopting regulation that earmarks general transfer fund for infrastructures.

Third, the government provides capital injection for State-Owned Enterprises that construct infrastructures and the Public Service Agency, which supports land procurement. For instance, in 2016, the Government allocated more than Rp50 trillion as a type of capital injection for SOEs and Rp 16 trillion for LMAN (Public Service Agency assigned for Land Acquisition). Most of these SOEs involve or support infrastructure development, such as PT PLN (Power Generator Enterprise), PT Jasa Marga (Highway Corporation), PT Hutama Karya (Constructing Company), and the Indonesia Infrastructure Guarantee Fund.

Lastly, the government supports creative financing for infrastructure that involves the private sector or non-budget funds. This scheme encourages State Budgets as the last resource for infrastructure development. Therefore, the government promotes various schemes to involve the private sector in developing infrastructures. The government not only supports Public Private Partnership (PPP) schemes, but also introduced a new scheme, the so-called Non-Government Budget Equity Financing or "Pembiayaan Investasi Non Anggaran Pemerintah (PINA)".

Concerning PPP, the government has provided various fiscal measures and policies to support and to facilitate PPP projects. Firstly, the government provides Viability Gap Fund (VGF) in State Budget for an infrastructure project financed by PPP to increase financial viability, to improve certainty in project procurement, and to provide an affordable fare for the society as a user. An example of VGF implementation is provided for the PPP water supply project SPAM Umbulan in East Java. This project is valued USD 140.7 million and began construction in 2017.

Secondly, starting in 2015, the government has introduced availability payment schemes, periodic payment, which is made by the Line Ministries to the business entity for the availability of infrastructure, that satisfies the quality and criteria set in PPP contracts. This scheme is expected to increase project feasibility to stimulate investors' interest. It has been applied in fiber optic based broadband telecommunication, Palapa Ring (West, Central and East Packages). The total estimated project cost for these projects is USD 545.6 million. These projects will have been commercially operated in 2018. Moreover, availability payment has also been introduced as part of financing the scheme in the projected State Budget for the year 2019.

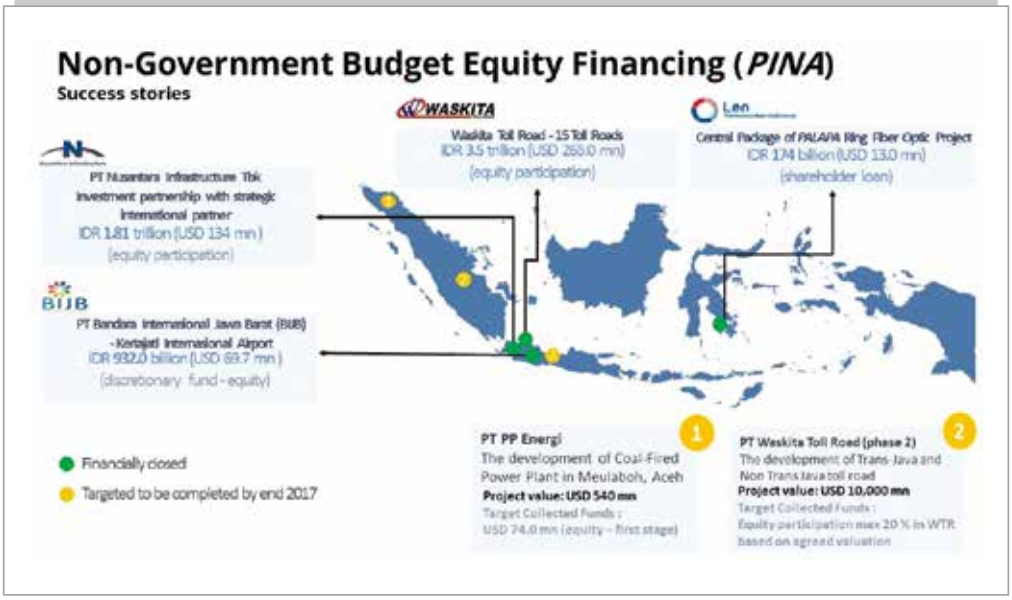
Thirdly, the government currently provides a government guarantee not only for PPP project, but also for projects receiving direct lending from international financial institutions and projects assigned to State-Owned Enterprises (SOE) under Presidential Regulations or SOEs that are completely owned by the government.

Fourthly, the government provides technical support and funding, which is called the Project Development Fund, to address unavailability of expertise and special funding as required for high quality project preparation needed for the success of PPP projects.

Lastly, the government enhances roles of PT Sarana Multi Infrastruktur (PT SMI), special SOEs of the Ministry of Finance that are the center for infrastructure financing in Indonesia with the capacity to fund development of infrastructure by State-Owned Enterprises (SOE), Regional Government-Owned Enterprises (ROE), and Regional Governments. The government also expands guaranteed facilities that are provided by Indonesia Infrastructure Guarantee Fund (IIGF), another special SOE of the Ministry of Finance.

Another scheme that promotes private sector to develop infrastructure is PINA. PINA is a facilitation scheme aimed to accelerate the private investment financing of national strategic projects, whose source of funding originates from non-government budgets (central government or regional government) and is fully supported by government policies (Ministry of Finance, 2018). The government assigns BAPPENAS (Ministry of Planning) as the Unit in Charge of PINA. The main role of PINA is fastening financial close of infrastructure projects. To support this role, PINA has three core functions: facilitation function, pipelining function, and ecosystem function (CEO PINA in PINA Day 2018). The success story of the PINA scheme in fastening financial close for infrastructure projects is detailed in the image below.

[Figure 1-4] National Strategic Projects in Indonesia



Source: http://pina.bappenas.go.id/ (accessed on May 31, 2018).

2.4. Case Studies: Strategic Infrastructure Projects in Indonesia

2.4.1. Strategic Project Case I: Solo-Kertosono Phase I Toll Road Project

1) Project Overview:

The Solo-Kertosono Toll Road Section is a partial section of the Trans Java Toll Road network that has a length of more than 1,000 km. The highway network extends from Merak in Banten Province (western part of Java Island) to Surabaya in East Java Province (eastern part of Java Island). Solo-Kertosono Toll Road Section has a total length 178.65 km, which extends from Solo (the main city, industry, trade and cultural center of Central Java Province) to Kertosono (municipal in East Java Province). Currently this section is divided into two sections: Solo-Ngawi Section and Ngawi-Kertosono. To secure financial viability and to attract more private investors, the government provides support by constructing 59.58 km of the total length of the project.

2) Benefits of the project:

This project as a part of Trans Java toll road is expected to provide benefits for the society as below:

a) Securing roads to provide an adequate and safe transportation facility for passengers and cargo

b) Improving connectivity by enhancing transportation capacity and logistic

c) Facilitating social and economic development of the city and its satellites

d) Providing an alternative road (supplementing an existing arterial road) connecting Central Java-East Java

e) Reducing travel time and cost of distribution

f) Accelerating movement of goods and services either for domestic and international markets through improving export and import logistic

g) Increasing touring industry in Surakarta and satellite areas

h) Providing an exchange tool for culture in Central Java and East java

3) Summary of economic analysis for the Government Portion (Source: project's feasibility study):

a) Estimated transportation demand 100,405 vehicle/year

b) Benefit items: vehicle operating cost reduction and value of time reduction are valued at approximately USD 946.39 million (discounted at 12%)

c) Cost items: project costs (construction, consultancy service, contingency, project management, fee), land compensation cost and maintenance management cost are valued at approximately USD 386.03 million (discounted at 12%)

d) Net Present Value: USD 560 million

4) Line ministries (or ministries/agencies in charge): Directorate General of Highways, Ministry of Public Works and Public Housing, PT Solo Ngawi Jaya, and PT Ngawi Kertosono Jaya

5) Funding scheme: PPP with government support

6) Location of the project: Central Java-East Java (municipal/district: Solo, Boyolali, Karanganyar, Kabupaten Sragen, Ngawi, Jombang, Madiun, Magetan, Nganjuk, and Kertosono)

7) Required budget for the project:

a) Government Portion Rp 3.16 trillion (land acquisition excluded) from State Budget-general fund and foreign loan (Source: document from Directorate General of Highways)

b) Private Portion Rp 8.97 trillion(source: https://properti.kompas.com/read/2015/09/08/171120921/Pemenang.Tender.Tol.Solo-Kertosono.Ditetapkan.Nilai.Kontrak.Rp.8.97.Triliun accessed July 31, 2018)

2.4.2. Strategic Project Case II: Trans Sumatera Toll Roads

1) Project Overview:

The Trans Sumatera Toll Road connects Sumatera Island from Banda Aceh, Aceh Province (northern part of Sumatera Island) to Bakaeuhuni, Lampung Province (southern part of Sumatera Island). It is the longest toll road project in Indonesia at approximately 2,704 km. This toll road is also part of the Asian Road (Asian Highway Network). Further, the project is divided into 24 sections (15 priority sections and 9 supporting sections). Of those sections, the government focuses on finishing 8 priority sections: (1) Medan-Binjai, (2) Palembang-Indralaya, (3) Pekanbaru-Dumai, (4) Bakauheni-Terbanggi Besar (5) Terbanggi Besar- Pematang Panggang, (6) Pematang Panggang-Kayu Agung, (7) Palembang – Tanjung Api-Api, and (8) Kisaran–Tebing Tinggi. Moreover, a feasibility study shows that all of those sections are economic viable but not financial viable. It can be seen that the Financial Internal Rate of Return (FIRR) of those sections ranges from 3.8% to 11.8% (source: Indonesia Toll Authority April 2018). Due to their low FIRRs, the projects cannot attract private sectors to participate. As such, the government decides to assign State Owned Enterprise (SOE) to construct and to operate (the assigned SOE must be 100% owned by the government). Then, the government provides support in form of capital injection to the SOE and bond and debt guarantee.

2) Benefits of the project:

Trans Sumatera Toll Road provides connectivity for Sumatera Island, which is a strategic location for production and refinery of natural resources and energy. This connectivity leads impacts on:

a) improving economic and industrial growth;

b) increasing export and import activities;

c) increasing utility of maritime infrastructure through providing access to hinterland area;

d) reducing logistic cost to be more competitive;

e) bringing economic spillover effect on inter-region and inter-sector as well as regional economic growth.

3) Line ministries (or ministries/agencies in charge): PT Hutama Karya (SOE) and Directorate General of Highways Ministry of Public Works and Public Housing

4) Funding Scheme: assignment to SOEs (PT Hutama Karya) according to Presidential Regulation number 100 year 2014 and number 117 year 2015

5) Location of project: Sumatera Island

6) Investment values: estimated Rp 88,003 billion (8 priority sections of 15 sections, land acquisition excluded)

7) Government support: Land acquisition, capital injection for SOEs(Rp 5,680 billion), debt guarantee

2.4.3. Strategic Project Case IIII: Martapura-Baturaja Double-track Railway Development

1) Benefits of the project: This project is expected to increase train traffic and capacity, either for persons or cargos. Its location is at strategic coal mining areas with the largest deposits in Indonesia. Yet, exploration for the coal is currently not optimal due to limited capacity of current transportation and logistics networks. Therefore, building double-track railways can address this limitation.

2) Line ministries (or ministries/agencies in charge): Directorate General of Railways Ministry of Transportation

3) Funding schemes: conventional contract by government

4) Location of project: South Sumatera

5) Required Budget for the project: Rp 68.45 billion (sources: State budget-sukuk based project)

3. Infrastructure Investment and Public Investment Management System in Korea

- Historical Overview of Infrastructure Investment

According to the Korean National Fiscal Management Plan (NFMP), the Korean government has strived to timely deliver infrastructure in order to support the economic development initiative that had been pursued since 1961. Infrastructure investment has been improving the quality of life of the people while operating as a driving force for economic development. At the initial phase of the infrastructure

development, the railway sector was one of the prioritized sectors. However, in the late 1960s, the infrastructure policy direction was shifted to the development of the road sector in order to promote export-oriented industries by improving price competitiveness. In the 1970s, in line with the industrial policy initiative on the heavy and chemical industries, Korea began to focus on the construction of roads and railways connecting the ports.

Since the rapid economic growth of this period had caused a sudden increase in traffic congestion costs and logistics costs, the government decided to increase investment in SOC facilities by introducing Special Accounts for Traffic Facilities since the 1990s. However, since the mid-2000s, there has been a decreasing demand for SOC investment due to excessive traffic demand forecasts, increases in social welfare budget, and addressing issues in financial soundness. Investment in SOC facilities has been gradually decreasing, except for a temporary increase only for the period of overcoming the economic crisis. As a result, the proportion of SOC investments as a percentage of the total expenditure of the central government has been steadily declining, from 8.2% in 2006 to 8.6% in 2010, and recently it reached around 6.1% in 2016.

3.1. Performance Evaluation of Infrastructure Investment in Korea

- Public Investment Management System in Korea

The global financial crisis hit the Korean economy in 1997 and it had a devastating impact on the economy. To address the fundamental issues related to the crisis and to achieve economic recovery, the government took steps to reform the Korean PIM system to overcome existing shortcomings in PIM, and to enhance efficiency and transparency. The reform was mainly designed to adopt integrated PIM system from ex-ante levels to ex-post levels in order to intensify monitoring and evaluation of the project during the implementation process.

In the past, there were strong criticisms that the cost overrun was common phenomenon, and one of the reasons is that the feasibility study that was done by line ministries underestimated costs and forecasted a relatively high level of benefits to make the project feasible. As a result, Korea introduced a Preliminary Feasibility Study (PFS) to enhance evaluation at the ex-ante level. Total project Cost Management System (TPCM) was adopted right after introducing PFS in 1994, in order to improve monitoring system during the project implementation period. An intermediate evaluation system, which was called "Reassessment Study of Feasibility (RSF)", was introduced in 1999. In 2005, the In-depth Evaluation of Budgetary Program (IEBP) was introduced to improve performance of budgetary programs

at the ex-post level, while line ministries had introduced an Ex-post Performance Evaluation System in 1999 to evaluate the performance of the project within three years after the completion of the project.

The integrated PIM system has contributed to enhance efficiency and effectiveness on the budget implementation process, and the table below provides the fiscal performance of the PFS, indicating annual savings of the total project cost by conducting the PFS. As of 2016, it has contributed to save KRW 130 trillion in relevant costs since its introduction in 1999. Also, the performance of RSF indicates that it contributed to reduce total project costs by KRW 37 trillion.

〈Table 1-4〉 Achievement of the PFS: Annual Savings of Total Project Cost

(Unit: 100 Million KRW)

Year	Number of projects	Total Project Cost	Cost Savings
1999	20	271,559	197,956
2000	30	152,439	57,753
2001	41	198,401	105,823
2002	30	162,059	73,120
2003	32	176,278	39,885
2004	55	185,740	52,697
2005	30	123,561	39,569
2006	52	193,531	101,401
2007	46	189,476	82,947
2008	38	90,471	39,685
2009	63	303,290	91,362
2010	48	279,831	112,091
2011	99	228,262	107,606
2012	35	206,434	75,150
2013	16	34,445	9,421
2014	34	119,939	28,305
2015	18	64,689	31,323
2016	49	122,781	60,952
Total	736	3,103,186	1,307,046

Source: Korea Development Institute, "Annual Report on KDI PIMAC", 2016.

〈Table 1-5〉 Achievement of the RSF: Annual Savings of Total Project Cost

(Unit: 100 Million KRW)

Year	Number of projects	Requested Total Project Cost	Adjusted Total Project Cost	Cost Savings
2003	6	47,987	42,328	5,659
2004	6	13,977	13,928	49
2005	9	72,976	47,375	26,847
2006	19	49,126	44,357	4,769
2007	14	40,650	43,684	-1,915
2008	21	166,919	155,070	29,306
2009	31	98,162	81,191	30,541
2010	31	148,006	132,340	34,250
2011	48	121,438	108,690	96,584
2012	11	48,657	48,598	34,987
2013	9	10,420	10,069	5,948
2014	18	80,368	76,537	20,762
2015	10	33,305	30,477	7,859
2016	66	100,593	95,995	74,665
Total	299	1,032,584	930,639	370,311

Source: Korea Development Institute, "Annual Report on KDI PIMAC", 2016.

- Public-Private Partnership(PPPs) System in Korea

The Korean PPP legislation system has been evolved by enactments and major amendments. The evolution of the Korean PPP system can be characterized by three stages: the first stage was an introduction of the Act on Promotion of Private Capital into Social Overhead Capital Investment from 1994. In 1999, the existing act was amended as the Act on Private Participation in Infrastructure. The current legal system is represented as the Act on Public-Private Partnerships in Infrastructure, which was introduced in 2005.

After several revisions since its enactment in 1994, the current legal framework and regulations on PPPs were established. The Act on Public-Private Partnerships in Infrastructure (hereinafter referred to as PPP Act) and the Enforcement Decree of the Act on Public-Private Partnerships in Infrastructure issued by Presidential Decree (hereinafter referred to as Enforcement Decree of PPP Act) are the principal

components of the legal framework of PPPs that stipulates eligible infrastructure facility types and implementation process, and the Basic Plans for public-private infrastructure partnerships (hereinafter referred to as basic plans for PPP) are prepared and announced by the Ministry of Economy and Finance, pursuant to the PPP Act in order to provide PPP policy directions and details in regard to PPP project implementation procedure. In addition to those legal documents, detailed guidelines for the implementation of PPP projects are provided by the Public and Private Infrastructure Investment Management Center (PIMAC).

On the other hand, it is widely recognized that ensuring the best use of taxpayer's money on the public investment project is important. According to the HM Treasury, "VfM is defined as the optimum combination of whole-of-life costs and quality of the good or service to meet the user's requirement (HM Treasury, 2006)". In order to provide efficient and effective delivery of public service, the Value for Money (VfM) test was introduced in Korea. VfM test is used when a government or competent authority makes a judgement on whether to implement the project either by PPP procurement type or a pure government-financed procurement type, in line with Article 64 of the Basic Plan for PPPs. Following this procedure, Korea adopted feasibility analysis in three phases. In the first, a feasibility study is conducted to examine comprehensive feasibility of PPP project using cost-benefit analysis from the national economic perspective. If the project deemed feasible, at the second phase, VfM test is used to determine whether the project is procured by PPP of PFI (Private Finance Initiative) or conventional procurement of PSC (Public Sector Comparator), by comparing government payment of PSC with PFI. Main assumption is that the quality and the level of services will be same for both PSC and PFI. The optimum alternative of the project is provided as a last step of the feasibility study.

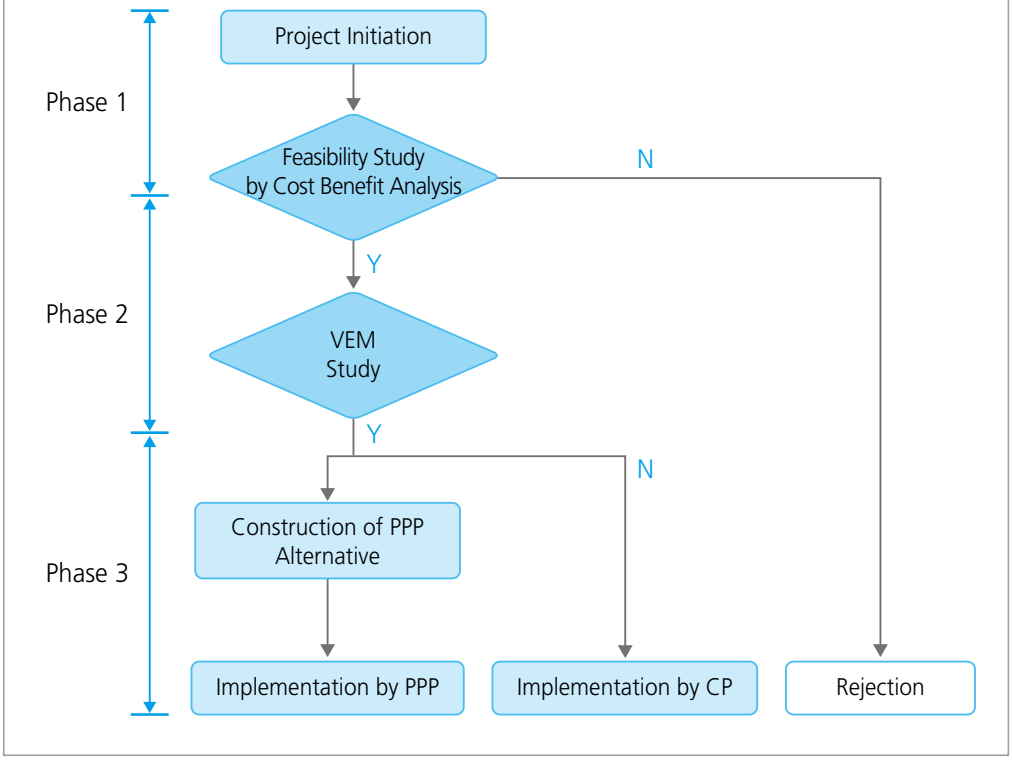
VfM test is largely divided into two parts: the quantitative VfM analysis and the qualitative VfM analysis. The quantitative VfM analysis is conducted by converting total costs of PSC and PFI into present values and comparing government payments on both alternatives, as below. If government payment of PSC is larger than that of PFI, the project demonstrates VfM, given the same level of service delivery by PSC and PFI.

$$VfM\,(\%) = \frac{GP(PSC) - GP(PFI)}{GP(PSC)}$$

The qualitative VfM is analyzed by discussing qualitative effects which can be delivered by implementing the PPP project. The criteria for qualitative analysis includes improvement of the service quality, efficiency in implementation and management of contracts, effects of risk sharing, efficiency in management and economic ripple effects, and project-specific factors. By adding results of quantitative

and qualitative VfM analysis, the VfM test is completed. The below figure indicates the comprehensive framework of appraisal on public investment and PPP project in Korea.

[Figure 1-5] Unified Framework for Public Investment and PPP Project



Source: MOEF and KDI, "2012 Modularization of Korea's Development Experience: Public-Private Partnerships: Lessons Learned from Korea on Institutional Arrangements and Performance", 2013.

As of 2012, out of 150 projects, 72 projects delivered VfM after its introduction in 2005. Therefore, this demonstrated amount of VfM indicates amount of reducing the fiscal burden which is equivalent to KRW 2.74 trillion. By year, VfM was significantly demonstrated from 2006 to 2009. In particular, from 2008 to 2009, amount of KRW 700 billion was delivered respectively, and the financial burden of the government was mitigated accordingly. By sector, railroad, road, environment, culture, sports, tourism, harbor, and others were able to deliver VfM in that order. In particular, the railway sector (about KRW 1.3 trillion) and road rector (KRW 1.40 trillion) have demonstrated relatively high level of VfM. The table below suggests more details on the achievement of VfM test.

〈Table 1-6〉 Achievement of VfM Test: Annual VfM Amount of BTO Projects

(Unit: 100 Million KRW)

Year	Number of VfM Assessment	Number of Projects delivered VfM	Amount of VfM
2005	15	5	368
2006	20	15	5,206
2007	18	10	4,420
2008	35	19	7,372
2009	29	14	7,424
2010	18	4	920
2011	11	2	133
2012	4	3	594
Total	150	72	26,437

Source: MOEF and KDI, "Comprehensive evaluation of PPP projects in Korea", 2015.

〈Table 1-7〉 Achievement of VfM Test: Sectoral VfM Amount of BTO Projects

(Unit: 100 Million KRW)

	Number of VfM Assessment	Number of Projects delivered VfM	Amount of VfM
Railroad	22	11	13,257
Road	52	31	10,448
Environment	52	21	1,480
Culture, Sports and Tourism	11	4	542
Harbor	2	1	532
Others	11	4	177
Total	150	72	26,437

Source: MOEF and KDI, "Comprehensive evaluation of PPP projects in Korea", 2015.

- PFS on Public Institution (SOE) Investment Projects

In 2010, the Korean government introduced PFS-type evaluation on large-scale public institution investment projects in order to maintain fiscal soundness of public

institutions. In line with Article 40 (3) of the Act on the Management of Public Institutions and Article 25 (3) of the Enforcement Decree, a certain type of public institution investment projects and quasi-government investment projects are subject to the PFS-type evaluation by assessing public interest, using cost-benefit analysis and profitability with the Profitability Index (PI). Pursuant to the Act and its Enforcement Decree, KDI PIMAC is designated as a specialized agency that conducts PFS on SOE investment project if the total project cost is amounting to over KRW 100 billion. With the introduction of PFS on public institution investment, it is able to provide budgetary information at ex-ante level for public institution in order to make a decision on large-scale investment project.

The following table indicates how the PFS on public institution investment project contributed to save fiscal budget by reviewing the feasibility of the project. From 2011 to 2014, the PFS on SOE's projects was conducted for 34 projects, of which only 28 projects were assessed feasible.

〈Table 1-8〉 Achievement of the PFS on SOE's Domestic Projects: Annual Savings of Total Project Cost

(Unit: 100 Million KRW)

Year	Number of Projects	Adjusted Total Project Cost	Cost Savings
2011	12	38,951	4,300
2012	8	46,803	8,100
2013	8	19,043	9,449
2014	6	29,874	0
Total	34	134,671	21,849

Note: Cost Savings for PFS on SOE's projects refer to the sum of the total project cost for unfeasible domestic projects.

Source: Korea Development Institute, "Annual Report on KDI PIMAC", 2014.

3.2. Methodologies for Estimating Benefits on Transportation Projects in Korea

3.2.1. Estimation of Transportation Demand and Benefits

In an effort to provide budgetary information, Korea conducts preliminary feasibility studies (PFS) for new, large-scale public investment projects in order to increase the efficiency of fiscal management for such projects. The produced information from PFS is utilized to decide whether a project is implemented or not.

In addition, PFS contributes to set priority on investment decision among candidates of large-scale government-financed projects in order to achieve efficiency of public investment.

Largely divided into economic analysis, policy analysis, and regional balanced development analysis, the PFS is conducted in line with the following procedure. First, the main issues of a project are identified by analyzing the outline and basic information of the project. Second, an economic analysis is conducted based on the estimated demand and benefits. In addition to the economic analysis, a policy analysis is carried out to analyze the policy issues associated with the project. Through a regional balance analysis, the government analyzes the project's relevance in the national economy. Finally, based on the results of these three analyses (economic analysis, policy analysis, and regional balanced development analysis), the government conducts an analytic hierarchy process (AHP) and an overall assessment of the project in order to decide whether to implement the project.

With Net Present Value (NPV) and Internal Rate of Return (IRR), Cost-benefit analysis is mainly used to conduct economic analysis of the project by comparing the benefits and costs of the project from national perspective. The details of economic analysis in PFS are determined based on the types of projects including transportation and cultural facilities. In particular, it is in essence to estimate benefits of the project in order to estimate positive changes of social welfare if the project is implemented. In this regard, the following describes how the benefits are generally estimated on a transportation facility.

In the PFS for transportation infrastructure investment projects, an economic analysis is conducted by comparing the cost of building the given transportation infrastructure or facility and the benefits that its construction would bring. In the PFS, the estimation of transportation demand is one of the most important factors in estimating the costs and benefits of transportation infrastructure construction. The transportation demand estimation allows the government to determine whether to proceed with a given project and properly assess the investment priorities. It can also be used in analyzing the appropriate scale of transportation infrastructure as well as the project's impact on the surrounding area.

This sub-chapter aims to examine the key issues involved in estimating the demand and benefits of transportation infrastructure (roads) and discuss the allocation of investment resources in relation to future transportation infrastructure projects in Indonesia.

3.2.2. Estimation of Demand in the Transportation Sector (roads)

South Korea uses a four-step sequential model, comprised of trip generation, trip distribution, mode choice, and trip assignment, to estimate transportation demand based on the classified traffic zones.

First, trip generation estimates the trips generated in each traffic zone and trips attracted to the destinations in order to determine the numbers of passengers and goods generated for each traffic zone. To this end, rate of change, unit, category, and regression models are used. Second, trip distribution distributes the estimated trips produced and attracted from the previous step among the traffic zones and matches passenger and good origins and destinations, which is often done using a growth factor or gravity model. Third, mode choice is utilized to segmentalize the transportation origin-destination data for the traffic zones by specific modes of transportation. For passengers, origin-destination data for cars, buses, railways, and other modes of transportation are computed, while for goods, origin-destination data for freight trucks and freight trains are generated. Finally, trip assignment allocates the origin-destination data for each mode of transportation to the transportation networks within the region where the project is to be implemented, often using static trip assignment techniques.

Korea uses the future origin-destination transportation demand data by mode of transportation compiled in the Korea Transport Database for its PFSs on road projects, omitting trip generation, trip distribution, and mode choice. It also assigns trips by setting the analytical range and revises the baseline data.

The first step in estimating demand for a PFS is to set the range of analysis after selecting the baseline data (origin-destination and network data). For consistency, the base year for the analysis is set as a reference point for the estimation of costs and benefits. Base year is set at the end of the year immediately prior to the launch of the PFS. The analysis period includes the project period and a 30-year period after the opening of the roads. The base years for analysis include the initial analysis year (year the new roads are opened), mid-term analysis year, final analysis year, and additional analysis years, with the spatial range being determined afterward. In the PFS, the spatial range is largely divided into the analysis region and affected region, with the latter being divided into the directly affected region and indirectly affected region. The analysis region refers to the geographical range of origin-destination and network data used in estimating real demand in the future. The affected region refers to an area smaller than the analysis region and needs to be included in analyzing the feasibility of projects, as "significant changes in travel patterns" typically occur after projects are implemented. As mentioned above, the affected region in a transportation project is divided into the directly affected

region and indirectly affected region. The directly affected region refers to the area geographically adjacent to the project site, and detailed origin-destination and network data for this area need to be compiled for the analysis, while the indirectly affected region includes the directly affected region as well as other geographic locations in which travel patterns will change and is included in calculating the benefits of the project. After the temporal and spatial ranges are determined for the analysis using the above data, the baseline data are revised. In this process, traffic zones are segmentalized based on the origin-destination trip and network data from the Korea Transport Institute's Korean Transportation Database (KTDB) and data on the Seoul Metropolitan Area. In addition, the trip generation and distribution amounts are adjusted by incorporating a development plan that includes invariable total trip origin-destination, tourism demand during peak seasons, and change in total trip origin-destination that reflects induced trips. Next, assuming that individual passengers choose routes that minimize transportation costs using a trip-assignment model, the changes in travel patterns in the network caused by implementing the project are analyzed. Finally, observed and assigned traffic volume is subjected to a comparative analysis through the calibration of the trip-assignment model. The trip origin-destination data by mode of transportation that were gained through the calibration process for the base years are assigned to estimate the traffic and trip characteristics before and after the implementation of the project. After the project is actually implemented, the changes in traffic between main road and railway sections within the affected region are estimated.

3.2.3. Estimation of Benefits of Transportation Infrastructure (roads)

The benefits generated by a transportation infrastructure investment project can be divided into direct benefits, which are referred to as transportation-related benefits, and indirect benefits, which are social benefits resulting from traffic improvement.

The direct benefits generated for transportation infrastructure users by the implementation of a transportation infrastructure project for roads or railways include decreased vehicle operation costs, travel times, and traffic accidents, greater comfort, improved regularity, and higher stability. It is relatively easy to monetize the benefits of the reduction of vehicle operation costs, travel times, and traffic accidents, but the improvements in comfort, regularity, and stability are difficult to translate into monetary values, as their value can vary depending on individuals' subjective values.

The indirect benefits of a transportation infrastructure project are ripple effects that affect everyone, regardless of their use of the transportation infrastructure, such as reduced environmental costs, effects on regional development, expanded market

areas, and improved industrial structure. In terms of railway projects, additional benefits include reduced expressway maintenance costs as a result of diverted travel demand, reduced opportunity costs for parking spaces due to a decrease in parking demand, and decreased costs for road users owing to reduced traffic congestion and road space during construction.

Studies that have quantified air pollution, noise, and other environmental factors can be incorporated into the analysis of the costs and benefits of the reduction in environmental costs. However, regional development, expansion of market areas, and improvements in industrial structure are difficult to quantify, as their realization needs to be accompanied by investment in sectors other than the transportation sector. Moreover, due to crowding out effects, these factors cannot be directly calculated through cost-benefit analysis and are therefore not included as benefits. On the other hand, the benefits of reduced expressway operation costs need to be reflected but are difficult to quantify.

In consideration of all the factors discussed in this section, the preliminary feasibility study guidelines for the road section distinguish between common benefits and project-specific benefits. Common benefits refer to the benefits generated by all road and railway projects, while business-specific benefits are limited to the assessment of specific projects.

3.2.4. Calculation Method by Benefit Category

1) Benefits of reduced vehicle operation costs

When a transportation infrastructure project is implemented, travel distances are reduced, while travel speeds increase, leading to a decrease in vehicle operation costs, which are generally divided into fixed costs and variable costs. The fixed costs include vehicle depreciation, insurance premiums, taxes, and public utility fees, while the variable costs include gas bills, engine oil costs, tire costs, and repair and maintenance costs. Among these costs, taxes, public utility fees, and insurance premiums are not included in the benefits of reduced vehicle operation costs, because the former is simple transfer expenditures that are not considered to be an economic cost, and the latter is fees paid to mitigate the monetary damage caused by possible traffic accidents. The traffic accident costs are calculated separately in the PFS. Therefore, vehicle operation costs include only the gas bill, engine oil costs, tire costs, repair and maintenance costs, and depreciation costs.

2) Benefits of reduced travel time

After the implementation of a transportation infrastructure project, changes occur in travel patterns, including changes in transportation modes, routes, and

speeds. Such changes affect not only the users of the transportation infrastructure, but also those using the surrounding transportation networks, both drivers and passengers alike. As travel speeds increase, travel times for drivers and passengers decrease. Under the assumption that drivers and passengers are able to make good use of their time savings for other purposes (work, leisure, etc.), reduced travel times are considered a benefit.

However, depending on the purposes for which the time savings are used, the benefits of reduced travel times vary. Reduced travel times for those commuting to work translates into an increase in work hours or time spent on productive activities, while reduced travel times for other people provides them with more leisure time. In Korea, trips are divided into work trips and non-work trips, and different time values are applied depending on the purposes of trips.

3) Benefits of reduced traffic accident costs

Social and economic benefits are generated by the reduction of traffic accidents through the implementation of a transportation infrastructure project. Although there are differences in the methodologies applied by South Korea and other countries, according to the data collected, all countries monetize the benefits of traffic accident reduction in assessing transportation infrastructure investment projects. If the implementation of a project results in a decrease in traffic accidents, it is considered a socio-economic benefit. Accident costs reflect all economic costs arising from traffic accidents, including production losses, property losses, medical costs, and psychological costs, and are used to estimate the benefits.

4) Benefits of reduced environmental costs

Transportation projects can have various negative impacts on the environment, including air, water, and noise pollution, vibration, ground subsidence, plant and animal ecosystem changes, altered scenery, and global warming. However, it is not easy to calculate the values of these environmental factors. Not only is it difficult to assess the level of impact in some cases, even when such impacts can be assessed, translating the results of the assessments into economic values involves significant uncertainty. Environmental costs are thus calculated mainly on the basis of air and noise pollution, as these types of pollution have relatively significant impacts on people's lives and are relatively easily assessed and monetized.

3.3. Case Study: PFS on Highway Construction Project

- Project Overview

The Daesan~Dangjin highway construction project is designed to newly construct a four-lane highway over 24.3km from Yongyeon-dong, Dangjin, which will be implemented by the Ministry of Land, Infrastructure and Transport, in line with its 2nd Road Improvement Basic Plan at national level. This project is expected to enhance accessibility to central Chungcheong region by expanding the expressway network directly connected with Daesan Port, which is the regional logistics hub, and to enhance competitiveness with the metropolitan area and promote balanced regional development.

〈Box 1-1〉 Project Overview (Daesan–Dangjin Highway Construction Project)

– Project outline
  Line ministry: Ministry of Land, Infrastructure and Transport (MOLIT) and Korea Expressway Corporation
  Total Project Cost: KRW 679.3 billion (national proportion: KRW 317.7 billion, KEC (SOE)'s proportion: KRW 356.6 billion)
  * National budget will cover land compensation cost and other related incidental costs (Survey, Design, Supervision, etc), and 40% of the construction cost
– Location: Dangjin-dong, Dangjin-si–Daesan-eup, Seosan-si
– (As of 2014, total population of Dangjin city has 168,000 residents and Seosan city has 163,000 residents)
– Project scope: Construction of new highway over 24.3km with four lane
– Project period: 2016–2026 (11 years, 7 years for construction)

- Main issues

In conducting PFS, the research team addressed main issues in terms of estimating total project cost and forecasting demand for the project. To review technical feasibility and estimate practical and realistic project cost, the location of starting point on the project was confirmed after discussing with the MOLIT. Due to the poor quality of the ground, it was required to review whether additional costs were necessarily included or not. Plus, an optimized alternative route was selected by reexamining the location and extension of the structure and partially modifying construction design. Lastly, the line ministry, MOLIT, requested the application of smart tolling, which is a newly adopted fee collection method, to reduce the relevant expenses and reviewed its applicability.

In terms of travel demand analysis, review of future development plans is one of the necessary factors to determine appropriate project scale. As review of future

development plans in directly influenced area was partly not reflected in KTDB, and thus it was required to review them in line with the relevant guidelines. Given the specific location of this project, which is located near Daesan Port, it was also required to analyze traffic volume based on the expected freight volume and its relevant travel demand. Also, there were three residential development plans and thirteen industrial complex development plans near the project location, so that it was necessary to analyze the related travel demands of the project. Lastly, in order to increase the accuracy of the analysis, the research team will set the zone in the base year calibration process.

- Cost Estimation

Cost Estimation includes the construction cost, the incidental costs (Survey, Design, Supervision, etc), land compensation cost, and the contingency. Based on each item, general cost type, format, and units are reviewed and project-specific adjustment is made. Basic direction of cost estimation for the project should be in line with the relevant guidelines and cost estimation of similar projects, and all the costs are adjusted to constant price by using construction investment GDP deflator and consumer price index. The construction cost has been reviewed using a 1/25,000 digital map (2014 version). According to the relevant guidelines, the incidental costs were estimated using the construction cost rate in line with the relevant guidelines. Land compensation cost was calculated by using the official land value of real estate announced by MOLIT. According to the general guideline for PFS, contingent expenses are estimated as 10% of the sum of construction cost, incidental costs, and land compensation cost.

- Forecasting Future Demand

To forecast future demand, selection of basic data is required at the first stage. For this project, the basic data is determined upon the information related to the Origin-Destination (O/D) and network data for the whole country as of 2013. For the time span of the analysis, the base year shall be 2014, the public open year shall be 2027, and the analysis years shall be 2030, 2035, and 2040. It is assumed that the traffic demand and benefits are the same from the end of the KTDB final analysis to the year 2056. The spatial range is determined by considering three criteria, including O/D standard traffic volume (PV), traffic volume change (DV), and traffic volume change rate (RV). Based on the analysis, directly influenced areas include Seosan and Dangjin, while Pyeongtaek, Asan, Yesan County, and Hongseong County were selected as indirectly influenced areas.

After that, the O/D was revised by reflecting the zone setting and the future development plan. Based on the network provided by the national traffic DB and

the related plan, the traffic assignment model was calibrated and the future traffic demand was estimated as follows.

〈Table 1-9〉 Future Demand Analysis

(Unit: Vehicle/Day)

Year	2027	2030	2035	2040
Dangjin JCT ~ Jeongmi IC	15,528	16,834	18,572	19,472
Jeongmi IC ~ Daehoji IC	11,478	12,456	13,511	13,902
Daehoji IC ~ Daesan IC	6,065	6,893	7,515	7,690
Weighted average	12,609	13,722	15,041	15,645

Source: KDI, "Preliminary Study on Daesan~Dangjin Highway Construction Project", 2016.

- Benefit Estimation

Benefits of this project include vehicle operation cost saving benefit, travel time saving benefit, traffic accident reduction benefit, and environmental cost saving benefit. Total annual benefits show a gradual increase over the coming year, similar to the increasing pattern of future traffic demand.

〈Table 1-10〉 Benefit Estimation

(Unit: KRW mil./year)

Year	Vehicle operation cost saving benefit	Travel time saving benefit	Traffic accident reduction benefit	Environmental cost saving benefit	Total benefit
2027	3,462	35,419	4,884	2,107	45,872
2030	4,123	39,412	5,242	2,375	51,152
2035	4,997	45,331	5,598	2,789	58,715
2040	5,421	47,811	5,819	3,102	62,153

Source: KDI, "Preliminary Study on Daesan~Dangjin Highway Construction Project", 2016.

- Overall Evaluation

Total project costs include construction cost, land compensation cost, incidental expenses and contingent expenses, which are calculated as KRW 650,224 million, a decrease of KRW 29,076 million from the requested project proposal. Future traffic demands for the project routes were calculated to indicate a gradual increase from

12,609 vehicles per day in 2027 to 15,645 vehicle per day in 2040. The project is deemed as economically feasible, since the cost benefit ratio is analyzed as 1.

The results of policy analysis indicate the project was directly mentioned in the higher level plan of the central government and consistent with the related plan and policy direction, such as being consistently mentioned in the regional plan. However, it is not included in the project list for achieving performance initiated by MOLIT. Plus, it was later confirmed that Chungcheongnam-do is highly committed to implement this project, and it is necessary to establish systematic and concrete financing plan considering the steady decline of SOC budget and the debt ratio of Korea Expressway Corporation. The employment-induced effects have been analyzed to be 8,061, which is higher than the average of 5,045 provided by results from the existing PFS over the past three years, and a comprehensive evaluation of the quality of employment has been analyzed to the middle level.

4. Investment Resources on Transportation Facilities in Korea[1)]

One characteristic of Korea's system for the financing and utilization of transportation infrastructure investment resources is that most of the resources are concentrated in the central government's budget. In this regard, the imbalance of budget between central and regional government has been an issue in the country. This is because the majority of the transportation facilities special account, which includes the traffic, energy, and environment tax and accounts for the largest proportion of all transportation infrastructure investment sources, belongs to the central government. In addition, the central government's transportation facilities special account is separately operated based on the type of transportation infrastructure, which hinders efficient investment. Moreover, the traffic, energy, and environment tax, which was temporarily introduced to prevent the inefficiency of earmarked taxes, has been extended several times and is still levied today.

In this sub-chapter, there will be some discussions on analyzing the current state of the investment source procurement and utilization systems, which include the traffic, energy, and environment tax, by investment organization and type of transportation infrastructure, providing a rough estimation of future investment in transportation infrastructure, and proposing measures for increasing the efficiency of the investment source procurement and utilization system for transportation infrastructure.

1) This sub-chapter is based on the research on "Efficient Utilization of Investment Resources on Transportation Facility", Korea Development Institute, 2013.

4.1. Infrastructure Investment in Transportation Facilities

Investment in Korean transportation infrastructure comes from the government, public institutions, and private investors. Among these sources, government investment is divided into investment from the central government and investment from the regional governments. Investment from the central government accounts for the largest proportion of transportation infrastructure investment sources, while regional governments procure investment sources through local tax and subsidies from the central government.

Investment sources for roads differ by the type of road. Expressways are funded by the transportation facilities special account, Korea Expressway Corporation, and private investors; general national highways are financed through the transportation facilities special account; government-aided provincial roads, national bypasses, and metropolitan roads are financed by the metropolitan and regional development special account and regional governments; and provincial and special metropolitan roads are supported by local subsidies and regional governments.

As for investment sources for railway facilities, Korea's high-speed railways are funded by the transportation facilities special account and the Korea Rail Network Authority; general railways are financed by the transportation facilities special account and private investors; metropolitan railways are supported by the metropolitan and regional development special account and regional governments; and urban railways are funded by the transportation facilities special account, regional governments, and private investors.

Based on the above information, this study analyzed the changes in investment by type of transportation infrastructure. As the proportions of investment for the different types of roads differ widely by investment institution, the total investment for different road types can be derived by summing all the investment proportions. The investments made by all investment institutions in 2010 were analyzed by road type, and the regional governments' investments by road type were estimated based on total investment and the investments made by the central government, Korea Expressway Corporation, and private enterprises by road type. The results revealed that the total investments (sum of all investments for all road types) by institution were: KRW 6.4 trillion by the central government, KRW 8.7 trillion by regional governments, KRW 2.1 trillion by the Korea Expressway Corporation, and KRW 0.2 trillion by private enterprises.

The total investments for the different types of railways were calculated as well. Railways are divided into high-speed railways, general railways, metropolitan railways, and urban railways. The following image shows the proportions of

investment by type of railway in 2010. The total investments for the different types of railways by institution in 2010 were: KRW 3.9 trillion by the central government, KRW 2.6 trillion by regional governments, KRW 1.3 trillion by the Korea Rail Network Authority, and KRW 0.9 trillion by private enterprises.

Overall, the investment analysis revealed that investment in the road sector was focused on expressways up until the 1980s, as Korea experienced rapid economic development. Afterward, with the increase in the number of passenger vehicles, investment in general national highways began growing dramatically. Recently, the focus on regionally balanced development has induced a huge increase in investment in provincial roads, metropolitan roads, and city and county roads.

Investment in railways appeared to be increasing consistently with respect to all types of railway facilities, but not as rapidly as investment in roads. In particular, the fact that the proportion of investment in metropolitan railways increased after 2000 shows that investment in general railways between regions was lagging behind.

4.2. Investment Resources on Transportation Infrastructure Facilities

Investment resources on transportation infrastructure are financed by the central government, regional governments, public institutions, and private enterprises. This sub-chapter covers how investment was financed from different types of investment institutions, and examines its utilization, with the exception of private enterprises, as it is nearly impossible to calculate the funds procured from each investment enterprise.

4.2.1. Source of Investment for Type of Transportation Facility: Central Government

There are two types of taxes in Korea: national tax levied by the central government and local taxes imposed by regional governments. By the purpose of taxation, Korean taxes are further subdivided into earmarked taxes, which are reserved solely for specific purposes, and general taxes, which are used for general expenditure.

Earmarked taxes, which are imposed for specific expenses, are also known as special taxes. The traffic, energy, and environment tax, which is earmarked for investment in transportation infrastructure, is used for projects for expanding transportation infrastructure, such as roads and railways, and fostering public transportation. Originally introduced as a traffic tax in 1994, it has been extended and is still imposed today. Along with earmarked taxes, there are a total of 18 special

accounts, two of which are for the transportation sector: the transportation facilities special account and metropolitan and regional development special account. The transportation facilities special account refers to the investment sources not only from the traffic, energy, and environment tax but also from the special consumption tax on cars, customs duty on imported cars, transferred revenue from general accounts, and airport and harbor usage fees.

A glance at the amount of investment in roads made by the central government shows a clear decreasing trend. Using current prices, the central government's investment in roads decreased from KRW 7.6 trillion in 2000 to KRW 6.7 trillion in 2005 and further to KRW 6.4 trillion in 2011. In terms of constant prices, adjusted for inflation, this decrease is even more significant.

In 1980, investment in railways and urban railways accounted for 8.2 percent of all investment in transportation infrastructure, as the majority of investment was made in roads, and remained under 10 percent for several years. However, as investment from the traffic system management account (public transportation account prior to 2008 and urban railway account prior to 2004), most of which was used for urban railways, increased after 1995, the percentage of investment in railways and urban railways increased from about 23 percent in 1995 to 37 percent in 2011. The central government's current-price investment in railways and urban railways increased to KRW 1.2 trillion in 1995 and continued its upward trend afterward, reaching KRW 2.9 trillion in 2000 and KRW 4 trillion in 2011. The changes in investment by type of railway, including general railway, metropolitan railway, and urban railway, are very different from the changes in investment in railways as a whole. This will be discussed in detail in the next section.

As for investment in ports and airports, investment in ports has accounted for about 10 percent of all investment in transportation infrastructure since 2005, while investment in airports accounted for 5.7 percent in 2000 and 3.2 percent in 2005. However, these figures decreased dramatically to about one percent in 2010 and 2011. The relatively high investment in airports in 2000 and 2005 seems to have been the result of the large investments in the first and second phases of the construction of Incheon International Airport, which were completed in 2000 and 2008, respectively. Aside from the transportation infrastructure listed above, investment in logistics and other facilities accounted for about 10 percent of all investment in transportation infrastructure until 1990. However, this investment in logistics and other facilities is not considered as a separate account in the transportation facilities special account.

〈Table 1-11〉 Central Government's Resource Allocation on Transportation Facilities Special

(Unit: KRW 100mil. /%)

	General account			Special account on transportation facilities				
	1980	1985	1990	1995	2000	2005	2010	2011
Road	1,536	4,572	7,440	29,848	75,848	67,159	63,882	54,555
	(46.2)	(65.4)	(60.2)	(58.3)	(62.3)	(52.9)	(53.3)	(50.0)
Railway	272	470	694	3,276	8,319	21,079	26,493	29,270
	(8.2)	(6.7)	(5.6)	(6.4)	(6.8)	(16.6)	(22.1)	(26.8)
Metropolitan Transportation Facilities	-	-	-	-	1,934	4,817	merged to metro politan and regional develop ment special account	-
Transportation system management	-	-	-	-	(1.6)	(3.8)		-
	-	-	-	8,506	20,241	12,482	12,923	11,140
	-	-	-	(16.6)	(16.6)	(9.8)	(10.8)	(10.2)
Airport	367	519	310	3,062	6,914	4,010	1,614	1,134
	(11.0)	(7.4)	(2.5)	(6.0)	(5.7)	(3.2)	(1.3)	(1.0)
Port	950	1,214	2,510	6,463	8,451	17,358	14,916	12,961
	(28.6)	(17.4)	(20.3)	(12.6)	(6.9)	(13.7)	(12.4)	(11.9)
Logistics, etc.	202	221	1,414	-	-	-	-	-
	(6.1)	(3.2)	(11.4)	-	-	-	-	-
Total investment of central government	3,327	6,996	12,368	51,155	121,707	126,905	119,828	109,060
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Note: figures in ( ) refers to each sector's proportion of the total account.
Source: Summary of balancing accounts, MOEF, each respective year.

4.2.2. Source of Investment for Type of Transportation Facility: Regional Government

Sources of investment by regional governments in transportation infrastructure largely consist of the central government's local subsidies, metropolitan and regional development special account, and regional government budgets. It is analyzed that the central government continued to increase funding for regional government investment in transportation infrastructure, which in turn meant that regional governments began relying more and more on the central government for their investment sources. Among the types of road infrastructure, regional governments focused their investment on provincial roads, metropolitan city roads, and city and county roads. As provincial roads and city and county roads are built using local subsidies and regional government budgets, instead of special accounts, regional governments make autonomous decisions regarding their investment in such roads. However, as regional governments have relatively fewer funding sources compared to the central government, new roads tend to be built with a high percentage of funding from the central government, such as government-aided provincial roads, national bypasses, traffic congestion-reduction projects in metropolitan cities, and metropolitan roads, and many regional governments are demanding the construction of such roads. Likewise, in the railway sector, regional governments want to build metropolitan railways, which receive more funding from the central government than urban railways, and general railways, which are fully funded by the central government, rather than metropolitan railways.

Of investments made by regional governments in transportation infrastructure, about 86 percent in 2008 and 76 percent in 2011 was for roads. While investment in roads has been in decline, it still accounts for the majority of investment in transportation infrastructure, followed by urban and metropolitan railways, shipping facilities and ports, and aviation and airports.

〈Table 1-12〉 Regional Government's Resource Allocation on Transportation Facilities

(Unit: KRW 100mil.)

	2008	2009	2010	2011
Road	94,431	121,031	87,652	77,329
Metropolitan Railway	6,099	13,094	11,699	10,971
Urban Railway	8,742	10,143	14,089	12,533
Shipping facilities and ports	1,113	1,725	1,047	936
Aviation and airports	9	9	17	75
Total investment by regional government	110,394	146,002	114,504	101,844

Note: Above figures excludes overlaps of the investment between the regional governments.
Source: http://lofin.mopas.go.kr and Settlement of accounts concerning revenue and expenditure, Government of Republic of Korea, each respective year.

4.2.3. Source of Investment for Type of Transportation Facility: Private Sector

a) Investment of public institution in the transportation sector

Most investment sources for transportation infrastructure are financed by the central government and regional governments, although public institutions do invest considerable amounts of funds in specific transportation infrastructure projects, including: the Korea Expressway Corporation for roads; the Korea Rail Network Authority for general railways; and metropolitan urban railway corporations, such as Seoul Metro Corporation, for urban railways. The investment sources from these public institutions are procured from fare revenues and loans. However, as the fare levels have been restricted, these public institutions have come to rely heavily on loans as their investment sources, resulting in a continuous growth of debt.

The Korea Expressway Corporation, one of the public institutions in the transportation sector, is responsible for the construction of expressways in Korea. The corporation provides approximately 50 percent of all investment made in expressways, with the other half being funded by the central government, although the proportion of investment made by the central government has been decreasing in recent years. The Korea Expressway Corporation's revenue includes tolls and rental fees for rest stop facilities. Currently, both the corporation's operating expenses and revenue are decreasing, while expressway construction and improvement costs have decreased along with the corporation's debt.

In the past, the Korean National Railroad was in charge of the construction and operation of all railways in Korea. However, after the rigid operation of the corporation resulted in a huge deficit, it was split into two: the Korea Rail Network Authority, which was founded to take charge of the highly costly construction and management of railways, and Korail, which was established to manage the operation of railways.

Established in 2004 for the construction and management of railway facilities across the country, the Korea Rail Network Authority provides the funds for all investment in railway construction projects, with its funding sources including track access charges from Korail's transport revenues and the central government's transportation facilities special account funds. Because the Korea Rail Network Authority is responsible for all railway construction, necessitating an enormous amount of expenditure, its expenditure exceeds its revenue. As a result, its deficit continues to grow, along with its debt.

Korail was established in 2005 as a public institution responsible for the railway operation division of the former Korean National Railroad. Its financing sources include transportation revenue from railway operation and government subsidies. Korail's operating profit and expenses have been increasing continuously, and its operating balance has been consistently in the red.

Investment made by public institutions was KRW 74.7 billion in 1980, accounting for 13.7 percent of all investment in transportation infrastructure; KRW 87.3 billion in 1985, accounting for 6.8 percent, which was a historic low; and KRW 1.41 trillion in 1995, accounting for the highest proportion of total transportation infrastructure investment at 15 percent. More recently, in 2011, public institutions' investment in transportation infrastructure stood at KRW 2.52 trillion, accounting for about 10 percent of all investment in transportation infrastructure. After the 1990s, investment in the transportation sector tended to be focused on roads, but investment in railways began increasing dramatically in 2010.

In terms of public institutions' investment by mode of transportation, roads were the most important in the 1990s, as shown by the rapid increase in the number of road projects after the 1990s. However, after 2005, investment in railways began increasing dramatically while investment in roads decreased. In 2011, public institutions invested KRW 2.1 trillion more in general railway projects than in expressways.

〈Table 1-13〉 Public Institutions' Resource Allocation on Transportation Facilities

(Unit: KRW 100mil.)

	1980	1985	1990	1995	2000	2005	2010	2011
Korea Expressway Corporation	754	1,199	3,459	33,904	43,974	40,865	40,452	30,830
Korea Rail Network Authority	1,548	1,594	3,198	11,049	31,327	26,664	50,980	51,827
Total	2,302	2,793	6,657	44,953	75,301	67,529	91,432	82,657

Note: Total investment only includes construction cost of general railway, express railway, metropolitan railway, not including O&M cost, etc.

Source: Yearly statistics on railway, Korail, each respective year.

4.2.4. Korea Expressway Corporation (http://www.ex.co.kr/)

a) Private enterprises' investment in the transportation sector

In 1994, the Act to Promote Private Capital toward SOC Facilities was enacted, enabling private investment. Initially, private capital accounted for 1.3 percent of all investment in transportation infrastructure, but that figure rose to an all-time high of 15.2 percent in 2005. As of 2011, private investment accounted for about five percent of all investment in transportation infrastructure. In 2008, investment in expressways accounted for more than half of all private investment, at 51.6 percent, but that proportion gradually fell to about 25.6 percent. On the other hand, private investment in railways and urban railways grew from 18.3 percent in 2008 to 43 percent in 2011. Private investment in freight terminals and other facilities also showed a dramatic increase. Investment in ports accounted for about 20 percent, but the absolute amount of private investment decreased significantly after 2009. As a result, investment by private sector in all types of transportation infrastructure has been decreased after 2009, except for the urban railways.

〈Table 1-14〉 Private Investment on Transportation Facilities

(Unit: KRW 100mil. / %)

	Expressway	Railway	Urban railway	Port	Freight Terminal, etc.	Total
2008	12,605	3,160	1,316	6,657	679	24,417
	(51.6)	(12.9)	(5.4)	(27.3)	(2.8)	(100.0)
2009	15,114	5,699	1,850	6,091	2,167	30,921
	(48.9)	(18.4)	(6.0)	(19.7)	(7.0)	(100.0)
2010	1,862	7,389	1,995	3,166	1,128	15,540
	(12.0)	(47.5)	(12.8)	(20.4)	(7.3)	(100.0)
2011	3,404	3,272	2,525	2,398	1,680	13,279
	(25.6)	(24.6)	(19.0)	(18.1)	(12.7)	(100.0)

Note: Private investment only includes investment made by private sector.
Source: Current status and performance of PPP projects, MOEF, each respective year.

〈Table 1-15〉 Trends in Private Investment and Total Investment on Transportation Facility

(Unit: KRW 100mil. / %)

	1995	2000	2005	2010	2011
Private Investment	1,321	8,518	36,277	15,540	13,279
	(1.3)	(3.9)	(15.2)	(5.2)	(4.9)
Total Investment	99,505	216,803	238,097	298,855	269,792
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Source: KDI, "Effective Utilization of Investment Resources on Transportation Facility", 2013.

4.2.5. Implications

While the central government has a large number of investment sources and is able to secure stable funding for transportation infrastructure, regional governments lack their own investment sources, forcing them to rely heavily on the central government. In many cases, despite being the actual investors, regional governments use a significant amount of the central government's financial resources. This has allowed regional governments to promote the construction of transportation infrastructure without considering their own limitations, resulting in the inefficient utilization of investment sources. In fact, the sizes of local subsidies and the metropolitan and provincial development special account of the central government

were found to be increasing annually, worsening the imbalance of investment sources by investment institution. Such imbalance is likely to impede the efficient utilization of investment sources.

On the other hand, a glance at the investment sources of public institution shows a huge increase in debt, as the operating costs are generally much higher than the operating profits. Since this trend is expected to continue in the future, it will likely be necessary to increase transit fares by a certain degree in order for public institutions to secure a stable supply of funding. Moreover, because investment sources are not reserved for special purposes, investments are made on a project-by-project basis, mainly favoring road facilities with relatively low construction costs.

- Proportion of investment by type of transportation infrastructure

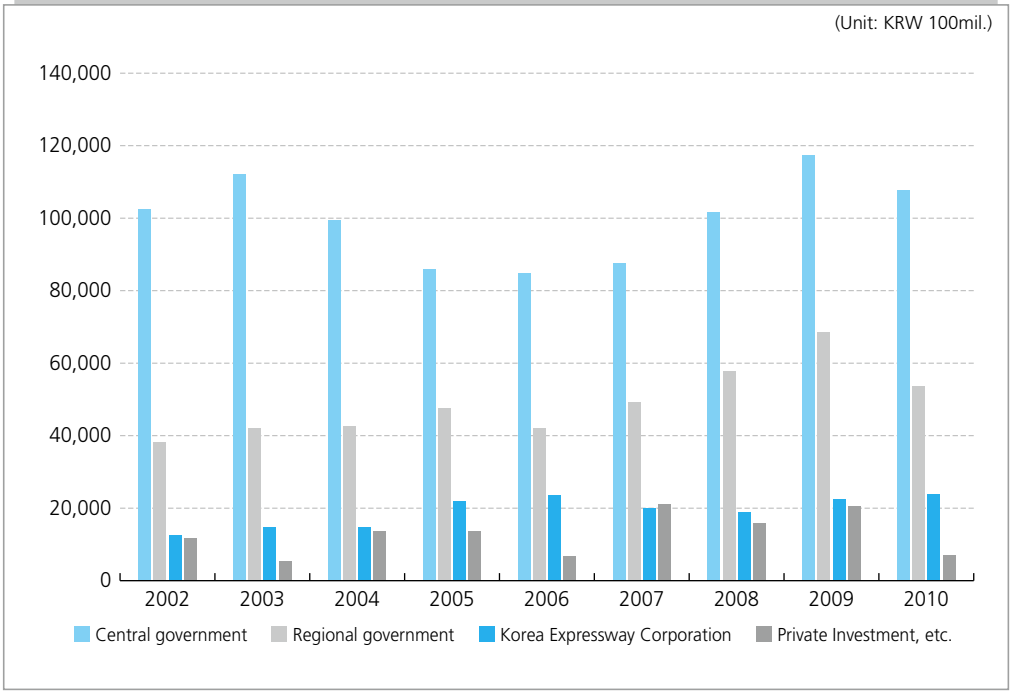
1) Roads

The construction of expressways is funded by the central government and Korea Expressway Corporation, each investing 50 percent, which means that there is no burden on regional governments to provide funding. This has led to a steady increase in the demand for the construction of expressways. Likewise, regional governments have no obligation to invest in the construction national highways, which are mostly funded by the central government, although they are demanding that some roads be raised in status to national roads. Roads that are funded mainly by the central government, such as government-aided provincial roads, national bypasses, and metropolitan roads, have been newly constructed, and projects to reduce traffic congestion in metropolitan cities have been implemented. In terms of the type of transportation infrastructure, the central government fully funds the construction of government-aided provincial roads and national bypasses, while the regional governments are responsible for the land acquisition costs. As a result, funds from the central government account for 70 percent of the investment in these roads, which is higher than that for existing provincial roads. In addition, the construction of metropolitan roads used to be fully funded by regional governments, but the central government now provides 50 percent of the funding, reducing the burden on the regional governments. Likewise, 50 percent of the funding for traffic congestion-reduction projects in large metropolises is now provided by the central government.

An examination of the changes in road investment shows that the central government's investment sources are the sum of its investment in the general national highways and expressways, and the regional governments' investment sources are the sum of their investments in provincial roads, city and country roads, and metropolitan roads. The Korea Expressway Corporation and private enterprises use their own funding. The central government's investment accounted for 53 percent of total investment in 2000, but that gradually decreased to 37 percent in

2011. The regional governments' investment appeared to be higher than that of the central government. However, considering that the funding from the central government's local subsidies and the metropolitan and regional development special account were incorporated into the regional governments' investment, the central government's investment is likely much larger in reality. Although the proportion of the central government's investment in road construction seemed to decrease after the 2000s, it remained quite high.

[Figure 1-6] Financing Sources on Road Sector



Source: KDI, "Effective Utilization of Investment Resources on Transportation Facility", 2013.

2) Railways

While the central government provides all investment for general railways, it provides about 50 to 60 percent of investment for high-speed railways, with the rest being funded by the Korea Rail Network Authority. As a result, there is a high demand for the construction of general railways among the regional governments. In terms of the type of railway, and as stated above, the central government funds 50 to 60 percent of the construction of high-speed railways, while the rest is funded by the Korea Rail Network Authority. The construction of general railways is fully funded by the central government, which also partially funds the construction of light railways (25 percent), subways (60 percent, or 40 percent for Seoul), and metropolitan railways (75 percent). As a result, regional governments have come to

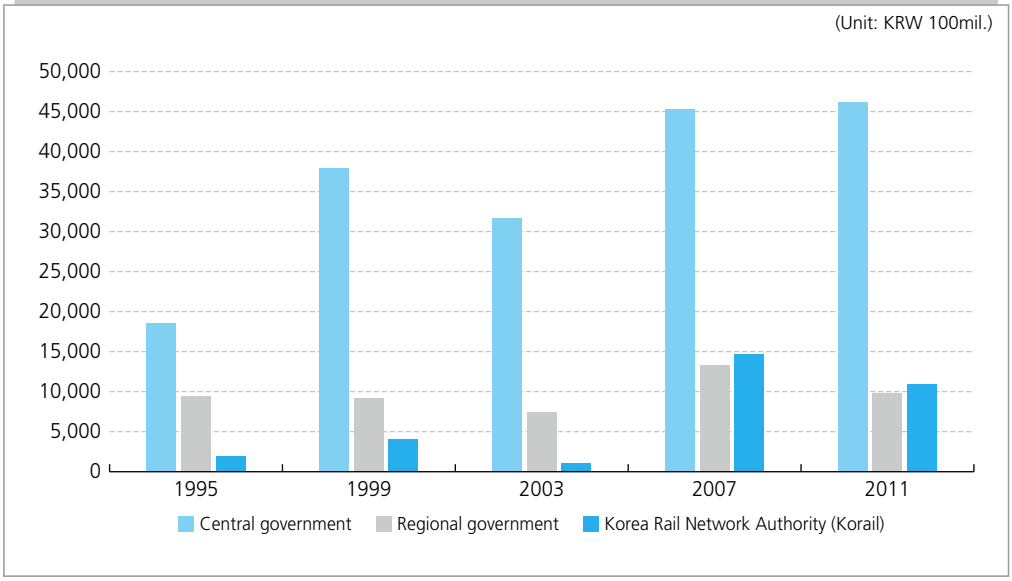
demand that their urban railways be changed to metropolitan railways or general railways.

An examination of the railway projects that have been undertaken confirms this trend, with the proportion of urban railways decreasing while that of metropolitan railways increases dramatically.

To analyze the investment sources for the entire railway infrastructure, this study reviewed the investment sources of the central government, regional governments, and Korea Rail Network Authority. For this review, government funding was excluded from the investment made by the Korea Rail Network Authority to prevent overlap, and the regional governments' investments were calculated by subtracting the central government' and public institutions' investments from the total investment made in railway infrastructure.

The estimated investment resources for the railway facilities described above increased from KRW 3 trillion in 1995 to KRW 5.2 trillion in 2000, of which 62 percent was funded by the central government. Afterward, the proportion of the central government's investment continued to increase, reaching 76 percent in 2005, dropping down to 45 percent in 2010, and rising again to 49 percent in 2011. The regional governments' investment decreased slightly, remaining steady at about 30 percent of the total investment in railway facilities. In 2011, the Korea Rail Network Authority's investment increased to 14 percent, while private investment accounted for seven percent of the total.

[Figure 1-7] Financing Sources on Railway Sector



Source: KDI, "Effective Utilization of Investment Resources on Transportation Facility", 2013.

3) Implications

The analysis of funding for different types of transportation infrastructure in this paper showed that the majority of the investment was made by the central government, which can secure stable investment sources from the traffic, energy, and environment tax. A review of investments in different types of transportation infrastructure showed that the regional governments' fiscal circumstances have deteriorated. To compensate for this, new types of transportation infrastructure that require larger proportions of investment from the central government were constructed, despite the fact that they were built in areas under the jurisdiction of regional governments.

These new types of transportation infrastructure, which were created as a means for the regional governments to secure assistance from the central government, included government-aided provincial roads and national bypasses in 1995, metropolitan roads in 1998, and traffic congestion-reduction projects in metropolitan areas in 2006. Many of such construction projects were undertaken afterward. This dependence of the regional governments on the central government has manifested in the railway sector as well. Because the proportion of the central government's investment in metropolitan railways is much higher than that of its investment in urban railways, regional governments began demanding the construction of metropolitan railways.

In this way, regional governments' lack of investment sources for transportation infrastructure, in comparison to the central government's large number of investment sources, has increased the number of new types of transportation facilities being built for which the central government funds a large proportion of the investment. In turn, this has led the regional governments to focus more attention on receiving more funding and assistance rather than on ensuring the efficiency of their use of the investment sources available to them. However, the functions of these different types of transportation infrastructure have not been clearly defined, and the regional governments are increasingly demanding that their transportation infrastructure projects be raised in status to those that receive more assistance from the central government. It is therefore necessary to clearly define the functions of different types of transportation infrastructure based on the functional standards of transportation facilities.

5. Policy Recommendation

5.1. Role of Ministry of Finance on Selection of Project and its Type of Financing

Recently, the Indonesian government set a target to expand infrastructure by increasing its budget on the infrastructure sector to boost economic growth as well as to reduce regional disparities in the country. However, given the budget constraints and infrastructure gap in the country, improving efficiency and effectiveness of infrastructure spending are recognized as key issues for the Ministry of Finance, and in order to make infrastructure spending more effective, one of the options for the ministry is to enhance monitoring and evaluation system on the infrastructure investment project in Indonesia. However, the role of Ministry of Finance is relatively limited during the project development process at the ex-ante and ex-post level since there are a wide range of stakeholders on the project implementation including role of KPPIP for selection of priority target of infrastructure and BAPPENAS as a planning agency.

On the other hand, Korea has a centralized budget system, whereby most of the budgeting and planning functions are given to the Ministry of Economy and Finance (MOEF). For example, in order to provide budgetary information, PFS is conducted to prioritize large scale infrastructure projects under the supervision of MOEF, and the type of financing is reviewed at the ex-ante level. Granting too much authority to a single ministry may cause difficulties in coordination among relevant ministries, but the unified management on prioritization and financing method on a project may lead to improved monitoring and evaluation systems on project implementation. From this perspective, the Ministry of Finance needs to be central to select the project, as well as to determine the type of financing. For example, based on the analysis of project, if the project is viable and bankable, the Ministry of Finance may consider financing options, either government-finance with the mixture of central and local budget or PPPs. On the other hand, if the project is viable but not bankable, the projects need to be implemented by SOEs, local governments, or by inviting the private sector. In this regard, the role of Ministry of Finance should be expanded in order to apply unified criteria for prioritizing projects and determining type of financing.

5.2. Strict and Rigorous Economic Analysis

Strict and rigorous economic analysis is a key component to objectively and transparently select a project. Institutional arrangements including legal system should be preceded to conduct strict economic analysis for budgetary decision making process. Since introduction of new framework for project assessment is quite

a big issue among various stakeholders, it is recommended to conduct pilot studies on the actual infrastructure investment project. After conducting several reference studies on the infrastructure project, it will be more evident which aspects should be supplemented or revised to review the project in a more strict way. For this effort, reference studies and developing a database would be an important process. During this process, working with BAPPENAS would be advisable in developing analytical tools and conducting assessments, given its expertise in project planning and development.

The need for solid economic analysis is not limited to a specific infrastructure project, yet should be applied to a grand infrastructure plan such as National Infrastructure Plan. First of all, a grand infrastructure plan aims for identifying and prioritizing among collection of candidate projects and considers feasible financing solutions over the mid- to long term. This collection of projects should be selected based upon rigorous economic analysis, which addresses economic impact to the national economy along with consideration of economic development phase in targeted region. As large scaled projects incur huge cost in implementation, feasible and viable financing vehicles should be examined in a clear way.

5.3. Financing Infrastructure with Various Resources

There is a wide spectrum for financing infrastructure from pure public-financed projects to private infrastructure. PPP projects and SOE invested projects can contribute in infrastructure implementation, while it is necessary to assess Bankability and Viability of a project in financial aspect. When a project is bankable and viable both in economic and financial aspects, PPP can work as a good implementation method. If a project is viable economically yet not bankable, then SOE's participation and investment become attractive, or government support should be used to enhance the bankability of the relevant project. When the project is neither bankable nor viable but socially desirable, the government should implement the project with public budget allocation. In deciding best financial solution, it requires rigorous and objective assessment for a candidate project.

In the long term, tax reform or establishment of special account for infrastructure can be considered. Sustainable resources are needed for infrastructure implementation, which requires more revenue with tax reform when budget allocation toward more infrastructure expenditure by decreasing spending in other sectors is not feasible. A special or earmarked tax can be utilized to establish special account for infrastructure financing. Of course, tax reform or shift in budget allocation should be preceded by elaborate and detailed consideration.

To facilitate financing procedure, high-level political willingness is considered

desirable because line ministries prefer to receive fixed amount of budget from the government, and thus political willingness plays a role to lead a solid consensus on using a wide range of financing mechanism for infrastructure.

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2017/18 Knowledge Sharing Program with Indonesia (III):
Improving Efficiency and Effectivity of Infrastructure
Spending by Enhancing Public Investment Management

Chapter 2

Developing Monitoring and Evaluation Systems for Infrastructure Development Programs in Indonesia

Developing Monitoring and Evaluation Systems for Infrastructure Development Programs in Indonesia

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Summary

Indonesia is an archipelago country that consists of 17,504 islands and a population of around 258.7 million people, 58% of which lives on Java Island. As an archipelago country, issues about infrastructure and connectivity are significant to reduce logistic costs and stimulate all regions to grow. However, although the Indonesian economy has been continuously growing, and the GDP of Indonesia has reach US $1 trillion in 2017, the level of infrastructure is still too low to meet the demand. For example, the seaport in Tanjung Priok has a dwelling time that currently takes up to 7 days, which is longer than Thailand (5 days) and Singapore (1.2 days).

Hence, by setting the National Medium-Term Development Plan 2015–2019, the government of Indonesia plans to enhance the infrastructure investment to improve inter-island connectivity and connectivity within the island, which will have a direct impact on reducing logistics costs in Indonesia, so as to be able to compete in the global economy. In addition, the Government has enacted various reforms to accelerate infrastructure provisions, especially in the fiscal, institutional, and regulation fields. These include setting up organizations, such as KPPIP and LMAN, changing laws for fostering private-public partnership (PPP) investment, tax-incentives, and land acquisition.

Keywords: Indonesia Government Monitoring & Evaluation, Pre-feasibility Study, Self-Evaluation, Infrastructure Investment, PPP (Phrate-Public Partnership)

Due to these efforts, the level of infrastructure investment has improved to some extent. However, the level of investment progress is still not meeting the planned and expected schedule. Note that the overall ranking of the Logistic Performance Index (LPI) by the World Bank in 2018 shows that Indonesia is below Malaysia, Singapore, and Thailand in all dimensions of key criteria, such as international shipments, tracking and tracing, and timelines.

In this regard, this study identifies the issues and provides policy suggestions that can improve the monitoring and evaluation systems of government investment, which is crucial for increasing efficiency and effectiveness of such investments. In particular, four issues are identified, and policy directions are suggested for each issue, based on the benchmarking of the Korean government's experiences.

First, in order to foster sustainable infrastructure investment, there need to be an integrated and strong legislation for monitoring and evaluation systems. Note that the Indonesian government has been making efforts to set up a sound institution for infrastructure investment throughout the years. In particular, the Indonesian government has been running a monitoring and evaluation system in which BAPPANAS conducts planning and the Ministry of Finance takes care of implementation and performance management. However, the process and system of monitoring and evaluation were not managed in an integrated manner, and the indicators were not clearly set up.

To overcome this issue, the Indonesian government is considering implementation of "The basic initiative for monitoring and evaluation for fiscal investment," which includes articles specifying the criteria and process of monitoring and evaluation of the government's fiscal infrastructure investments. The monitoring and evaluation scope should include ex-ante planning stages, as well as implementation, performance, and feedback stages.

Note that the Korean government experienced a hard time managing fiscal investment schedule in the early stages of its economic development. In order to overcome this difficulty, the Korean government set up monitoring and evaluation systems for all the stages through the "National Finance Act" and "Act on the Management of Public Institutions". In these acts, the scope of monitoring and evaluation includes ex-ante and ex-post stages of public investment. For example, in the "Act on the Management of Public Institutions", the Pre-Feasibility Study has to be conducted by the respective public organization in order to compile a budget for a new investment project and capital investment (Article 40). This Pre-Feasibility Study needs to start at least one year before starting the project.

Secondly, an effective M&E coordination mechanism among the ministries and governments has to be operated. In particular, there has to be a mechanism in the monitoring and evaluation system for coordination, not just between the central government ministries, but also between the central government and the provincial or local governments. Indonesia is a country that has a very distributed authority system. In other words, the local governments have strong autonomy, where the central government cannot arbitrarily make decisions on the infrastructure investment issues related with provincial or local governments. This has pros and cons. One of the pros is that local properties are protected by the local government's authority, while one ofthe cons is that the central government sometime cannot achieve certain levels of infrastructure investment without the consent of the local government.

One way to overcome this issue is to make a M&E coordination planning process in which all the stakeholders participate in the process of the infrastructure investment project. The local representatives initially participate in the ex-ante feasibility study stage and monitor the project implementation through all the stages. For example, in Korea, the PFS, an ex-ante evaluation method, requires submission of the list of stakeholders that participated in planning the project report. In this project planning committee, various types of stakeholders participate in the committee.

Thirdly, developing a training program for establishing and operating a M&E system is necessary. Note that investing in developing human resources that can systematically develop and operate the M&E system in Indonesia is crucial for the future of the Indonesian government, where the human resources specialized in the M&E system can provide solid planning and feasibility study for the infrastructure investment projects that will be pursued by the Indonesian government. To do so, there needs to be government-wide support for the training and educating Indonesian government officials and experts to get the expertise needed for developing and operating M&E systems in Indonesia.

In Korea, there were decades of efforts to acquire expertise in the M&E for government investment programs. For example, In January 1977, a new department dedicated to developing an investment review system was created within the Economic Planning Bureau (EPB), a government ministry in charge of infrastructure investment planning in Korea at that time. Moreover, the Planning and Budget Committee of the Korean government established the Public and Private Infrastructure Investment Management Center (PIMAC), a specialized agency at the Korea Development Institute (KDI).

Fourth, making effective M&E tools and systems for financial investment project is crucial. Note that the Indonesian government needs more financial resources for sufficient infrastructure investment. The Indonesian government has been using various channels and methods, such as PPP, for such investments. However, there were no systematic tools for monitoring and evaluating the investment projects, including PPP projects, for efficient and effective investments in Indonesia.

For example, in Korea, the Ministry of Strategy and Finance entrusted KDI to conduct M&E for all the fiscal investment, including PPP projects. To do so, KDI implements M&E tools and methods to efficiently and effectively conduct its role. Benchmarking this case, it may be crucial for the Indonesian government to develop an Indonesian version of M&E tools for infrastructure investment to efficiently and effectively use financial resources.

1. Introduction

This study aims to share various monitoring and evaluation systems developed and used by the Korean government related with public infrastructure investment and provide policy suggestions, so that it can be helpful for establishing an efficient system that can monitor and evaluate government infrastructure investment programs in Indonesia.

Indonesia's economy has been growing continuously in various aspects. However, the insufficient infrastructure, such as roads and seaports, has been pointed out as an obstacle for reducing the logistic costs, which is crucial for sustainable economic growth. Recently, the Indonesian government has taken great efforts to enhance the national infrastructure, realizing the fact that the infrastructure of Indonesia is relatively less competitive compared with other neighboring countries and globally. Hence, during the past few years, in particular, the Indonesian government has been putting greater efforts to foster infrastructure investments. This led the government to explore new policies, such as making new laws and setting up new government organizations.

Under such economic and social circumstances, the Indonesian government, as part of its Knowledge Sharing Program, has requested of the Korean government to share experiences in establishing and operating government monitoring and evaluation systems in the course of the Korean government's infrastructure investment, which are recommended to complement other government efforts to enhance effectiveness and efficiency of public infrastructure investments.

Based on the results of meetings and discussions held to identify demand in response to this request, this paper intends to present the key monitoring and evaluation systems used for the Korean government's infrastructure investments. In particular, the monitoring and evaluation systems, such as Total Project Cost Management System, Pre-Feasibility Study, Public Management Evaluation System, are provided as benchmarking examples.

This paper has been divided into five sections. Section 2 provides an overview of the infrastructure investment situation in Indonesia and recent efforts by the Indonesian government, while Section 3 reviews the monitoring and evaluation systems used for infrastructure investment by the Korean government. Based on the material covered in Sections 2 and 3, Section 4 suggests policy alternatives for setting up and empowering the monitoring and evaluation system to enhance the effectiveness and efficiency of government infrastructure investments.

2. Infrastructure Investment Policy in Indonesia

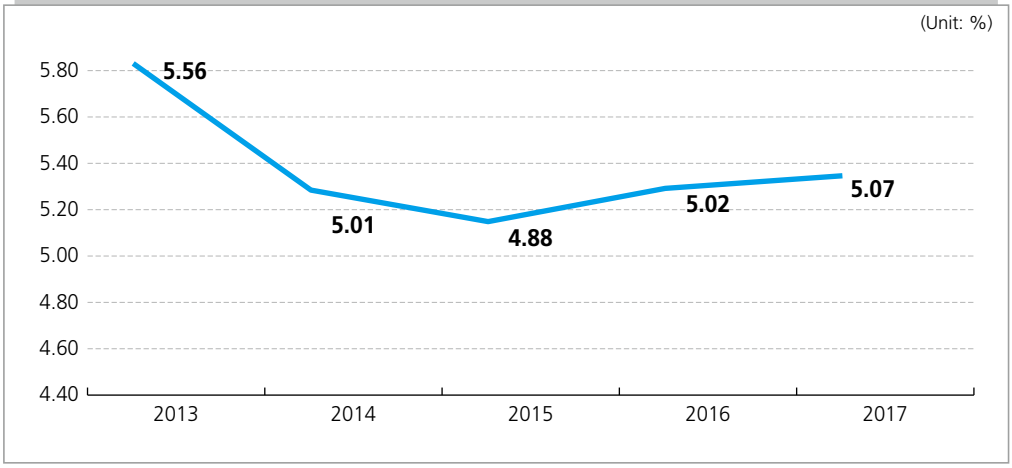
2.1. Overview of Current Infrastructure Conditions

Indonesia is an archipelago country that consists of 17,504 islands and a population of around 258.7 million (Central Bureau of Statistic, 2017). It is facing a challenging agenda to provide welfare for its people by narrowing the interregional development growth gap, especially between Western Indonesia and Eastern Indonesia. One of the ultimate keys to reach equitable development is by accelerating infrastructure development.

As an archipelago country, issues about infrastructure and connectivity are significant to reducing the logistic costs and stimulate all potential regions to growth. By now, advanced infrastructure is mostly concentrated in Java Island, and less in the other islands outer Java. In the other words, Indonesia is in a state of infrastructure deficit.

Recently, the Gross Domestic Product (GDP) of Indonesia has reach US $1 trillion. To be able to continue to encourage this trend of growth, the government is targeting infrastructure investment to improve inter-island connectivity and connectivity within the island. This will have a direct impact on reducing logistics costs in Indonesia, so as to be able to compete in the global economy.

[Figure 2-1] Indonesia's Economic Growth 2013-2017



Source: Indonesian Central Bureau of Statistics, 2018.

The importance of infrastructure projects in Indonesia has become a serious concern for the government in recent years. There are several issues why Indonesia needs to boost infrastructure building. Indonesia's Global Competitiveness Index in 2016–2017 placed it at rank 41 among 138 countries (World Economic Forum, 2016). To enhance its position, Indonesia needs to improve the quality and extensiveness of infrastructure networks significantly to boost economic growth, reduce income inequalities, and poverty in a variety of ways.

The World Bank assesses the score for country's logistic performance through thLPI Index. The index uses six key dimensions to benchmark countries' performance by weighting the average of the country scores on: Efficiency of the clearance process (i.e., speed, simplicity and predictability of formalities) by border control agencies, including customs; Quality of trade and transport related infrastructure (e.g., ports, railroads, roads, information technology); Ease of arranging competitively priced shipments; Competence and quality of logistics services (e.g., transport operators, customs brokers); Ability to track and trace consignments; and Timeliness of shipments in reaching destination within the scheduled or expected delivery time (Arvis, *et al.* 2014). In 2016, Indonesia's LPI Index and its neighboring countries were as follows:

〈Table 2-1〉 LPI Indexes in Indonesia and Neighboring Countries 2016

Country	LPI Rank	LPI Score	Customs	Infrastructure	International shipments	Logistics competence	Tracking & tracing	Timeliness
Singapore	5	4.14	4.18	4.2	3.96	4.09	4.05	4.4
Malaysia	32	3.43	3.17	3.45	3.48	3.34	3.46	3.65
Thailand	45	3.26	3.11	3.12	3.37	3.14	3.2	3.56
Indonesia	63	2.98	2.69	2.65	2.9	3	3.19	3.46
Vietnam	64	2.98	2.75	2.7	3.12	2.88	2.84	3.5

Source: lpi.worldbank.org, 2018.

Based on this fact, among the six indicators on Indonesia's LPI Index it can be seen that Indonesia scored lowest in the infrastructure category. It means that the lack of adequate quality infrastructure remains the main bottleneck that causes significant economic costs across Indonesia's business sectors. The main infrastructure issue is caused by the connectivity bottleneck within the major Indonesian islands, like Java, Sumatera, Kalimantan, and Sulawesi, where the quality of roads is mostly poor, and land connectivity between productions centers and ports and from suppliers to buyers is inefficient.

From this point, the government has set the target of reducing the logistics cost to 19 percent of GDP by 2019. To support this target, the government has optimistically set various infrastructure programs in development agendas. Over the past year, the government has kicked off of various infrastructure projects in Indonesia, including new toll and non-toll roads, new railways, port and harbor development, airport development, and power plant development. However, it will take time before these projects are completed to increase the country's LPI Index score and its rank in the next assessment.

In term of railways, the lack of double tracking reduces efficiency of the rail system in the country for both freight and passenger rail services. A major issue in the seaport sector is the high dwelling time that currently takes up to 7 days in the Indonesia's major seaport of Tanjung Priok, far longer than Thailand (5 days), Malaysia (4 days), and Singapore (1.2 days) (Winarno, 2017). Furthermore, in the airport sector, since the deregulation in 2004, growth in air travel has gone up to double digits per year, but new airport development or the expansion of existing airports has not caught up. For example, Soekarno-Hatta International Airport (SHIA), as a major airport in Indonesia, is designed for 22 million passengers but currently handles over 55 million passengers per year, which means overcapacity, and this condition also happened in Indonesia's other airports (Winarno, 2017).

It has been realized that in Indonesia, especially at a more urban area, the lack of good quality and integrated public transportation is a significant issue. The modern public transportation services like Mass Rapid Transit (MRT) services in major capital cities are urgently needed to overcome these inefficiencies. Recently, within the Indonesian capital of Jakarta, rail-based public transportation currently only accounts for 2.3 percent of commuter traffic, whereas over 62 percent is still private vehicles (Winarno, 2017). This excessive use of private vehicles is causing heavy congestion or gridlocks in Jakarta. In addition, an inefficient economic caused by this congestion in major cities in Indonesia is worsened due to insufficient road space compared to that which is normally expected. This situation is caused by the poor quality of roads and high levels of congestion, which make travel times the highest in the region. In addition, a lack of government investments in public transport over the years has resulted in excessive use of private transport for commuting, thus causing major congestion in many cities in Indonesia. Finally, the land acquisition problem combined with severe underinvestment in roads has caused this bottleneck.

2.1.1. National Development Policy for Infrastructure Investment

Currently, commitment to accelerate infrastructure development continues. The government remains committed to pursuing equitable development of infrastructure projects across Indonesia. Every five years, the agenda of national development is formulated by the government through the Ministry of National Development Planning/Bappenas in line with the president-elected agenda. Recently, Indonesia desires to achieve a national economic growth of 7 percent in 2019 and beyond to be considered as a developed country in 2025. To accelerate this growth, Indonesia is eager to promote investment in various sectors related to infrastructure building. The agenda itself is followed by a number of policies that are improvements in regulatory, fiscal, and institutional aspects, including enhancing the coordination between all stakeholders that are involved directly with the programs. Therefore, the entire endeavor that the government has made is expected to spur the achievement of the infrastructure priority projects milestones.

The government of Indonesia has planned out the development of infrastructure within the National Medium-Term Development Plan (RPJMN) 2015–2019. The target of this infrastructure development is part of the national development agenda to improve productivity and competitiveness in the international market and to realize economic independency by activating the strategic sectors of the domestic economy. For this purpose, the government devotes considerable attention to the development and expansion of infrastructure in the fields of logistics and energy. Based on the target of infrastructure development (RPJMN 2015–2019), the government has confirmed hundreds of projects and programs that need completion in order to pursue intended goals in economic.

According to RPJMN 2015–2019, the total investment needed for infrastructure reaches Rp 4,796.2 trillion. Investment funds for infrastructure projects sourced from the State Budget/Regional Budget reaches Rp 1,900 trillion or around 41% of the total need. Due to the limited investment funds that can be provided by the State Budget/Regional Budget, sources of non-Government budget investment fund are needed and can be obtained from utilizing long-term immovable managed funds, such as retirement funds and insurance, both domestic and foreign, to close the gap in infrastructure development funding.

As a result, the Ministry of National Development Planning (PPN)/National Development Planning Agency (Bappenas) initiated Non-Government Budget Investment Financing (PINA). PINA is Non-Government Budget Investment Financing that raises sources of alternative funding to contribute to the financing of national strategic infrastructure projects having commercial value and positive impact on improving the Indonesian economy. PINA is designed to cover the insufficient funds in priority infrastructure projects needing a large amount of funds yet considered commercially feasible.

Others schemes that are being studied by the government include the Limited Concession Scheme/LCS. By implementing this scheme, the government is expected to obtain fresh money for infrastructure funding by optimizing the existing infrastructure assets through the given concession. The implementation of LCS tends to be easier because it takes shorter time to prepare it (around 6–18 months), and the scheme has been successfully implemented in several countries, which creates a good precedent for the private sector.

Furthermore, under Presidential Regulation No. 3/2016, as many as 225 projects plus 1 program were stated as National Strategic Projects. After being evaluated, 15 projects were excluded from the list, but 55 new projects and 1 program were added, bringing the total to 265 projects and 2 programs. Following evaluation in 2017, 20 projects have been completed, with 245 projects and 2 programs remaining as National Strategic Projects under Presidential Regulation No. 58/2017. Until 2018, there were 10 National Strategic Projects from various sectors that have been successfully completed, with 14 projects removed from the list because of time and funding issues, followed by the addition of 1 project and 1 program, totaling 222 projects with 3 programs.

2.1.2. National Strategic Projects (PSN)

In addition to physical achievements in development, there are also a number of government achievements in amendments to policies, which in turn allow acceleration of infrastructure development. In order to increase Indonesia's economic

growth through infrastructure development, the government has made efforts to accelerate projects considered to be strategic and have great urgency to be realized within a short period of time. Through the KPPIP, the government has selected various projects considered as national priority based on certain criteria.

〈Table 2-2〉 PSN Criteria

No.	Criteria Category	Criteria Detail
1.	Basic Criteria	a. Compliance with national/ regional medium-term development plans and infrastructure sector strategic plans b. Compliance with spatial and regional plans (to the extent by not changing the Green Open Space)
2.	Strategic Criteria	a. Has a strategic role to the economy, social welfare, defense and national security (contributions to GDP and Regional GDP, employment, socio-economic effects, and environmental effects) b. Having inter-sectoral linkages between infrastructure and inter-region (having complementary effects) c. The diversity of inter-island distribution (balancing between development in the west and eastern parts of Indonesia)
3.	Operational Criteria	a. New projects proposal should have a Pre-Feasibility Study (Pre-FS) b. The investment value of projects should be above Rp 100 Billion or the project has a strategic role in encouraging the growth of the regional economy

Source: KPPIP, 2018.

Based on those criteria, by the Presidential Regulation No. 58/2017 on the amendment to Presidential Regulation No. 3/2016 on the Acceleration of the Implementation of National Strategic Project, the amount of National Strategic Projects (PSN) plus programs were decided. All the projects and programs will require around Rp 4,197 trillion, with funding sources from the State Budget Rp 525 trillion, State-Owned Enterprises (BUMN/D) Rp 1,258 trillion and Private Sector Rp 2,414 trillion.

〈Table 2-3〉 National Strategic Projects Funding Needs

Investment Value of National Strategic Projects	Estimated Funding Requirement for 245 projects + 2 national strategic programs		
	Rp4,197 trillion		
	State Budget	SOEs/Regional Govt Enterprises	Private Sector
	Rp525 trillion	Rp1,258 trillion	Rp2,414 trillion

〈Table 2-3〉 Continued

5 Sectors with the Highest Investment Value	Sector	Number of Projects	Investment Value	
	Energy	12 projects	Rp	1,242 trillion
	Power	1 program	Rp	1,035 trillion
	Roads	74 projects	Rp	684 trillion
	Rail	23 projects	Rp	613 trillion
	Zonal	30 projects	Rp	290 trillion

Source: Bappenas.

In 2017, National Strategic Projects (PSN) encountered several issues about project completion, which required policies designed by the government and adjustment to the arrangement of PSN. Matters to which adjustment are made include: (a) addition of arrangement on projects financed by non-Government budget (Non-Budget-PINA Infrastructure Financing); (b) arrangement in renewing determination of location to make land procurement easier; (c) prioritizing the use of domestic goods and/or services to promote the implementation of PSN; (d) monitoring the implementation of PSN by using information technology system used; and (e) revision to attachment to PSN list based on the results of evaluation.

After evaluating and selecting the strategic projects and its accelerated development mechanisms, adjustments were made to the arrangement. The government specifically determined a number of regulations to overcome various major problems delaying infrastructure development, taking into consideration the urgency of completing infrastructure projects.. The regulations are beneficial by improving ways to remove obstacles resulting from non-conformity with spatial plan (Government Regulation No. 13/2017 on National Spatial Plan) and enabling acceleration of land procurement using business entity's funds (Regulation of the Minister of Finance No. 21/2017 on the Procedure for Land Procurement for National Strategic Projects and Asset Management of Land Procurement by State Asset Management Agency).

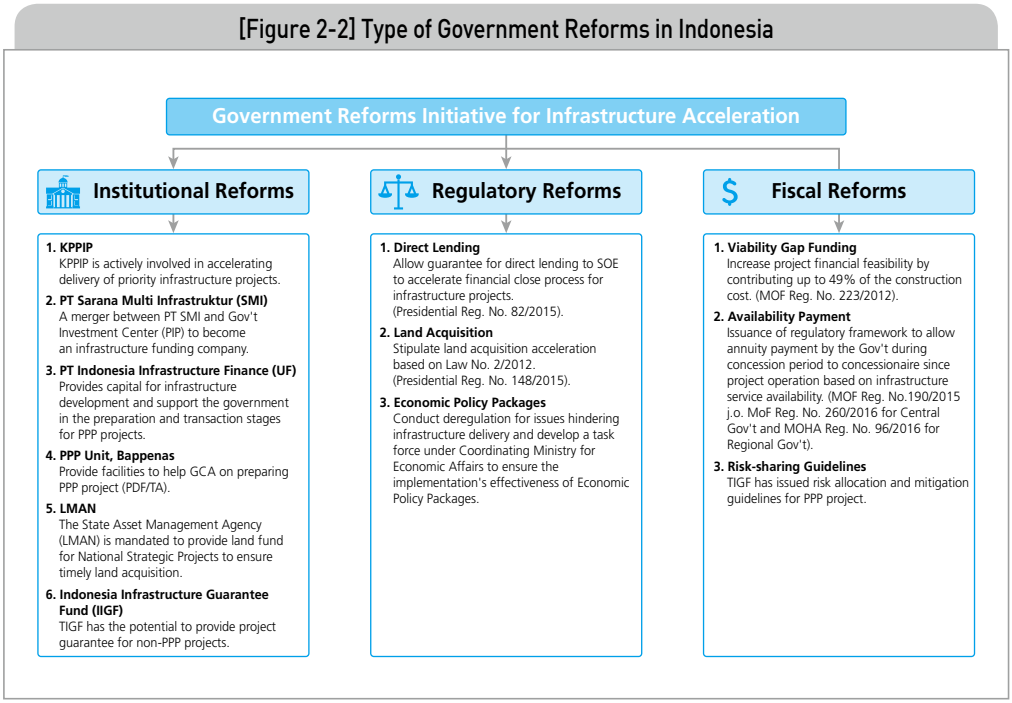
In order to handle potential social conflicts, which in turn may delay the land procurement process, the government has also issued Presidential Regulation No. 56/2017 on Handling Social Impacts for the Purpose of Land Procurement for National Strategic Projects. This Presidential Regulation governs monetary compensation to be paid to the locals who are affected due to the need of the National Strategic Projects for the land but have no title over the land. From the aspect of funding, Regulation of the Minister of Finance No. 60/2017 on the Procedure for the Grant of Central

Government Guarantee for Acceleration of National Strategic Projects is expected to build confidence of Business Entities involved in National Strategic Projects (PSN), considering that compensation shall be provided for any delays of the projects not attributable to Business Entities.

2.2. Recent Efforts to Enhance the Infrastructural Competitiveness

One of the major infrastructure obstacles in Indonesia is coordination amongst government institutions (ministries, agencies, regional governments, SOEs/ROEs) and the private sector. With a set of laws and regulations defining the autonomy and authority of line ministries and government institutions, infrastructure investors and developers are required to face and experience complex multi-phase coordination and approval to deliver an infrastructure project in Indonesia. This fact has required a coordinating agency to address these matters. Fortunately, the government has enacted various reforms to accelerate infrastructure provisions, whether it is in the fiscal area or institutional and regulatory aspects.

[Figure 2-2] Type of Government Reforms in Indonesia



Source: Ministry of Finance, 2018.

These initiatives are crucial steps towards solving Indonesia's infrastructure crisis, but there is still a long way to go. The sheer magnitude of the problem requires

that all levels of government work together effectively, which is very difficult given Indonesia's level of decentralization. Finding the necessary funding will require greater active involvement from bilateral and multilateral funding agencies, as well as from domestic and international private investors. Improved communication processes are necessary to facilitate community acceptance of the need for major projects. However, the initiatives taken over the past three years are definitely steps in the right direction. The improvements and new initiatives in fiscal, institution, and regulatory policies undertaken by the government are expected to solve obstacles encountered in infrastructure provision, so that decisions made by the central and regional governments for acceleration can be executed.

2.2.1.1. Institutional Reforms

In terms of institutional reform, the government has set up several institutions to play a role in accelerating infrastructure delivery, such as the Committee for Acceleration of Priority Infrastructure Delivery (KPPIP), which has an active role in coordinating the acceleration of infrastructure priority projects, PT Sarana Multi Infrastruktur (SMI) and PT Indonesia Infrastructure Finance (IIF) as infrastructure financing institutions, LMAN as fund provider in land acquisition for National Strategic Projects, and PT Penjaminan Infrastruktur Indonesia (PII) as the facilitator for government guarantees. As for regulations in general, laws and regulations needed are available and ready for implementation. The government's commitment to conduct fiscal, policy, and institutional reforms, as well as close coordination among stakeholders, is expected to result in more PPP schemes implemented in Indonesia.

a) KPPIP

The Committee for Acceleration of Priority Infrastructure Delivery (KPPIP) was formed based on Presidential Regulation No. 75/2014. There are several main mandates that must be carried out by KPPIP, which establish the quality standard of Pre-feasibility Offshore (Offshore Business Case / OBC), as well as performing redo revision if necessary, establishing Priority Project List, preparing schemes and funding sources for projects defined as priorities, monitoring and debottlenecking by formulating action plans, , defining strategies and policies in the infrastructure sector, and facilitating the increase of apparatus and institutional capacity by providing priority infrastructure. KPPIP is screening the national strategic projects based on two factors, namely the criteria of strategic projects and the fiscal capacity of the State Assets Management Agency (LMAN) to finance the land acquisition for infrastructure projects this year. The criteria for national strategic projects can be seen with basic, strategic and operational perspectives. However, in general, the value of the project should be above Rp 100 billion and should have strategic economic value. In

addition, there should also be a technical ministry responsible to push for the project.

b) PT Sarana Multi Infrastruktur (SMI)

The government has merged PT SMI and Government Investment Center (PIP) to become an infrastructure funding company. In December 2015, by Minister of Finance Regulation No.232/PMK.06/2015 on the Shifting of Government Investment at the Government Investment Center to Become State Capital Injection for the Limited Liability Company PT Sarana Multi Infrastruktur (PT SMI), which serves as the ground for capital injection of PT SMI in the amount of IDR 18.4 trillion. Along with the State Capital Injection, PT SMI has expanded its role to become the center for infrastructure financing in Indonesia with the capacity to fund development of infrastructure by SOEs, ROEs, and Regional Governments.

c) PT Indonesia Infrastructure Finance (IIF)

PT IIF provides capital for infrastructure development and support the Government Contracting Agency (GCA) in the preparation and transaction stages for PPP projects). PT Indonesia Infrastructure Finance (IIF) is a private national company providing infrastructure financing and advisory services, which is managed professionally and focuses on commercially viable infrastructure projects. IIF is established by the Government of the Republic of Indonesia cq. Ministry of Finance of the Republic of Indonesia along with World Bank, Asian Development Bank (ADB) and other multilateral institutions, in accordance with the Regulation of the Minister of Finance No 100 of 2009 regarding Infrastructure Financing Company. IIF was established on August 6, 2010, through the Decree of Minister of Finance (KMK) No 439/KM.10/2010. IIF's purpose is to be a catalyst to accelerate and to improve private participation in infrastructure development in Indonesia. IIF provides fund-based products, such as long-term loan and non-fund-based products, such as guarantees and other services relating to infrastructure projects.

d) PPP Joint Office-Bappenas

Due to the nature of PPP, which requires cross-sector and cross-agency coordination to make sure the success of PPP project, a coordination system between government agencies is needed. Responding to that need, in December 2016, the PPP Joint Office (Kantor Bersama KPBU Republik Indonesia) was established. This PPP Joint Office was established to assist the GCA and investors and to answer any queries about the PPP Scheme. The PPP stakeholders from the central government and institutions agreed to establish this PPP Joint Office in Jakarta. This PPP Joint Office now acts as a one stop service for PPP. Hence, PPP could be accelerated in an accountable method. The PPP Joint Office is a coordinating system between above-

mentioned agencies to accelerate PPP project implementation in Indonesia. It has no structural system between the agencies but works as a coordination system. The functions of PPP Joint Office are:

a. Coordination between government agencies, GCA and a Special Purpose Vehicle (SPV) related to PPP project.

b. Facilitate all parties related the project in order to accelerate PPP project

c. Implementation in Indonesia.

d. Capacity building related to PPP project implementation.

e) The State Asset Management Agency (LMAN)

Based on Minister of Finance Regulation No. 54/2017, the State Asset Management Agency (Lembaga Manajemen Aset Negara), hereinafter called LMAN, is a non-echelon organizational unit within the Ministry of Finance that implements the financial management of a public service agency that is under and responsible to the Minister of Finance through the Director General of State Assets. LMAN is chaired by the President Director. LMAN is mandated to provide land fund for National Strategic Projects to ensure timely land acquisition process.

f) Indonesia Infrastructure Guarantee Fund (IIGF)

IIGF has the potential to provide project guarantee for non-PPP projects. Government guarantee is one of the important factors to attract investment in projects. However, in the past, guarantees can only be provided for projects under PPP scheme. Through the issuance of Presidential Regulation No. 82 of 2015 on Central Government Guarantee for Infrastructure Finance Using Direct Lending from International Financial Institutions to a State-Owned Enterprise, the scope of projects eligible for such guarantees is broadened. This guarantee can be provided for SOEs that are wholly owned by the Government. SOEs that have been given assignment under the Presidential Regulation are also provided with guarantees. As a result, the number of projects eligible for guarantees provided by IIGF is likely to increase.

2.2.1.2. Regulatory Reforms

a) Direct Lending

Direct Lending is a facility of infrastructure financing provided by the government in the form of loans provided by International Financial Institutions directly to State-Owned Enterprises Infrastructure and/or State-Owned Infrastructure Financing Company under the loan agreement with terms and conditions equivalent to Central

Government loans. It allows guarantees for direct lending to State Owned Enterprise to accelerate financial close process for infrastructure projects (Presidential Reg. No. 82/2015).

b) Land Acquisition

Land acquisition acceleration is based on Law No. 2/2012 (Presidential Reg. No. 148/2015), which came into full effect in 2015. The Law outlined the clear work responsibilities of each assigned institution, appointed a new National Land Agency as the champion for development, stipulated timelines structured an accountable appraisal mechanism, and facilitated land rights revocation processes.

c) Economic Policy Packages

2.2.1.3. Fiscal Reforms

Due to the increasing demand for the funding of infrastructure development, the Indonesian government has determined various policies to attract participation of the private sector in infrastructure development. Private sectors, both domestic and foreign, responded positively to these policies that are proven, among others, by the increasing funds distributed to the sectors related to infrastructure. The Indonesian government realizes the importance of private participation in accelerating infrastructure development in Indonesia, especially considering the limitation of the government in funding infrastructure needs. Based on an estimation of infrastructure funding needs in 2015–2019, the government is only able to fulfill 41.3% of total infrastructure funding needs, which is about IDR 4,796 trillion in total. Approximately 36.5% of the funding gap is expected to be fulfilled through cooperation with the private sector (Bappenas, 2018). Private participation, however, is expected not only to fill the funding gap but also to share knowledge and experience in the development, operation, and management of qualified infrastructure services. To that end, the government has committed to continuously improve and innovate in increasing investment attractiveness and to ensure that the involvement of the private sector is not hampered.

Among many various policies that available, the government focuses in several funding schemes, including Public-Private Partnership (PPP), Non-Government Budget Investment Financing (PINA), and Limited Concession Scheme/LCS. The Public-Private Partnership (PPP) scheme was formed as one of the attempts to cover the limited funds that can be provided by the government by means of State Budget/ Regional Budget and SOE/RGOE by inviting private party to participate in supporting infrastructure development in Indonesia. In order to succeed in this attempt, the government has conducted policy reforms and prepared instruments needed to

support the implementation of PPP scheme in Indonesia.

Moreover, in fiscal reforms, the Government has issued several fiscal contributions, such as Viability Gap Funding (VGF), Availability Payment (AP), Land Revolving Fund, and guidelines for risk allocation as the basis for providing guarantee by PT Penjaminan Infrastruktur Indonesia (PT PII).

a) Viability Gap Funding (VGP)

Increase project financial feasibility by contributing up to 49% of the construction cost. (MoF Reg. No. 223/2012). VGF is awarded for infrastructure projects that do not have big profits or have long turnover time, so that investors still interested to participate in the tender.

b) Availability Payment

Issuance of regulatory framework to allow annuity payment by the government during concession period to concessionaire since project operation based on infrastructure service availability. (MoF Reg. No. 190/2015 j.o. MoF Reg. No. 260/2016 for Central Government and Minister of Home Affairs Reg. No. 96/2016 for Regional Government).

c) Risk Sharing Guidelines

IIGF has issued risk allocation and mitigation guidelines for PPP projects. Through IIGF, the guarantees are made available with the aim of providing more certainty in achieving the necessary financial closing, by way of improving the creditworthiness or bankability of the PPP projects. This is done with consideration of the ability of the Contracting Agency to manage project risks that are properly allocated to them.

With regards to the emphasis on roper risk allocation, this guideline becomes very essential as a key reference in assessing and allocating risks for the purpose of guarantee provision, as mandated by the regulation. This guideline is also intended to be a key reference for: (1) Contracting Agencies in developing the PPP Contracts as well as the Guarantee Application Package (GAP) to be submitted to IIGF for guarantee provision; and (2) Investors and financiers in assessing their potential investment and financing for PPP projects in Indonesia.

2.2.1.4. Establishment of KPPIP for Policy Coordination

The Committee for Acceleration of Priority Infrastructure Delivery (KPPIP) was established with the main objective of becoming a coordinating unit in decision-

making processes to encourage settlement of issues arising from the lack of effective coordination between the various stakeholders. KPPIP acts as the point of contact to facilitate coordination in debottlenecking efforts for National Strategic Projects and Priority Projects.

KPPIP was formed by revitalizing KKPPI (National Committee for the Acceleration of Infrastructure Provision), which was considered ineffective for several reasons, such as the lack of decision-making authority, limited roles at all stages of the projects starting from the design stage until the commencement of the construction, inability to provide incentives or disincentives in order to encourage projects acceleration, and an organizational structure that was too large that often caused arduous decision-making process. Taking such limitations into consideration, Presidential Regulation No. 75 of 2014 on Acceleration in Priority Infrastructure Delivery was issued for the purpose of establishing KPPIP.

Led by the Coordinating Minister for Economic Affairs as the Chairperson, the Committee consists of the Minister of Finance, Minister of PPN (National Development Planning)/Head of Bappenas (National Development Planning Agency), and Minister of Agrarian Affairs and Spatial Planning. Due to the change of the structure of Kabinet Kerja (the currently ruling cabinet) in October 2014, a change in the organization structure to include the Coordinating Minister for Maritime Affairs and Minister of the Environment and Forestry in the membership is currently under consideration.

According to the mandates as provided under Presidential Regulation No. 75 of 2014, KPPIP will provide support for the projects selected as priority projects in line with the criteria established by KPPIP. For such priority projects, KPPIP will ensure that the projects are prepared in accordance with quality standards it has established and will control the steps taken for problem resolution. Furthermore, KPPIP will apply incentive/disincentive schemes to follow-up project monitoring results so that all relevant parties are encouraged to accelerate the delivery of the priority projects. Besides that, KPPIP also has a duty to expand the capacity of the Government Contracting Agencies (GCAs) to ensure their capability for providing the projects as well as a duty to coordinate issuance of regulations and policies related to infrastructure. The chart below shows a brief description of the roles and functions of KPPIP derived from the objective of its establishment.

In line with the development of economic policies, the roles of KPPIP are in adjustment to these developments. KPPIP has been entrusted with selecting National Strategic Projects (PSN), which have been given privileges and accelerating facilities as stipulated by Presidential Regulation No. 3 of 2016 on Acceleration of the Implementation of National Strategic Projects. From the PSN list of projects,

KPPIP selected some projects to be put on the list of priority projects. In 2015, KPPIP analyzed various preparations for the operation, establishment and image building of the committee, which among others covered:

1. Establishment and operation of various Working Teams and Project Management Offices (PMO);
2. Finalization of the List of Priority Projects for 2015 – 2019 as stipulated by Coordinating Minister for Economic Affairs Regulation (Permenko) No. 12 of 2015;
3. Provision of facility to prepare Pre-Feasibility Study, Value for Money, and AMDAL Study for the selected Priority Projects;
4. Preparations for and establishment of Standard Operating Procedure (SOP) and mechanisms for monitoring and debottlenecking;
5. Actual acceleration in priority projects as elaborated further herein;
6. Mapping of improvements to be made to regulations on infrastructure;
7. Development of an IT system for the purpose of project management and improvements in decision-making quality.

By having completed the operations of the Committee in 2015, KPPIP is expected to be able to accelerate the accomplishment of the tasks as mandated by Presidential Regulation No. 75 of 2014. In order to achieve the target for 2016, KPPIP will push for financial closure of 2 to 4 priority projects, establish all Working Teams required, and ensure that the IT system is fully operational by the end of the 1st Quarter for the use of all stakeholders. It is expected that all of the endeavors will encourage the development of infrastructure urgently required to improve the economy of Indonesia.

a) The Committee (Ministerial Level)

As stipulated in the Presidential Regulation No. 75 of 2014, KPPIP is chaired by the Coordinating Minister of Economic Affairs with a membership comprising of: The Minister of the National Development Planning, the Minister of Finance and the Minister of Agrarian and Spatial Planning. A revision of the Presidential Regulation No. 75 of 2014 will add the Coordinating Minister of Maritime Affairs and the Minister of Environment and Forestry as Committee members.

This Committee membership has been structured to respond to the main mandate of KPPIP, which is to focus on project preparation quality improvement, as well as debottlenecking in order to accelerate the development of the priority projects.

The membership is therefore comprised of only the Ministries/Institutions that have inter-sector authorities and frequently deal with the technical Ministries that execute the infrastructure projects. In addition to the above, the involvement of Ministry of Finance from project preparation stage is expected to improve coordination needed for granting government support, both in mechanism and implementation level.

b) Implementation Team

As described in the Decree of the Coordinating Minister of Economic Affairs No. 127 of 2015, the Implementation Team is a collective decision-making team comprising of Echelon I officials and is chaired by the Deputy Minister for Coordination of Infrastructure and Regional Development Acceleration of the Coordinating Ministry of Economic Affairs. To support the Chairman, the Expert Staff of Regional Development of the Coordinating Ministry of Economic Affairs is appointed as the Secretary. As for the responsibilities, the Implementation Team is formed to assist the Committee in:

1. Developing strategic plans and policies to accelerate priority infrastructure delivery;
2. Monitoring the implementation of strategies and policies for the acceleration of priority infrastructure delivery;
3. Facilitating capacity building of state apparatuses and institutions in delivering the priority infrastructure projects;
4. Determining the standard of pre-feasibility study and its evaluation procedures;
5. Facilitating preparation of the priority infrastructures;
6. Developing an inventory of problems and barriers as well as conveying recommendations in solving the problems arising from the priority infrastructure delivery.

c) Working Team

As stipulated in the Presidential Regulation No. 75 of 2014, the Coordinating Minister of Economic Affairs, as the Chairman of KPPIP, is given the authority to form a sectoral work team and an inter-sector work team whenever required. In its implementation, the work team for Acceleration of Electricity Infrastructure Delivery has been established by a virtue of the Decree of the Coordinating Minister of Economic Affairs, as the Chairman of KPPIP (Decree No. 129 of 2015) and the work team for Acceleration of Bontang Refinery Development has also been established

by a virtue of the Decree of the Coordinating Minister of Economic Affairs, as the Chairman of KPPIP (Decree No. 159 of 2015).

d) Project Management Office (PMO)

To support the decision-making process by the Implementation Team and the Committee, KPPIP is equipped with a Project Management Office (PMO), which is comprised of professional experts in their respective ends. PMO has a responsibility to provide recommendations to the Implementation Team in the selection of and in the implementation of the priority projects, as well as in problem solving. PMO consists of a Program Director as the head of PMO, who is tasked to ensure achievement of the KPPIP's mandate, to provide policy recommendations to the Implementation Team, to develop KPPIP organization, to ensure the implementation of the priority project delivery, and to build capacity as well as to improve regulations supporting the priority infrastructure delivery.

The Program Director is supported by a team of senior experts specialized in port, airport, train, energy and electricity, and water resources. These experts, namely Sector Directors, are responsible to ensure that projects in their respective sector are well-prepared and to drive the project implementation up to the construction phase. For projects that are already in the construction phase, the Sector Directors are responsible to ensure that the project delivery is on time and to provide supports to troubleshoot any emerging issue. Moreover, the Sector Directors are also required to analyze constraints on the project delivery, needs for regulation improvements and other acceleration efforts in his/her sector, which in the long run, could be applied to other projects.

2.2.1.5. State Asset Management Agency (LMAN)

a) Objective

LMAN has the duty to carry out business development services, research in the field of property, utilization in the form of utilization and operational cooperation of state assets, alienation, reporting, monitoring and evaluation of state asset management, procurement, construction, security, maintenance, licensing, documentation, publication, marketing, and legal handling, drafting of agreements; and needs planning land/land development, government investment fund management including funding land acquisition for National Strategic Projects as stipulated in legislation.

At the beginning of the establishment of LMAN, the main mandate given is as an Assets Operator (operatorship) in optimizing state assets that are considered not

optimized, underutilized, and unused or idle. Assets managed by LMAN include state property and/or other state assets which mandated by DG of State Assets to managed, other assets that acquired and funded with funds sourced from the State Budget on Government Investment Management, and asset yields from land acquisition for National Strategic Projects (PSN). Generally, based on its establishment background, LMAN has objectives as follows:

1. Providing asset management services (especially property) to the public either government, private, or the public at large quickly, accurately, optimally and accountably;
2. Improve the status of assets (physical and legal) to add value to assets;
3. Non-tax Revenues maximization through asset utilization;
4. Assist the government in providing land for infrastructure development.

b) Function

Infrastructure development is essential to support high, inclusive, and sustainable economic growth and improve long-term prosperity. Based on RPJMN 2015–2019, infrastructure funding needs has reached Rp 4.796 trillion, but only 41 percent of which can be met from the state budget, the remaining 22 percent of SOEs and 36.5 percent of private sector. To that end, the government is focusing on financing land acquisition through LMAN, as the preparation of the land, in addition to attracting private interests to engage in infrastructure development in Indonesia, also serves as public investment. The government believes that the provision of capital investment to LMAN for land acquisition will be healthier and more accountable for the government balance sheet.

LMAN's main business at the beginning of its establishment was the management of State Property (BMN), primarily implementing the utilization and transfer of BMN focused on the management of state property and asset solution consulting services on the management of state assets. LMAN then received a new mandate for the implementation of land funding so that LMAN's overall mandate includes the management of state property, the provision of consultation/advisory services related to the management of state property, and the implementation of land acquisition funding for projects incorporated in the National Strategic Project (PSN). Referring to its mission, LMAN has several main functions, as follows:

1. Manage assets under management to generate financial and non-financial benefits for the State;
2. Mobilize the optimization of State assets to increase value added assets (added value);

3. Funding land acquisition for national strategic infrastructure development;
4. Creating leverage over assets under management; and
5. Carry out special government assignments (sovereign function).

c) Organization structure

The LMAN organizational structure is lead by the President Director, and it comprises the Director of Finance and Organizational Support, Director of Operations and Risk Management, Director of Land Procurement and Funding; and Director of Development and Utilization. In addition, the LMAN can be formed by functional groups in accordance with the requirements under the provisions of legislation. In carrying out their duties, each head of the organizational unit within the LMAN shall apply the principles of coordination, integration, and synchronization both within their respective circles and between organizational units within the LMAN, as well as with other agencies outside LMAN according to their respective duties.

d) Activities and Performances

In accordance with its functions and authorities, the LMAN is very actively supporting the financing of infrastructure projects initiated by the government. During 2017, regarding the total value of land acquisition funding related to the National Strategic Project (PSN), especially the toll road development project, LMAN funding reached Rp 11.7 trillion. This fund is used to finance land acquisition on 27 toll roads, with a total of 17,219 parcels of land across Indonesia. From the budget allocations, most of the funds used for land acquisition for the construction of Trans Java toll roads consisting of 10,170 plots of land valued at Rp 4.39 trillion and land acquisition of Trans Sumatra land on 3,687 plots worth Rp 1.84 trillion.

The toll road project is one part of the land acquisition and development program for the implementation of the PSN undertaken by LMAN throughout 2017. In the Revised State Budget of 2017, LMAN allocated Rp 32.05 trillion for land acquisition in 78 projects, including 43 toll roads worth Rp 25.2 trillion, 1 port worth Rp 500 billion, and 6 rail infrastructures worth Rp 3.8 trillion. In addition, the fund is also allocated for 27 dams and 1 National Capital Integrated Coastal Development (NCICD), a sea dike project worth Rp 2.3 trillion.

〈Table 2-4〉 State Budget Allocation for Land Acquisition by LMAN FY 2016–2018

Item	FY 2016	FY 2017	FY 2018
State Budget Allocation	IDR 16 trillion	IDR 32.05 trillion	IDR 35.4 trillion
Number of Projects	27 projects	78 projects	65 projects
Detail of Projects	1. 5 toll roads Trans Sumatera 2. 9 toll roads Trans Java 3. 9 toll roads Jabodetabek 4. 4 Other toll roads	1. 43 toll roads 2. 1 seaport 3. 6 railways projects 4. 27 dams 5. 1 NCICD	1. 23 toll roads 2. 2 railways projects 3. 40 dams

Source: LMAN, 2018.

2.2.1.6. Monitoring and Evaluation System

Based on Government Regulation No. 17/2017, the MoNDP/Bappenas and MoF are responsible for evaluating development and budgeting performance to ensure that every public fund spent through the budget has achieved its output target. Furthermore, the evaluation of development performance and budget is conducted in preparing for national development planning and budgeting for next fiscal terms. Therefore, the evaluation mechanism, both technical and financial, should not be separated from the whole stages in the budget cycle. The regulation, which is effectively implemented from FY 2018, has made significant changes of government direction on how to formulate a good quality of public spending and budgeting.

Public spending should contain a value for money principles. In the infrastructure context, due to fiscal constraints, especially due to limited state budget financing, the government has to make selective decisions whether the projects are feasible to be financed by state budget or not. Moreover, the Bappenas and MoF-two major government ministries that are responsible for development planning and state budgeting are really concerned about the output achievability from the whole process of project implementation. The degree of evaluation scope and authority is dependent on the size of financed projects. There are some criteria by which projects should be financed by the state or are feasible to be offered to the private sector.

In Indonesia, every single public investment that is financed by the state budget or offered to the private sector should be in line with RPJMN. The document that has been formulated by the Bappenas has become a main reference for line ministries, SOEs, and private sectors in their public investment planning. Without referring to the RPJMN, the projects most likely will not be approved by the government. On the

other hand, project approval from the Bappenas that has also receive approved by the MoF will be included in state budget allocations.

〈Table 2-5〉 Financing Scheme of Infrastructure Projects

No.	Project Feasibility	Financing Scheme	Modality
1	Feasible economically and financially	Private	Private Investment (Business-to-Business/ B-to-B)
2	Feasible economically and financially marginal	Private PPP	PPP with government support (VGF, Creative financing, state financing guarantee)
3	Economically feasible but not financially feasible	SOEs Government	SOEs special assignment
4	Not economically and financially feasible	Government	State Budget (APBN)

Source: Djajawinata, 2016.

The state budget is still the main financing source for infrastructure investment in Indonesia. However, because of fiscal constraints and a lot infrastructure project lists, the government has to conduct prioritization policies. For ordinary capital spending, which means that the project is not economically and financially feasible, government financings is conducted fully through state budgets. In addition, for infrastructure projects that have a strategic value and a total cost that is more than IDR 100 billion are dealt with by KPPIP, and other projects that have feasibility both economically and financially are offered to the private sector and are coordinated by MoNDP/Bappenas.

a) Process

Monitoring and Evaluation (M&E) is really important to be conducted by the government whether it is done by executing agencies (line ministries), MoNDP/ Bappenas, or MoF. The information reported by M&E systems will be useful in the stage of budget preparation, which means that due to the limitation of fund resources, the information collected will allow the government to improve the budgeting process by monitoring the availability of resources (inputs) and achievements (outputs and outcomes). This is true for Indonesia's current economic and financial situation, where the allocation of fiscal resources needs to prioritize only the best programs in terms of efficiency and effectiveness.

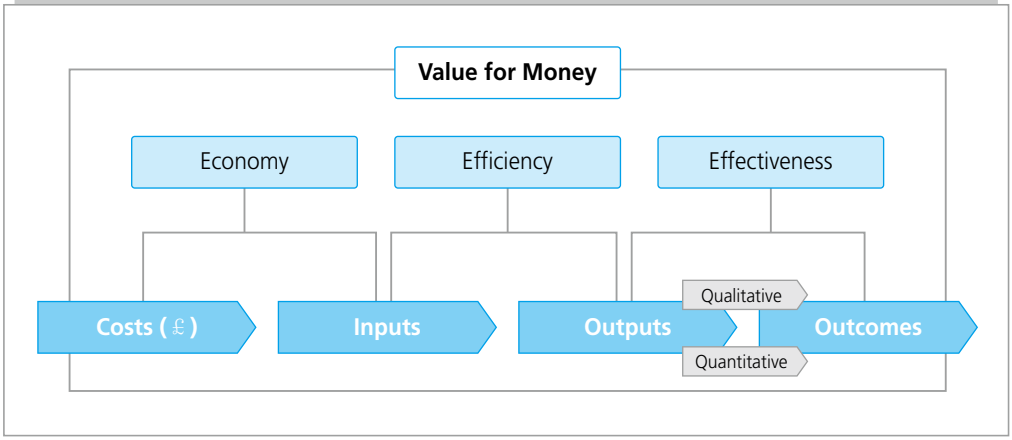
The M&E systems will also help authorities to monitor project activities during budget execution, allowing them to identify and evaluate quickly what is working

and what is not, compare different administrative units and districts, and identify good, bad, and promising. Strengthening its ex-post evaluations system will allow the government to determine the factors that are causing the results and to decide whether changes are needed in some policies, programs, and projects.

b) The Importance of Value for Money

The government direction related to the M&E system is to emphasize the importance of value for money (VfM) principles. The concept of VfM in infrastructure spending denotes that it has to be a balanced benefit measure covering quality levels, performance standards, risk exposure, and other policy or special interest measures (e.g. environment impacts), as well as price (Foster Infrastructure, 2013). Furthermore, VfM is trying to assess the "whole of life" or "total cost of ownership" basis, which includes the transitioning in, contract period, and transitioning out phases of an infrastructure project. Therefore, the government can focus on choices that ensure that the project outcomes are promoted and protected in successive anticipated contracts and any certain deals regarding the public investment.

[Figure 2-3] Concept of Value for Money



Source: Barnett, *et.al.* 2018.

VfM assessment is just one of ultimate direction during the M&E process. Based on budget realization evaluation during FY 2015–2017, the government's capital spending realization is not really optimal. Based on the trend of capital spending during 2015–2017, it shows that the realization rate (on average) was below 87%. This indicated that there were problems regarding the execution of capital spending. Therefore, all the government units that related to the policies are trying to reforms the framework within the M&E system, including organization structure, functions, activities, and information technology (IT) system, which can be relied on to support

the policy implementation. Hopefully, the budget realization will achieve proper result that in line with the achievement of project outputs and outcomes.

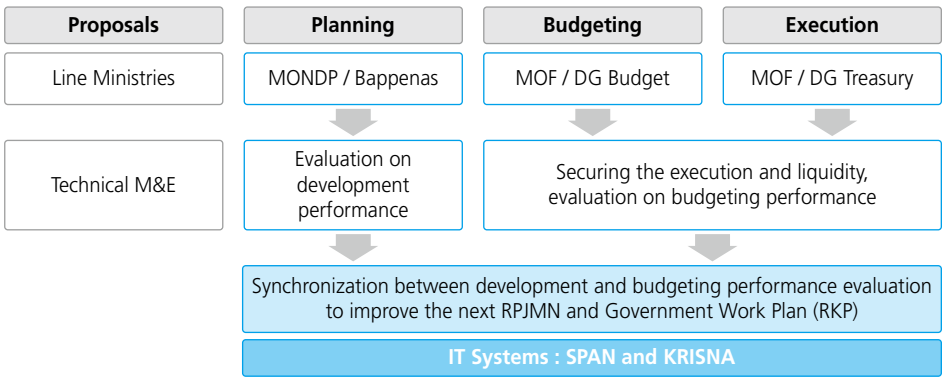
〈Table 2-6〉 Capital Expenditure on State Budget (APBN) FY 2015–2018

(Unit: in Billion Rupiah)

FY	BUDGET CEILING	REALIZATION	%
FY 2018	135,078	8,498*	6.29%
FY 2017	134,934	116,883	86.62%
FY 2016	124,728	98,808	79.22%
FY 2015	169,313	142,085	83.92%
TOTAL	564,054	370,892	65.75%

Note: *1st quarter FY 2018.
Source: Ministry of Finance, 2018.

[Figure 2-4] Public Spending M&E Framework



M&E system cannot be separated from the whole process of the budget cycle. Focusing on capital spending, which the infrastructure has been financed by state budget, it firstly comes from proposals of the executing agencies or line ministries. The project proposals should be in line with the RPJMN and Government Work Plan. Internally, line ministries have their own mechanisms on how they evaluate and assess which project should be propose to MoNDP/Bappenas and MoF to obtain budget allocation. The project proposal making process in the line ministries usually uses a combined mechanism of top-bottom up budgeting processes. Central office gets a budget ceiling that has to be broken down into several regional units that are responsible for their projects depending on the location. Right after the regional

units assess the budget need, they submit the proposal to their central office to be selected and become a full budget proposal document to be proposed to MoNDP/Bappenas and MoF.

After the line ministries/executing agencies confirm their proposals, the three parties (EA, MoNDP/Bappenas, and MoF/DG Budget) arrange a trilateral meeting to assess and evaluate the feasibility of each budget proposal. If there are no objections from MoNDP/Bappenas and DG Budget, the proposals will go through the state budget to be proposed to the parliament, and then, when the state budget has been approved by legislation process and become state budget act, DG Budget issues a budget document to be executed in the next fiscal year. During the next phase, in the fiscal year, the DG Treasury has authority in regulating the budget execution mechanism. All the commitment process, contractual documents, and bill payments should be reported to the DG Treasury. From these activities, DG Treasury captures all the business process regarding the pattern of government spending, including infrastructure spending. That's why the DG Treasury can capture the indication of any problems related to budget execution. By Government Regulation No. 17/2017, the MoF cooperates with MoNDP/Bappenas to conduct an evaluation regarding state budget performance and all development performance, including infrastructure progress performance. It should be evaluated by authority to formulate better policies and to ensure that all planned projects hit targets and adequately support national development and people welfare.

2.3. Obstacles and Issues

Based on the current condition of Indonesia's infrastructure projects, there are several aspects that should be highlighted as main issues. First, in terms of regulatory framework, currently, the regulations that govern all infrastructure program policies are dispersed amongst several government units, including regional/local governments. Sometimes there are project overlaps in several government units. Indonesia does not have strong regulations that mandate the government to conduct systematic processes in assessing infrastructure programs. Strong regulations as laws or acts that are mandated from the national assembly/parliament are required to support government actions in boosting the infrastructure programs.

Second, the Indonesian government needs more human resources and relevant capacities. In particular, the Indonesian government needs to improve the competency and independency of HRD/officers in assessing and planning infrastructure programs. These are required to endorse and assure the project proposals and ensure the projects are feasible. A think tank policy unit is needed to address this matter.

The third issue is policy coordination. Infrastructure provision in Indonesia often faces obstacles, due to the lack of coordination among various stakeholders involved, namely the government (ministries, institutions, regional governments, SOEs/ROEs) and the private sector. Such a large range of stakeholders, each having its own objectives and responsibilities, has the potential to cause delays to the implementation of infrastructure projects.

The final issue is obtaining financial resources. Indonesia has many priorities in infrastructure projects for narrowing the gaps amongst regions. However, due to fiscal constraints, the government cannot support and finance all those priorities. Creative financing policy, such as PPP, is needed to attract more investors to involve in infrastructure project in Indonesia. Another issue is how to make PPP projects attractive to investors.

3. Public Investment Monitoring and Evaluation System in Korea

3.1. Evolution of the System

The investment evaluation system was introduced when the South Korean government first established and implemented economic development plans in the early 1960s. More specifically, the system was instituted in 1962, when the first Five-year Economic Development Plan was launched. The government began evaluating investment plans, as it was necessary to select and implement projects that could most effectively contribute to the achieve the government's development goals and most efficiently utilize the country's limited resources, such as capital, foreign exchange reserves, technology, and manpower. Of course, monitoring and evaluation at the time was quite basic in terms of both technique and methodology, and this system was insufficient to accurately judge the feasibility of the investment programs.

In the 1970s, the development efforts that had been made up until that time spurred rapid economic growth, leading to larger investments that had increasingly greater impacts on the national economy. However, the complex issues surrounding the establishment and implementation of investment plans required highly specialized methodologies and techniques. This prompted the establishment of a more comprehensive and systematic evaluation system. In response to this demand, the Economic Planning Board (EPB) set about introducing a more sophisticated investment evaluation system.

Korea was still unfamiliar with the investment evaluation system in the 1970s. The EPB therefore enlisted the help of foreign experts and advanced foreign institutions, such as the World Bank, to evaluate its investment programs. Moreover, the Korean government implemented a series of related policies, including the establishment of training classes and creation of a manual that took into account Korea's circumstances, and used the evaluation methodologies developed by foreign institutions. After the system had been established, it was used to evaluate the feasibility of government programs funded by foreign loans. Having begun with considerable zeal and high expectations, the Korea government had difficult time keeping the level of capacity for operating the evaluation system. The factors that prevented the success of the initial evaluation system are the following:

First, there was a shortage of specialists. Since there was no pool of experts specialized in all areas necessary for evaluating investment projects, it was left to non-experts to calculate all related figures, such as the internal rate of return (IRR), which was done inadequately. Ultimately, these calculations were not applied to investment evaluations, as their use as final standards would have been problematic.

Second, there was a lack of practical methodologies and techniques. The methodologies and techniques required for such program evaluation tend to be more complex and contingent upon reality, which would naturally be highly difficult to simply apply the theoretical methods. As the conditions required for developing more sophisticated methodology suitable for Korea, there had to be more trial and error and constant efforts to improve the system.

Third, rather than establishing a new organization to take charge of reviewing investment projects, the Korean government assigned the task to an existing organization. As a result, this organization lacked sufficient means to conduct the reviews. At the time, a small number of employees responsible for conducting the reviews cooperated with employees in charge of other tasks in order to make it possible to review a large number of different types of projects. To conduct investment reviews properly, it is necessary to establish an organization dedicated to the task and secure sufficient manpower. However, securing such a large amount of funds and manpower, especially for a new task where success seemed uncertain, was not easy. Starting the investment reviews without a plan, based merely on the hope that the endeavor would succeed, was one of the factors that contributed to the failure of the system.

Lastly, the lack of social understanding and awareness necessary to accept the system was another factor. Of course, this was a result, in part, of Korea's inexperience with methodology. However, it was also difficult to pursue the development of such an unfamiliar system under the circumstances at the time,

when Korean society was not yet ready to pursue objective quantification and use it as a standard for investment reviews.

Although this first effort to establish an investment review system failed, it was not a complete failure. Thanks to the creation and distribution of manuals in 1970, 1972, and 1972, people gained a better understanding of the methodologies and techniques of investment reviews, and government offices and private companies improved their investment project planning capabilities. In 1976, having gone through the trial-and-error stage and in the course of reviewing related problems and economic policies, the Korean government once again became keenly aware of the need for an investment review system in order to promote the country's economic development. The government thus decided to establish a new investment review system. In January 1977, a new department dedicated to developing an investment review system was created within the EBP (Project Analysis Department of the Domestic Economic Planning Bureau). At the end of 1977, the department was expanded to a bureau (Investment Review Bureau). In July 1979, it was expanded once again to include one more department (bringing it to a total of four departments).

Since the nature of investment projects and the preconditions for their feasibility differed by industry sector, the review and analysis process differed as well. For the manufacturing sector, the major issues to consider were the possibility of manufacturing products at production costs on par with the global standard and the existence of sufficient demand to sell the products. For social overhead capital, however, the major considerations were the appropriateness of investment timing in relation to demand, appropriateness of scale, and existence of alternative means of achieving the same goals at lower construction costs.

As there was a technical limit to the cost-benefit analysis, which depended on quantification, the system approach, which is used to analyze the relevance with the whole system, as well as the traditional qualitative analysis were used in a complementary manner. In addition, financial analysis, which involves the examination of corporate profitability and the performance of investment projects, and economic analysis, which reviews the national economic effect of investment projects, were conducted as well. The financial and economic analyses were considered particularly important for public projects, which consisted largely of investments in infrastructure and the agricultural sector.

Despite the efforts of the EPB, most of the investment review functions were carried out within the scope of the investment review system and the methodologies established by the World Bank and other similar organizations, and they were not improved to suit the economic situation and model of Korea. Although the

Investment Review Bureau conducted analyses for some of the important projects, its analytical methodology did not fully consider the macroeconomic variables and microeconomic parameters of the Korean economy. Moreover, the methodology was applied only to some projects. As a result, the bureau was unable to conduct systemic analyses for the promotion of many other projects.

Until the early 1990s, the EBP continued to make efforts to expand the investment project review and assessment functions. However, under the Ministry of Finance and Economy, which was established in 1994 to replace the EBP, the Investment Review Bureau was abolished, greatly weakening the ministry's investment review capability. Alone, the Budget Office lacked the expertise and time to conduct thorough reviews of the results of feasibility assessments of the major projects submitted by each ministry and department.

From that time, feasibility assessments were conducted by the government departments in charge of projects, as the Ministry of Finance and Economy did not have a separate organization for conducting investment reviews. The documents submitted by government departments were used as the basis for the investment reviews and evaluations. From this point on, government departments began using feasibility study data to secure funding for their projects. For instance, between 1994 and 1998, only one out of 33 large-scale financial projects that were subject to feasibility studies conducted by the competent authorities was found to be "not feasible." This statistic clearly shows that feasibility studies became an important part of the project budgeting process of government departments.

Moreover, the lack of government guidelines for feasibility studies of major projects resulted in the inconsistent use of the various coefficients in feasibility studies, depending on the organizations in charge of carrying out the projects. For example, complaints arose regarding the social discount rate of 13 percent, which had been used consistently from the 1980s to convert future values to present values and was thus applied to investments, with many saying that the figure was too high. Therefore, for the energy sector, the social discount rate was lowered to 10 percent (Kim Jae-hyung *et al.,* 1999, p. 268-271).

In addition, in feasibility studies conducted for expressways, the maintenance and repair costs, vehicle operation costs, and hourly value, which should be applied to all such feasibility studies for expressways in a consistent manner, often varied by project (Roh and Ok, 1996). In the expressway feasibility studies conducted in the early 1990s, for example, different vehicle types and values were applied for different projects. This all changed in the late 1990s, immediately after the 1997 Asian financial crisis, when the feasibility study system for public investment projects underwent a dramatic overhaul. The original budget for 1998 that had passed in the regular

session of the National Assembly in November 1997 was introduced with a nominal growth rate of 10.8 percent. Following the occurrence of the financial crisis, however, the economic growth rate was expected to drop rapidly, and it became necessary to restructure expenditures to overcome the crisis. The need to restructure overall expenditure following the financial crisis naturally led to a thorough review of the priorities of public works projects. In 1998, the Planning and Budget Committee raised these problems concerning feasibility studies, strongly asserting that there was a lack of objectivity and credibility in the feasibility studies conducted by the government departments in charge of the projects and that there were no standard guidelines for such studies.

Therefore, as the budget for 1999 was prepared, the Planning and Budget Committee's view that feasibility studies for new, large-scale projects should not be conducted by government departments gained ground. However, the government departments in charge of such projects argued that feasibility studies require expertise and pointed out that no other country in the world had its budgeting authorities conduct feasibility studies.

In the end, both sides managed to come to an agreement by introducing pre-feasibility studies overseen by the Planning and Budget Committee and conducted prior to the feasibility studies of government departments. In April 1999, the Enforcement Decree of the Budget and Accounts Act was amended to include a second paragraph in Article 9, stipulating that new, large-scale projects must go through the process of: pre-feasibility study → feasibility study → basic design → working design → compensation → launch.

The Planning and Budget Committee also established the Public and Private Infrastructure Investment Management Center (PIMAC), a specialized agency, at the Korea Development Institute (KDI), and tasked it with and provided it with a budget for carrying out pre-feasibility studies.

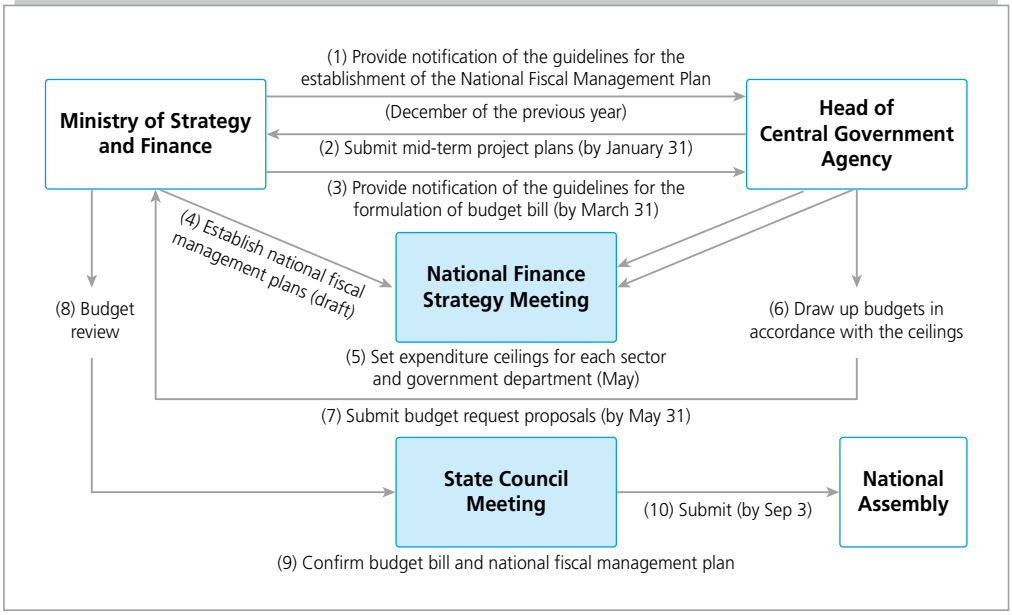
3.2. Total Cost Program Management System (TCPMS)

3.2.1. What is the TCPMS?

Budgeting is a process in which the annual revenue and expenditure of a fiscal year is calculated in advance. In this process, the executive branch prepares and submits the documents necessary to be granted authority over revenue and expenditures by the legislative branch, which then approves the budget (Kang, 2000).

In general, there are two basic budget decision-making approaches: the top-down approach and the bottom-up approach (Oh Young-kyun, 2007, p. 93). TCPMS is a top-down approach. In the top-down budgeting system, the central budget agency preliminarily determines the total expenditure and establishes the ceilings for each sector and ministry in order to strategically allocate the available funds. Each ministry then allocates the resources for its projects within its given ceiling (Byun, 2002; Ehrhart *et al.,* 2001). The procedure is outlined below:

[Figure 2-5] Government Budget Planning Procedure Using the Top-down Budgeting System



Source: Choi and Yang (2015).

Each government department submits their mid-term project plans to the central budget agency by the end of January, and the agency establishes a finance allocation plan (National Fiscal Management Plan) for the next five years. Based on this plan, ceilings are set for each sector and government department at the National Finance Strategy Meeting. Afterward, each government department submits budget request proposals in accordance with their ceilings and the budget proposal guidelines. Finally, after consulting with each department, the central budget agency conducts the budget review, and the government budget is confirmed at the State Council Meeting (Choi and Yang, 2015).

3.2.2. Limitations of the Bottom-up Budgeting System

1) Inefficient allocation of national resources

In terms of resource allocation, the previous bottom-up budgeting system was limited in terms of its ability to renew the strategic allocation of resources at the national level. In particular, it was too rigid for setting budgets for individual projects and items and tended not to effectively reflect actual demand. For example, the system was unable to meet the basic demands for education and housing, and the income gap between cities and agricultural regions widened despite the large-scale investments that were being made in rural areas.

2) Restricted autonomy of government departments

The more the central budget agency enforces the traditional, centralized, micro-control methods, the more important functions, such as the management of fiscal soundness, and priority analyses can be downgraded. In addition, the Ministry of Planning and Budget tended to limit the creativity and autonomy of government departments, as it focused on micro-controlling projects, leading it to intervene excessively in the tasks of diversified and specialized government departments rather than focusing on strategic resource allocation and other macro fiscal policy functions.

3) Irrational practice of "excessive demands and drastic reductions"

Irrational practices have persisted in the budgeting process due to the asymmetry of information between the Ministry of Planning and Budget and other government departments. In the bottom-up system, the budget of each government department was reduced whenever the Ministry of Planning and Budget slashed the budget. As a result, government departments did not provide completely accurate information and focused mainly on providing information that improved their chances of receiving bigger budgets. This led the Ministry of Planning and Budget to distrust the information provided by the government departments and spend most of its time examining each requested project and cutting their budgets.

4) Fiscal deficit and increase in national debt

Developed countries using the top-down budgeting system control the allocation of their budgets by setting the spending ceiling for each government department in an effort to reign in their growing budget deficits. As of yet, the Republic of Korea's deficit is not at a worrying level compared to other developed countries that are using the top-down budgeting system. However, as the country has recently become an aging society marked by low growth and an increasing budget deficit, measures to resolve these problems have become necessary. Since the 1980s, the growth rate

of Korea's budget has exceeded the growth rate of the national economy. Also, the national debt ratio rose from 12.3 percent in 1997 to 30.4 percent in 2005.

3.2.3. Expected Effect of TCPMS

Base on Kim and Moon (Kim and Moon, 2007), the expected effects of the top-down budgeting system, which was implemented in 2004 to resolve the problems of the bottom-up budgeting system, are the following.

1) Strategic resource allocation and the division of roles

Strategic resource allocation and the division of roles between the financial authorities and government departments are expected to improve department efficiency and increase their autonomy over resource allocation.

The Ministry of Planning and Budget focuses on the strategic allocation of resources at the macro level, while each government department, which has greater awareness of the nature of individual projects, concentrates on resource allocation within the department at the micro level, thereby increasing the efficiency of tasks and the autonomy of government departments. In addition, since the expenditure ceilings for government departments are set in advance, it is possible for each department to actively utilize its expertise to decide the budget for each project and strengthen its accountability and authority.

2) Fostering information sharing

During the budgeting period, the financial authorities and government departments share important information, such as the size of the total budget and budget for each government department and sector, and decide the resource allocation plan for each sector and department at the State Council Meeting to improve the transparency of resource allocation. Accordingly, each department is expected to reduce the incentive to secure partitioned resources, such as special accounts and funds, and review the budget size from a medium-term perspective, which is expected to strengthen the fiscal review function of the financial authorities.

3) Ending the vicious cycle

Another expected effect is bringing an end to the vicious cycle of government departments making excessive demands and the Ministry of Planning and Budget drastically reducing the proposed budget. This would reduce the reckless and aggressive lobbying activities in which government departments in charge of projects used to engage.

3.2.4. Limitations of the TCPMS

1) Setting criteria for expenditure ceilings

Objective functions or indices for determining the appropriateness of expenditure ceilings have not yet been developed and are, in fact, quite difficult to develop. Expenditure ceilings are said to be set based on strategic considerations, mid- to long-term financial revenue and expenses, and revenue and expense estimations.

Fundamentally, however, uncertainty is inherent in setting the ceilings, as the total size of the budget is estimated based on the prospects for economic growth, tax revenue estimations, and other future forecasts. Moreover, the executive branch tends to hold a more optimistic future outlook.

Therefore, it seems that the expenditure ceilings for government departments and sectors are still calculated by using a bottom-up approach, which is used to determine the budget for a individual project, instead of the top-down approach.

2) Possibility of distortion and waste in resource allocation

Rather than strictly observing the allocated expenditure ceilings, each government department is only creating the appearance that they are abiding by the ceilings. For each year from 2009 to 2014, the number of organizations not in compliance with the budget bill was 12, 11, 9, 15, 12, and 8, respectively. This shows that government departments have not been strictly complying with the expenditure ceilings.

〈Table 2-7〉 Number of Organizations Not Complying with Expenditure Ceilings

Category	2006	2007	2008	2009	2010	2011	2012	2013	2014
Number of non-complying organizations	16	16	8	12	11	9	15	12	8

Source: Refer to Ministry of Planning and Budget (2014).

Government departments abuse their autonomy to make it seem as if they are observing the expenditure ceilings while they are actually violating them. Occasionally, they intentionally leave out certain projects from the budget or make small budget requests for national projects and later demand additional funds, citing changes in circumstances (Ministry of Planning and Budget, 2014).

3) Limitations of autonomous budgeting within government departments

As autonomous budgeting became increasingly important, government departments began autonomously determining the priorities and budget sizes for each of their projects based on their particular expertise and practical experiences in an effort to increase efficiency.

However, to maximize the use of expertise within each department, it is important to respect the autonomy and expertise of sub-organizations. It is also important for departments and sub-organizations to form consensuses and be willing to engage in reasonable and efficient budgeting. If they fail to do so, budgets will likely come to be allocated by the heads of organizations and become centered on more powerful agencies or bureaus. In fact, complaints have already been made regarding such practices (Oh, 2007).

3.3. Pre-Feasibility Study for Managing Fiscal Demand

Public projects are much larger in size and impact, as they affect everyone in the country. It is therefore necessary to conduct thorough evaluation of the feasibility of such projects. If these evaluations are not conducted properly, it is possible for projects that are not necessary or not economically feasibility to be pursued. It is also likely that changes or increases in project expenses will occur in the process. Moreover, once such a project gets underway, regardless of its economic feasibility, it is difficult to stop it. In Korea, the pre-feasibility study system was instituted to ensure the stable management of financial demands (KDI, 2017).

3.3.1. Objective and Basis of the PFS

The pre-feasibility study (PFS) is a preliminary feasibility assessment overseen by the Minister of Strategy and Finance for the purposes of compiling a budget and establishing a fund management plan for new, large-scale projects (Article 38 of the National Finance Act).

The PFS is conducted prior to the feasibility study, and the basic objective is to decide whether to promote the project at the national level. To this end, PFSs are conducted by third-party organizations that have no particular interest in the projects, thereby allowing them to remain objective and neutral (KDI, 2017). The purpose of the PFS is to validate large-scale public investment projects by transparent and objective preliminary evaluation methods (KDI, 2012).

3.3.2. Conditions for Investment Projects Requiring PFS

The PFS is conducted for new, large-scale construction, informatization, and national research and development projects with budgets of KRW 50 billion or more, at least KRW 30 billion of which is provided by the government, as well as for new projects with mid-term expenditures of over KRW 50 billion in the social welfare, healthcare, education, labor, culture and tourism, environmental protection, agriculture, fisheries, or industrial SME sectors (hereafter referred to as "other financial projects").

Construction projects are civil engineering and construction projects; informatization projects and national R&D projects are those included under the informatization and R&D project budgets, in accordance with the "Guidelines for Types of Detailed Projects" in the "Detailed Guidelines for Budgeting."

Other financial projects are projects in the social welfare, healthcare, education, labor, culture and tourism, environmental protection, agriculture, fisheries, and industrial SME sectors, in terms of the program budget system, and are not considered to be construction projects, informatization projects, or national research and development projects.

When a PFS is conducted for a private investment project announced by the government, the PIMAC of the Korea Development Institute (KDI) can also conduct feasibility studies, in accordance with the Act on Public-Private Partnerships in Infrastructure (KDI, 2017).

3.3.3. Procedure of the PFS

To include the projects that require the PFS in the budget bill or fund management plan, the head of each central government agency must, in principle, submit a request for a preliminary feasibility study to the Minister of Strategy and Finance at least two years prior to the starting date of the given project, taking into consideration the time it takes to conduct a feasibility study. However, for urgent projects, it is possible to request a PFS for new projects scheduled for the following year.

The Minister of Strategy and Finance reviews the projects for which the heads of central government agencies have requested PFSs and selects the projects through financial project evaluation consultation meetings. In relation to the formulation of a budget or the establishment of a fund management plan, when necessary, it is possible to conduct a PFS without the request of the head of a central government agency (KDI, 2017).

A PFS is conducted by a research team made up of economists, transportation studies scholars, civil engineers, and other experts selected by PIMAC (Public and Private Infrastructure Investment Management Center). As the evaluation research team is made up of experts with different backgrounds and affiliations with different organizations, various opinions can be collected for the evaluation, and the decision-making process is more transparent and objective.

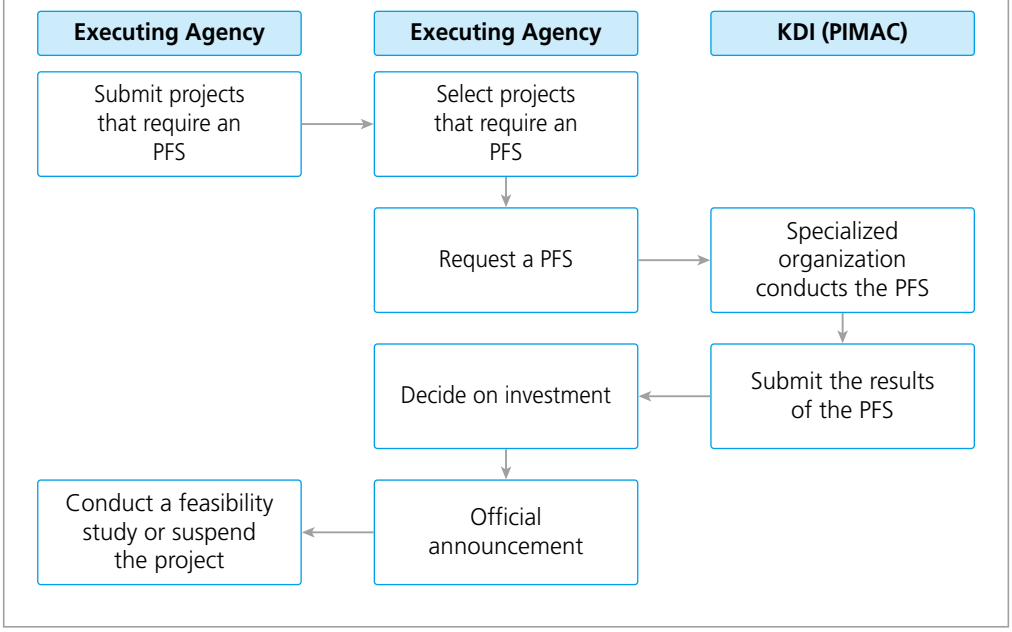
The Ministry of Strategy and Finance's Pre-Feasibility Deliberation Committee, consisting of the Fiscal Policy Bureau, departments in charge of projects, PIMAC, and experts from each sector, evaluates individual projects. It also periodically holds open discussions for the interim and final reports of the PFS (KDI, 2012).

3.3.4. System of the PFS

The basic system of the PFS is divided into three stages: background analysis, key issue analysis, and comprehensive project analysis. The background analysis involves reviewing the project plan and collecting background information, such as social, economic, geographic, and technical data, so that brainstorming may be carried out to find the key issues of the project.

The key issue analysis includes an economic efficiency analysis, policy analysis, and balanced regional development analysis. The most important part of the economic efficiency analysis is the cost-benefit (C-B) analysis, which estimates the costs and benefits of a project based on estimated demand. The C-B ratio, net present value (NPV), and internal rate of return (IRR) are calculated based on the annual flow of costs and benefits. Since July 2007, the real social discount rate of 5.5 percent, which reflects the trend of the risk-free interest rate in Korea, has been applied to feasibility analyses.

[Figure 2-6] Procedure of the PFS



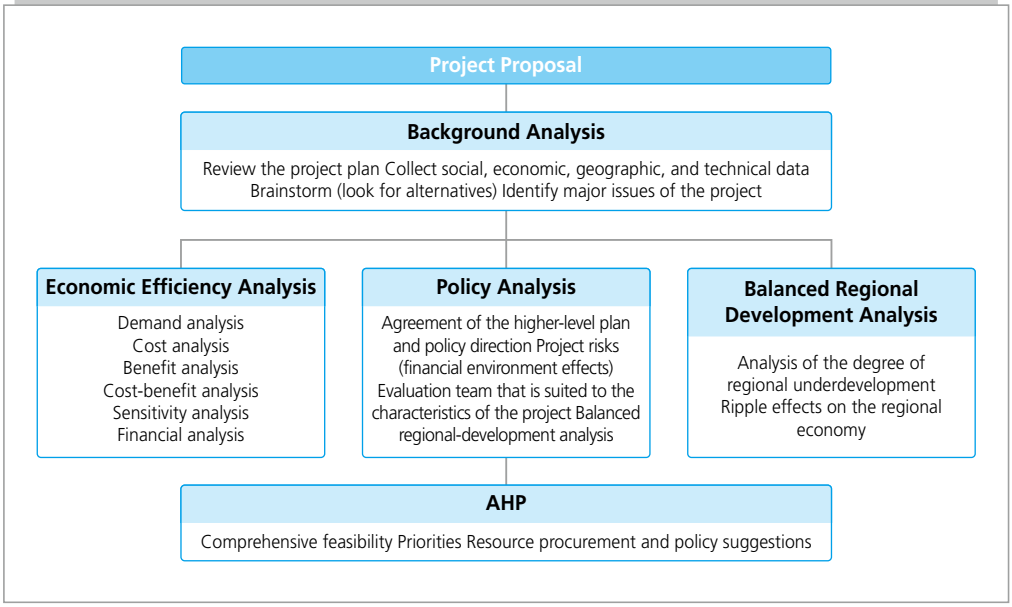
Source: KDI (2012), Public Investment Management Reform in Korea: Efforts to Enhance the Efficiency and Sustainability of Public Expenditure, p. 37.

Policy analysis evaluates a project's impact, in terms of quantity and quality, such as the consistency of policy, risk factors in the project promotion process, and evaluation categories specific to the project. In terms of consistency of policy, the analysis focuses on the willingness and readiness of the business owners and local residents to promote the project, while risk factors in the project promotion process include potential risks in resource procurement and environmental risks after the completion of the project.

In the balanced regional development analysis, projects are evaluated in terms of their impact on regional development. Also, the analysis of ripple effects on the local economy is conducted through the Multi-Regional Input-Output Model (MRIO) (KDI, 2012).

The analytic hierarchy process (AHP) is used to combine the results of the economic efficiency, policy, and balanced regional development analyses. In general, this process involves creating a hierarchy of complex problems, dividing them into major factors and specific factors, and conducting a pair comparison to determine the degree of importance (KDI, 2012).

[Figure 2-7] Content of Pre-Feasibility Studies



Source: KDI (2012).

3.3.5. Facts and Performance of PFS

1) Number of PFSs conducted

From 1999 to 2016, a total of 654 PFSs were conducted (based on the number of projects for which PFSs were completed). The number of PFSs conducted in the road transportation and railway sectors is 229 and 118, respectively, accounting for more than half (approximately 53 percent) of the PFSs conducted during this period. Since the scope of the PFS was expanded in 2007, the number of PFSs conducted for construction projects and other irregular projects has been increasing steadily (refer to Table 1-1) (KDI, 2017).

〈Table 2-8〉 Results of PFSs Conducted by Sector (1999–2016)

(Unit: Cases)

Year	Roads	Railways	Ports	Culture, tourism, and construction	Water resources (dams)	Others	Total
1999	11	2	1	4	1	1	20
2000	11	7	5	2	1	4	30
2001	20	14	1	5	-	1	41

〈Table 2-8〉 Continued

(Unit: Cases)

Year	Roads	Railways	Ports	Culture, tourism, and construction	Water resources (dams)	Others	Total
2002	9	8	2	2	5	4	30
2003	10	7	3	5	5	2	32
2004	24	13	1	2	3	12	55
2005	11	6	2	1	3	7	30
2006	27	10	5	5	1	4	52
2007	30	5	1	2	1	7	46
2008	12	2	4	3	2	15	38
2009	22	5	2	2	12	20	63
2010	7	14	2	1	2	22	48
2011	6	5	2	11	5	14	43
2012	7	7	5	6	5	5	35
2013	8	-	1	2	1	4	16
2014	6	4	2	12	2	8	34
2015	3	3	2	7	-	3	18
2016	5	5	2	3	4	3	23
Total	229	117	43	75	53	136	654

Note: 1) Based on the projects for which the PFS was completed by December 2016.
2) "Others" includes airport, informatization, R&D, and other financial projects.
3) The construction sector began to be differentiated in 2011, and prior construction projects are included in "Others."
4) The trade-off studies (simple PFSs) for project plans are not included in the results.Total expenses saved

Source: KDI (2017).

2) Total expenses saved

From the introduction of the PFS in 1999 to the end of December 2016, a total of 736 PFSs, including the PFSs for the Third and Fourth Five-year National Route and Local Route Plans, were conducted in the civil engineering, construction, and informatization sectors, as well as for other financial projects. Approximately KRW 130.7 trillion in expenses was found to be saved through the PFSs (KDI, 2017).

〈Table 2-9〉 Ratio of Validated Programs by Sector and Year (1999–2016)

(Unit: %, cases)

Year	Roads	Railways	Ports	Culture, tourism, and construction	Water resources (dams)	Others	Feasibility rate
No. of projects	229	118	43	75	53	141	659
No. of feasible projects	138	68	32	49	37	97	421
Feasibility rate (%)	60.3	57.6	74.4	65.3	69.8	68.8	63.9

Note: 1) The results of the PFSs from 1999 to 2002 were based on press releases issued by the (former) Ministry of Planning and Budget. The results of the PFSs conducted from 2003 and after were calculated based on an AHP >= 0.5.

2) In "Others," the smart grid expansion project was divided into six business areas, and the overall feasibility of the project in each area was analyzed.

Source: KDI (2017).

3.3.6. Limitation of the PFS

In terms of procedure, it may be difficult to secure a period of time for PFSs prior to contract signing. To expedite the PFS process for overseas projects, it is necessary to help implement feasible projects at the right time by conducting PFSs earlier or when required and reducing the PFS period. For urgent overseas bidding projects, it should be possible to start PFSs when the organizations in charge confirm the project plans, even if the selection of preferred bidders has not been completed. In addition, it is important to conduct PFSs when required, aside from the regular schedule, and reduce the length of PFS. Of course, to prevent unreliable PFSs, such issues should only be taken into account for special cases.

For overseas PF (project financing) projects, for which preliminary feasibility studies have been conducted on profitability and risks related to the group of lenders, some content of the feasibility studies is highly likely to overlap with the content of the PFSs. Therefore, it is necessary to simplify the PFS process for projects where reliable preliminary feasibility studies have been conducted for the project, whose lenders include international financial institutions or international commercial banks.

When applying the discount rate to overseas projects guaranteed by international organizations, it is also necessary to rationalize the PFS standards so as to reflect the national risk premiums. For projects guaranteed by the World Bank's Multilateral

Investment Guarantee Agency (MIGA) and other similar international organizations, reduced national risk premiums should be applied to the PFSs.

As PFSs are not conducted for resource development and exploration projects, the need for objective feasibility reviews by external experts, starting from the exploration stage, has been raised. Another problem regarding these projects is the lack of a control system for projects launched without PFSs. It is therefore necessary to conduct PFSs for all overseas resource development projects. However, in consideration of the uncertainty of the projects, it is necessary to develop measures for qualitatively evaluating the appropriateness of exploration methods based on the results of preliminary studies (KIPF, 2016).

3.4. Self-Evaluation System for Fiscal Projects

3.4.1. Introduction of the System

The Self-Evaluation System for Fiscal Projects is a system through which each government department evaluates its own fiscal projects on an annual basis and uses the results for budgeting purposes. Specifically, the Ministry of Planning and Budget provides the evaluation categories and guidelines by project in advance; the government departments in charge of the major fiscal projects evaluate the projects; and the Ministry of Strategy and Finance checks and examines the results. The system allows the results to be used by the government departments for budgeting purposes and other financial tasks and increases the efficiency of fiscal projects by providing recommendations for each government department on improving any shortcomings found in the process (National Assembly Budget Office, 2009).

In 2003, the Korean government introduced and began operating the Performance Management System for Fiscal Projects, laying the foundation for evaluating the budgets and performance of financial programs. However, as there was no specific system that linked performance with budgets, the Ministry of Strategy and Finance decided to introduce and operate the Self-Evaluation System for Fiscal Projects, after first examining the Program Assessment Rating Toll (PART) implemented in the United States, in an effort to supplement performance information in accordance with the Government Performance Results Act (GPRA) (National Assembly Budget Office, 2009).

The system was introduced for the following reasons. First, it was introduced to increase government departments' accountability for the results of their financial programs and grant them autonomy in budgeting by adopting the top-down budgeting system, which was implemented in 2004. The Self-Evaluation System for Fiscal Projects enabled the Ministry of Strategy and Finance, which is responsible for

overseeing the budget, to monitor the operation of the budgets of government departments and reflect the results in the budgeting process, thereby allowing budget allocation.

Second, the system was introduced to supplement the existing Performance Goal Management System for Fiscal Projects. Although the Performance Goal Management System for Fiscal Projects assigns performance goals and indicators by project units and manages performance in order to improve the performance of each department's fiscal projects, its capability to link performance with budgets was limited. The Self-Evaluation System for Fiscal Projects was introduced to remedy this shortcoming.

Third, the Self-Evaluation System for Fiscal Projects was introduced in response to the need for an evaluation system for fiscal projects following the implementation of the Integrated Public Service Evaluation System under the Framework Act on Public Service Evaluation.

Basically, the Self-Evaluation System for Fiscal Projects was introduced in an effort to reinforce the accountability of government departments following the change in the budgeting system to a top-down system, which emphasizes the autonomy of government departments (National Assembly Budget Office, 2009).

The Self-Evaluation System for Fiscal Projects was first introduced in 2005. However, in the first year, the system was operated according to the enforcement guidelines. It wasn't until 2006 that the system gained a legal basis, with the enactment of the Framework Act on Public Service Evaluation and the National Finance Act.

The Self-Evaluation System for Fiscal Projects is overseen by the Ministry of Strategy and Finance based on Article 8, Paragraph 6 of the National Finance Act, which stipulates that "the Minister of Strategy and Finance may conduct evaluations of major fiscal projects and reflect the findings therefrom in financial management, as prescribed by Presidential Decree" (National Assembly Budget Office, 2009).

3.4.2. Relationships with Other Performance Management Systems

The Self-Evaluation System for Fiscal Projects is one of the key components of the Performance Management System for Fiscal Projects, including the Performance Goal Management System for Fiscal Projects and In-Depth Performance Evaluation System for Fiscal Projects. The Performance Goal Management System for Fiscal Projects (performance monitoring) involves the monitoring of all budget plans and achievements of each government department, focusing on the mission, vision,

strategic and performance goals, and performance indicators. This system requires each government department to draw up a performance plan based on its particular mission, vision, strategic goals, performance targets, and performance indicators one year before the fiscal year and write a performance report on the budget execution results of the same fiscal year. However, through this system, it was difficult to gain specific information on individual projects, which made it difficult for the performance evaluation results to be linked with budgets. To address this issue, the Self-Evaluation System for Fiscal Projects was introduced in 2005.

The In-Depth Evaluation System for Fiscal Projects (program evaluation) involves the in-depth analysis and evaluation of: projects deemed to require additional detailed evaluation based on the results of the Self-Evaluation System for Fiscal Projects; projects that are similar to projects of other departments; projects for which in-depth review is deemed necessary by the National Assembly, the Board of Audit and Inspection, or other organizations; overlapping projects; projects subject to budget waste; projects that require continuous increases in fiscal spending; and projects, whose promotion performance is deemed necessary for review through in-depth analysis. Projects deemed not to have achieved their original goals can be subject to measures such as consolidation, reduction, change, and suspension when planning their budgets for the following year, or improvement measures can be implemented to enhance the efficacy or operation methods of the projects.

The three systems for managing the performance of fiscal projects described above are closely interrelated. First, each government department must operate the Performance Goal Management System for Fiscal Projects in order to receive positive results from the self-evaluation system and promote its projects without difficulty, as the categories related to the performance goal management of fiscal projects are reflected in the categories of the Self-Evaluation System for Fiscal Projects. Second, the Self-Evaluation System for Fiscal Projects is closely related to the In-Depth Evaluation System for Fiscal Projects, as the projects with poor performance, according to the results of the self-evaluation system, can be subject to in-depth evaluation (National Assembly Budget Office, 2009).

3.4.3. Components of the Self-Evaluation System for Fiscal Projects

1) Evaluation Procedure

A government department self-evaluates its own projects (self evaluation), and the Ministry of Strategy and Finance and others check and examine the evaluation procedure and compliance with standards (meta evaluation). The following is the detailed schedule:

The Ministry of Strategy and Finance distributes the Guidelines for the Self-Evaluation of Fiscal Projects by the end of March of the year prior to the evaluation. Each government department must then consult with the Ministry of Strategy and Finance on the projects to be selected for evaluation. In January and February of the evaluation year, the Ministry of Strategy and Finance provides evaluation guideline training for individuals in charge of the self-evaluation of fiscal projects as well as those in charge of fiscal projects. The government departments then submit the self-evaluation reports, evidential materials, and action plans for the projects deemed "poor" to the Ministry of Strategy and Finance by the end of March. The ministry checks and examines the reports and asks for the advice of the central performance management advisory group regarding the examination results, so that the evaluation results can be checked and reviewed by the end of May. In this process, the Ministry of Strategy and Finance enlists the help of the Korea Institute of Public Finance, the Korea Internet and Security Agency, and other research institutes specializing in related areas (National Assembly Budget Office, 2009). The evaluation is conducted using meta evaluation methods and can be conducted by project when necessary (Ministry of Strategy and Finance, 2015).

Each central government agency then reviews the revised evaluation reports, makes objections in cases of differences in opinion, and holds discussions and mediates with the Ministry of Strategy and Finance to settle on the final evaluation reports. The final evaluation reports are disclosed to the public, and all performance-related information acquired during the evaluation process is handled as important information for budget-related decision-making processes (Ministry of Strategy and Finance, 2013).

2) Check and Examination of Evaluations

The Ministry of Strategy and Finance can check and examine the self-evaluations of government departments in terms of the faithfulness of the evaluation process, appropriateness of the evaluation results, and reasonableness of the project feedback, among others. When necessary, the projects subject to evaluation can be reviewed by the Ministry of Strategy and Finance from the very beginning, and additional projects can be selected and rated as "below average." The check and examination of the evaluations are carried out according to the following criteria using a meta evaluation method, and can be carried out by project or by evaluation index, when necessary. In addition, in the check and examination stage, the Ministry of Strategy and Finance can recommend improvements for the performance indices, project review, integration, mediation, or other aspects of the system (Ministry of Strategy and Finance, 2015: 4-5).

3) Utilization of Evaluation Results

Since the self-evaluation of financial projects is conducted by the financial authorities, so that it may be used in the budget review, the results of the evaluation are used in connection with budgeting or to make system improvements (National Assembly Budget Office, 2009:13). According to the "2015 Guidelines for the Self-Evaluation of Fiscal Projects," the action plans from the self-evaluations conducted by government departments and results of checks and reviews are thoroughly considered in the development of feedback measures for each project and necessary incentives and penalties for each organization.

When the evaluation results are considered on a project-by-project basis, the characteristics of the projects, reasons for their "below average" or "poor" rating, and other factors are reflected in the budget for the following year or used to promote measures for improving the system. In principle, the budgets of projects that are rated "good" or higher should be increased, while those for projects rated "below average" or lower should be reduced by 10 percent or more. However, if cutbacks are difficult due to the characteristics of the projects and in consideration of the reasons for their low ratings, measures for improving performance of the projects are implemented. For projects rated "below average" or "poor," feedback measures tailored to the characteristics of the projects need to be implemented, and the level of implementation needs to be checked on a regular basis until the projects ratings improve.

When the evaluation results are considered on an organization basis, government departments are given incentives or penalties depending on the results of the checks and reviews. For departments rated "good" or "excellent," the evaluation results are recognized as is, and the departments are given rewards, such as lowering the percentage of projects rated "below average" and "poor" for the following year. On the other hand, for government departments rated "below average," basic expenditure is reduced and the percentage of projects rated "below average" and "poor" is increased for the following year (Ministry of Strategy and Finance, 2015).

3.4.4. Limitations of the System

Among the various problems, one of the foremost issues is the lack of performance measurement and evaluation in the execution process. Unlike the United States, which adopted the quarterly performance management program for some of its major projects in order to manage and improve the performance of the project execution process, Korea introduced the Performance Information (PI) Board for all project units. As a result, despite the intention to strengthen the quarterly performance management for projects, there is a high probability that side effects

will occur. In particular, there are many projects for which quarterly performance indices are difficult or impossible to set, and it is highly likely that the burden on government departments will increase. Therefore, it is likely that the PI Board will be used as a mere formality rather than as an actual measure to improve quarterly project performance.

Another problem is the fact that the system is connected to the budget in a negative way in relation to budget cuts. Budget reduction-centered incentives cause government departments to become more generous in their self-evaluations and could allow project evaluations to be influenced by politics or priorities regardless of the actual project performance. In particular, budgets are reduced uniformly without considering the reasons for the poor performance of projects. As a result, the budgets for "good" or "excellent" projects that have achieved their aims, and should thus be subject to reductions, are maintained, while those for "poor" projects that require budget increases face cuts (Oh Young-Min, *et al.,* 2014).

4. Policy Suggestions

Based on recent issues identified above by the Indonesian government and historical overview of the Korean government's experience of setting up monitoring and evaluation system, there are four policy suggestions below.

4.1. Need to Set up a Strong and Compliable Legislation for Monitoring & Evaluation

In order to foster sustainable infrastructure investment, there needs to be an integrated and strong legislation for monitoring and evaluation system. Note that the Indonesia government has been making efforts to set up a sound institution for infrastructure investment throughout the years. In particular, the Indonesian government has been running a monitoring and evaluation system in which BAPPANAS conducts planning and the Ministry of Finance takes care of implementation and performance management. However, the process and system of monitoring and evaluation were not managed in an integrated manner, and the indicators were not clearly set up.

To overcome this issue, the Indonesian government should consider implementing "The basic initiative for monitoring and evaluation for fiscal investment", which includes the articles specifying the criteria and process of monitoring and evaluation of the government's fiscal infrastructure investments. The monitoring and evaluation scope should include the ex-ante planning stage, as well as the implementation, performance, and feedback stages.

As shown in the previous section, note that the Korean government experienced a hard time managing the fiscal investment schedule in the early stage its economic development. In order to overcome this difficulty, the Korean government set up monitoring and evaluation systems for all the stages through the "National Finance Act" and "Act on the Management of Public Institutions". In these acts, the scope of monitoring and evaluation includes ex-ante and ex-post stages of public investment.

For example, in the "Act on the Management of Public Institutions", the Pre-Feasibility Study has to be conducted by the public organization, respectively, in order to compile a budget for a new investment project and capital investment (Article 40). This Pre-Feasibility Study needs to start at least one year before starting the project. The project can be declined to be funded, or the size of the project can be changed by going through the Pre-Feasibility Study process provided in the previous chapter.

Afterwards, the projects are re-evaluated when they surpass the budget spending that was initially estimated, and the performances of the project are evaluated when the project is finalized. Note that the authority and accountability of BAPPENAS and the Ministry of Finance needs to be clear, and the stakeholders need to follow the rules set by the laws and the governments.

4.2. Need a M&E Coordination Mechanism among the Ministries and Governments

For an efficient and effective infrastructure investment, coordination among the key ministries and governments is crucial. In particular, there has to be a mechanism in the monitoring and evaluation system for coordination, not just between the central government ministries, but also between the central government and the provincial or local governments.

Indonesia is a country that has a very distributed authority system. In other words, the local governments have strong autonomy, where the central government cannot arbitrarily make decision on the infrastructure investment issues related with provincial or local governments. This has pros and cons. One of the pros is that local properties are protected by the local government's authority, while one of the cons is that the central government sometimes cannot achieve a certain level of infrastructure investment without the consent of local governments.

One way to overcome this issue is to make a M&E coordination planning process, in which all the stakeholders participate in the process of the infrastructure investment project. The local representatives initially participate in the ex-ante feasibility study stage and monitor project implementation throughout the stages.

In Korea, the PFS, an ex-ante evaluation method, requires the submission of a list of stakeholders that participated in planning the project report. Moreover, in the PFS manual, a project planning committee is formed, and this committee is usually held several times to review the planning materials and give feedback for each draft submitted to the project planning committee members periodically. Various types of stakeholders participate in this project planning committee.

In summary, by benchmarking the Korean case of the participatory project planning committee, efficient infrastructure investments may be done by forming and operating a planning committee that includes all relevant stakeholders, including local residents and local government representatives, as well as firms and central government representatives.

In addition, the Ministry of Finance may need more authority in coordination efforts to improve efficiency when dealing with the issues, so that policies can be implemented on time and on budget.

4.3. Developing a Training Program for Establishing and Operating a M&E System

Note that investing in developing human resources that can systematically develop and operate the M&E system in Indonesia is crucial for the future of the Indonesian government. Human resources specialized in the M&E system can provide solid planning and feasibility studies for infrastructure investment projects that will be pursued by the Indonesian government.

To do so, there needs to be government-wide support for training and educating of Indonesian government officials and experts to get the expertise for developing and operating M&E systems in Indonesia.

In Korea, there were decades of efforts to acquire expertise in the M&E government investment programs. For example, In January 1977, a new department dedicated to developing an investment review system was created within the EPB (Project Analysis Department of the Economic Planning Bureau), a government ministry in charge of infrastructure investment planning in Korea at that time. At the end of 1977, the department was expanded to a bureau (Investment Review Bureau). In July 1979, it was expanded once again to include one more department (bringing it to a total of four departments).

Moreover, the Planning and Budget Committee of the Korean government established the Public and Private Infrastructure Investment Management Center (PIMAC), a specialized agency, at the Korea Development Institute (KDI). KDI had

expertise in economic analysis and enhanced its capability by recruiting many PhDs who acquired related majors, which eventually enhanced PIMAC's analytical capability up until now.

In summary, the Indonesian government could consider developing and operating various training courses associated with public investment feasibility studies, with the support of countries that have experience running such processes, such as the Republic of Korea.

4.4. Making an Effective M&E Tools and System for Financial Investment Project

Note that the Indonesian government needs more financial resources for sufficient infrastructure investment. The Indonesian government has been using various channels and methods, such as PPP, for such investments. However, there are no systematic tools for monitoring and evaluating the investment projects, including PPP projects, for efficient and effective investments in Indonesia.

In Korea, the Ministry of Strategy and Finance entrusted KDI to conduct M&E for all fiscal investments, including PPP projects. To do so, KDI developed M&E tools and methods to efficiently and effectively conduct its role. For example, since the manual for PFS was officially documented in 1999, the manuals are updated periodically and developed by relevant sectors.

Benchmarking this Korean case, it may be crucial for the Indonesia government to develop an Indonesian version of M&E tools for infrastructure investment to efficiently and effective use financial resources.

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