

**Response to questionnaire for:**

**Assessment of strategic plans and policy measures  
on Investment and Maintenance in Transport  
Infrastructure**

**Country:**

**Republic of Korea**

## 1 INTRODUCTION

### 1.1 Infrastructure

#### 1.1.1 Infrastructure Summary

Continuous investment on transportation facilities brought out gradual increases of facility capacity, number of passengers, cargo handling capacity through the decade (2001-2010). In addition, expressway trail extension, container cargo handling capacity and distribution field's complex area got increased obviously.

Table 1. Transportation Infrastructure Summary

Types		2001	2005	2010
Road	Total road length(km)	91,396	102,293	105,565
	Expressways length(km)	2,637	2,968	3,859
	National road length(km) <sup>1)</sup>	14,254	14,224	13,812
Railway	Single-track length(km)	3,125	3,392	3,558
	Double-track length(km)	1,004	1,355	1,763
	Express-track length(km)	-	240	369
Airport	Number of flights(thousand/year)	449	442	550
Port	National cargo handling capacity(million ton/year)	471	650	801
	Trade port cargo handling capacity(million ton/year)	462	641	823
	Container cargo handling capacity(ten thousand TEU/year)	883	1,458	2,187
Logistics	ICD area(thousandm <sup>2</sup> )	760 <sup>2)</sup>	1,534 <sup>3)</sup>	1,704 <sup>4)</sup>
	Logistic distribution complex area(thousandm <sup>2</sup> )	- <sup>2)</sup>	1,316 <sup>3)</sup>	7,067 <sup>4)</sup>

Note: 1) 1st, July, 2006, after announcing the Jeju Special Self-Governing Province, 5 of national roads, 342km, transferred into local roads.

2) As of 2000.

3) As of 2006.

4) As of 2009.

Source: Ministry of Land, Transportation and Maritime Affairs ([www.mltm.go.kr](http://www.mltm.go.kr))

#### 1.1.2 Investment on Transportation Infrastructure

In terms of investment on transportation infrastructure by national governments, including the Ministry of Land, Transportation and Maritime Affairs (MLTM), the total amounts of investments have been increased until 2009. Especially, in order to resolve global economic depression in 2009, the amount of investment raised sharply to 19.96 trillion KRW<sup>1</sup>.

Table 2. Investment by National Governments (unit: hundred million KRW, %)

Types	Road	Railway	Urban	Airport	Port	Logistics &	Total
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<sup>1</sup> KRW means the code for the currency of South Korea (Korean Won).



Urban railway	401.1	410.4	410.4	422.4	469.7	482.1	500.3	503.9	534.0	537.0
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Source: Ministry of Land, Transportation and Maritime Affairs, Railway Handbook, 2010.

### 1.1.5 Airport

As of December, 2009, total 15 airports, including 8 international airports and 7 domestic airports, are in service.

Table 5. Airports in Service

Types		Airports
Function	International Airports	Incheon, Kamp, Kimhae, Jaeju, Daegu, Chungju, Yangyang, Muahn
	Domestic Airports	Gwangju, Goonsan, Sachun, Yeosu, Wonju, Pohang, Ulsan

Source: Ministry of Land, Transportation and Maritime Affairs ([www.mltm.go.kr](http://www.mltm.go.kr)).

### 1.1.6 Port

Total of 58 ports, including 31 trade ports and 27 coastal ports, are in service in 2010. Total of 31 trade ports of which 9, 11, and 14 ports are located in western coast, southern coast and eastern coast, respectively, have 822,504 tons of cargo handling capacity.

## 1.2 Performance

### 1.2.1 Modal Share Rate

In terms of modal share rate for passenger trips in 2008, road share rate was 81.4%, railway share rate was 15.9%, air share rate was 2.5%, and ship share rate was 0.23%. Road share rate has gradually decreased from 83.0% as of 2001 to 81.4% as of 2008 whereas railway share rate has increased from 13.6% to 15.9% during the same time period as roads. Especially, railway passenger and cargo transport share rate increased dramatically after opening the expressway rail in 2004.

Table 6. Modal Share Rate for Inter-City Trips  
(unit: %)

Types		2001	2002	2003	2004	2005	2006	2007	2008
Domestic Passenger Trips (person· km)	Road	83.0	83.2	82.7	81.6	82.2	82.2	81.7	81.4
	Railway	13.6	13.5	14.0	15.4	15.1	15.0	15.7	15.9
	Air	3.2	3.1	3.2	2.8	2.5	2.5	2.5	2.5
	Ship	0.18	0.18	0.20	0.20	0.19	0.19	0.20	0.23

Domestic Cargo Trips (ton· km)	Road	65.9	65.2	68.1	73.4	74.2	74.6	73.0	71.1
	Railway	7.6	7.6	8.3	7.7	7.1	7.2	7.5	8.1
	Air	0.12	0.12	0.11	0.12	0.11	0.10	0.09	0.09
	Ship	26.4	27.1	23.5	18.8	18.7	18.1	19.4	20.7

Source: Korea Transport Database (www.ktadb.go.kr)

### 1.2.2 Road

Traffic congestion cost including city roads was 26.9 billion KRW in 2008. The congestion cost keep increasing despite continuous expansion of road networks.

Table 7. Congestion Costs by Road Types

(Unit: hundred million KRW)

Types	2000	2001	2002	2003	2004	2005	2006	2007	2008
Expressway	21,509	19,845	20,651	20,126	20,591	23,055	24,131	28,188	28,315
National Highway	51,381	56,073	57,350	55,980	54,660	50,247	49,204	50,591	50,967
Provincial Roads	10,101	11,966	13,512	15,025	16,053	17,635	18,468	18,059	19,528
Total	82,991	87,885	91,513	91,130	91,305	90,937	91,802	96,838	98,811

Note: city roads were not included.

Source: The Korea Transport Institute, National Traffic Congestion Cost Measurement as of 2008, 2010.

### 1.2.3 Railway

Railway passenger trips decreased at the annual rate of -0.3%. The number of short distance passenger trips decreased because lots of short distance railway passenger trips were shifted to passenger cars due to increased mobility and accessibility in road networks.

Total cargo trips decreased since 2001, however, railway container transportation has been increasing at the annual rate of 9.5%.

Table 8. Railway Passenger Trips

(unit: thousand person, %)

section	KTX	Semaeul	Mukunghwa	Tongil	Bidulgi	Total
2000	-	15,534	73,809	26,477	93	115,913
2001	-	16,042	76,088	25,488	-	117,618
2002	-	15,362	70,539	24,034	-	109,935
2003	-	14,538	67,509	23,477	-	105,524

2004	19,791	12,428	62,877	15,257	-	111,214
2005	32,104	10,579	58,120	13,329	-	115,002
2006	36,017	9,566	55,645	12,225	-	114,331
2007	36,709	9,844	54,956	7,965	-	110,630
2008	37,417	10,716	57,383	6,885	-	113,059
2009	36,823	10,820	55,034	3,983	-	107,733
2010	41,349	10,925	58,565	1,255	-	112,093
annual rate of growth	13.1	-3.5	-2.3	-26.3	-	-0.3

Source: The Korea Transportation Institute, Railway Statics Annual Report, 2010.

Table 9. Railway Cargo Trips

(Unit: unit: thousand ton, %)

Types	2001	2002	2003	2004	2005	2006	2007	2008	2009	Rate
Container	7,774	8,154	8,753	8,925	10,034	11,253	11,729	12,443	8,511	1.14
Other items	37,347	37,577	38,359	35,587	31,634	32,088	32,801	34,363	30,387	-2.55
Total	45,121	45,731	47,112	44,512	41,668	43,341	44,530	46,806	38,898	-1.84

Source: The Korea Transportation Institute, Railway Statics Annual Report, 2010.

### 1.2.4 Airport

The amount of airport cargo treatments has gradually increased. In details, the amount of international cargo has increased whereas the amount of domestic cargo has decreased from 2,209 thousand tons as of 2003 to 3,327 thousand tons as of 2010.

Table 10. Airport Passenger Treatment

(Unit: thousand persons)

Types	2003	2004	2005	2006	2007	2008	2009	2010
International	21,459	26,930	29,684	32,707	36,897	35,341	33,514	40,061
Domestic	21,380	18,893	17,158	17,181	16,848	16,990	18,061	20,216
Total	42,839	45,823	46,842	49,888	53,751	52,331	51,575	60,277

Source: Ministry of Land, Transportation and Maritime Affairs, 2010 National Transport SOC Statistics, 2011.

Table 11. Airport Cargo Treatment

(Unit: thousand tons)

Types	2003	2004	2005	2006	2007	2008	2009	2010
International	2,209	2,569	2,617	2,854	3,138	2,997	2,872	3,327
Domestic	423	409	372	355	316	254	269	262

Total	2,632	2,978	2,989	3,209	3,455	3,252	3,141	3,589
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Source: Ministry of Land, Transportation and Maritime Affairs, 2010 National Transport SOC Statistics, 2011.

### 1.2.5 Port

The amount of national goods delivered through ports has increased since 2000.

Table 12. National Goods Delivered

(Unit: thousand ton, %)

Types	2000	2005	2006	2007	2008	2009	2010	Annual rate of growth
Total quantity of goods delivered	833,581	984,535	1,036,843	1,093,479	1,139,087	1,076,541	1,204,068	3.89%

Source: Maritime and Port Distribution Information Center(SP-IDC) ([www.spidc.go.kr/](http://www.spidc.go.kr/))

Especially, the growth of containers treated through container ports is high. The amount of container treated reached 19,369 ten thousand TEU in 2010.

Table 13. Containers Treatment

(Unit: thousand TEU, %)

Types	Treatments							Annual rate of growth	
	2000	2005	2006	2007	2008	2009	2010		
National	Import	3,196	4,727	5,065	5,656	5,853	5,127	6,159	6.78
	Export	3,192	4,684	5,058	5,598	5,753	5,242	6,191	6.85
	Trans-shipment	2,529	5,533	5,673	6,155	6,186	5,719	6,641	10.14
	Coastal Trade	274	272	168	134	135	253	378	3.27
	Total	9,190	15,216	15,965	17,544	17,927	16,341	19,369	7.74

Source: Maritime and Port Distribution Information Center(SP-IDC) ([www.spidc.go.kr/](http://www.spidc.go.kr/))

## 2 MAJOR PROJECTS AND FUNDING

### 2.1 Long Term:

The amount of investment on transportation infrastructure 2011 through 2020 would be 185 trillion KRW based on the recent long term plan, National Intermodal Transportation Plan, which was established in 2011 by the Ministry of Land, Transport and Maritime Affairs. However, the detailed investment plan may be established based on the mid-term plan, the Mid-term Transport Facility Investment Plan as well as the National Mid-term Finance Plan, which is a master plan for managing the national expenditure established by the Ministry of Strategy and Finance."

Table 14. 10 Year-Long Investment Plan by Modes (Government expenditure)

Type	Road	Railway	Airport	Port	Logistic & etc.	Total
Investment fund (trillion KRW)	70	72	1	18	24	185
Ratio (%)	37.9	38.9	0.5	9.7	13.0	100.0

Note: all numbers include maintenance cost.

Source: Ministry of Land, Transport and Maritime Affairs, National Intermodal Transportation Plan, 2011.

### 2.2 Mid Term

For five years 2011 through 2015, 146 trillion KRW of investment finance will be spent on building transportation infrastructure. However, the plan will be reviewed through the National Mid-term Finance Plans in every year.

Table 15. Investment Plan by Resources

Type	Total	Government expenditure	Local government expenditure	Self-financing	Private-fund & etc.
Investment Amount	1,455,526	867,583	74,983	143,584	369,376

Note: including maintenance cost

Source: Ministry of Land, Transport and Maritime Affairs, 3rd Mid-term Transport Facility Investment Plan, 2011

Among 146 trillion KRW, 49.3 trillion KRW will be invested on road infrastructure and 49.4 trillion KRW on railway.

Table 16. Investment Plan by Modes

Type	Total	Road	Railway	Airport	Port	Urban railway	Logistic & etc.
Investment Amount	1,455,526	493,136	494,007	21,808	201,628	84,298	160,649

Note: including maintenance cost

Source: Ministry of Land, Transport and Maritime Affairs, 3rd Mid-term Transport Facility Investment Plan, 2011

In government expenditure, 34.3 trillion KRW will be used for road infrastructure, and 30.9 trillion KRW for railways.

Table 17. Government Expenditure Plan by Modes

Type	Total	Road	Railway	Airport	Port	Urban railway	Logistic & etc.
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Investment Amount	867,583	342,695	308,729	3,601	84,527	38,503	89,528
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Note: including maintenance cost.

Source: Ministry of Land, Transport and Maritime Affairs, 3rd Mid-term Transport Facility Investment Plan, 2011

Especially, the amount of investment on railway infrastructure will increase noticeably until 2015.

Table 18. Variation of Investment on Transportation Infrastructure by Modes

Types	Total	2011	2012	2013	2014	2015
Road	493,136	94,902	92,990	100,367	102,520	102,357
Railway	494,007	72,979	94,268	103,009	117,898	105,853
Airport	21,808	1,866	2,068	2,762	5,377	9,735
Port	201,628	33,257	38,792	42,729	41,803	45,047
Urban railway	84,298	19,341	18,369	18,695	13,130	14,763
Logistics & etc.	160,649	45,398	30,017	33,959	31,350	19,925
Total	1,455,526	267,743	276,504	301,521	312,078	297,680

Note: including maintenance cost.

Source: Ministry of Land, Transport and Maritime Affairs, 3rd Mid-term Transport Facility Investment Plan, 2011

### 2.3 Transportation Infrastructure Special Fund

Stable funding sources are essential to increase the efficiency of transport facility investment. South Korea's economy more than doubled in scale during the decade (1983-1992), and the number of vehicles increased fivefold. However, the transport infrastructure, including railroads, roads, harbors, and airports, expanded by slightly less than 20% and exceeded their respective capacity limitations. This severely limited the country's industrial development and also fueled increases in socioeconomic costs. Traffic congestion threatened further economic growth, which prompted drastic improvement measures beginning in the 1990s.

The government enacted the Transport Tax Act in 1993 to provide a stable supply of transport facilities, while the Transport Facility Special Account Act was enacted in 1994 to facilitate transport facility expansions and to create an efficient investment system. This act was first named Road and Other Transport Facility Special Account Act, but it was renamed Transport Facility Special Account Act in 1995. These two acts formed the legal bases for establishing the transport facility special account. The road and other transport facility special account was established by incorporating the road project special account and the urban-railroad-project special account together as well as absorbing the high-speed rail, airport, and harbor project accounts supported by the general accounts. Pursuant to the Special Act on Large City and Metropolitan Transport Management promulgated in 1998, the metropolitan transport facility account was additionally established to stably raise the project costs for the construction and improvement of

metropolitan roads, metropolitan electric railroads, and other metropolitan transport facilities under the act.

In December 2006, the expiration date of the Transport Facility Special Account Act was extended from December 31, 2006 to December 31, 2009, provided that the ratio of transferring transport, energy, and environmental tax revenues to the transport facility special account changed from 0.858 to 0.800.

The ratios for sharing transport tax revenues for each account were stipulated in the Enforcement Rule of the Transport Facility Special Account Act under the MLTM Decree. The transport facility special account had four accounts: the road, airport, metropolitan, and reserve accounts. Of the special account finance, the Enforcement Rule specified the distribution of the special account as follows: road account, 65.5%; railroad account, 18.2%; airport account, 4.3%; metropolitan account, 2%; and the remainder, 10%. The revenues and expenditures for the road and railroad categories are outlined in the following table.

Transport facility special account revenue sources are classified into transport and other taxes, non-tax revenues such as facility use charges, and transfers from general accounts. Of these, the largest revenue item is the transport tax, 85.8% of which is transferred to the special account. As such, this portion represents about 70% of the total special account. The transport tax refers to gasoline and diesel special-consumption revenues. In addition to the transport tax, the transport special account revenue also comprise of the passenger car special consumption tax, automobile import tariff, the deposits received from financial investment and loan special accounts, airport service charges, and transfers from general accounts. Of these, the next largest portion is the passenger car special consumption tax, which represented 13.4 and 11.6% of the total transport facility special account revenue in 1995 and 1997, respectively.

With the transport facility special account, transport investment increased with stability to expand the country's transportation infrastructure, which was driving force of national economic growth. The government extended the year of the special account from the end of 2003 to 2006 by revising the Transport Facility Special Account Act. In March 2004, the said act was amended to establish an urban railroad account and to revise the Environment Rule of the Transport Account Act, which enabled flexible readjustment of the transport tax sharing ratios for each account.

The special account greatly helped secure much needed transport investment finance. With its major revenue source being the gasoline special consumption tax, which followed the principle of having users assume the costs of the transportation service provided. The said special account raised KRW5 trillion in 1994, KRW12.4 trillion in 2000, and KRW14.2 trillion in 2004. The percentage of the GDP devoted to transport facility investment increased from 1.56% in 1994 to 2.4% in 2000 and 2.1% in 2004.

Table 19. Revenues and Expenditures under the Transport Facility Special Account (Road, Railroad, and Metropolitan)

Account	Revenue	Expenditure
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Road account	<ul style="list-style-type: none"> <li>- 65.5% of transport tax</li> <li>- Passenger car special consumption tax</li> <li>- Transfers from general accounts</li> <li>- Revenue from investment and stake participation in, and loaning to, government-invested agencies</li> <li>- Deposits received and transferred from other accounts</li> <li>- Local and foreign loans</li> <li>- Deposits received from state management funds</li> <li>- State portion of toll road revenues</li> <li>- Revenue from road management and operation</li> </ul>	<ul style="list-style-type: none"> <li>- Road construction, management, operation, survey and research, and technology development</li> <li>- Investment and stake participation in, and loaning to, government-invested agencies for road project support</li> <li>- Principal repayment for deposits received and local and foreign loans acquired for road projects</li> </ul>
Railroad account	<ul style="list-style-type: none"> <li>- 18.2% of transport tax</li> <li>- Tariff on cars, parts, and components, except those for railroads and tracks</li> <li>- Transfers from general accounts</li> <li>- Payment to state coffers for construction of high-speed rail</li> <li>- Loans for construction and operation of urban railroads and high-speed rail</li> <li>- Deposits received and transferred from other accounts</li> <li>- Local and foreign loans</li> <li>- Deposits received from government bond management funds</li> <li>- Other deposits received</li> </ul>	<ul style="list-style-type: none"> <li>- Construction, improvement, and modernization of general railroad infrastructure facilities and equipment</li> <li>- Subsidies and loans for urban railroad construction and operation</li> <li>- Investment in and loans for high-speed rail construction</li> <li>- Survey and research on and technology development for railroad construction and operation</li> <li>- Repayment of principals for deposits received and foreign and local loans</li> </ul>
Metropolitan transport facility account	<ul style="list-style-type: none"> <li>- 20% of transport tax</li> <li>- Transfers from general accounts</li> <li>- Loans for construction and operation of metropolitan transport facilities</li> <li>- Deposits received and transferred from other accounts</li> <li>- Local loans</li> <li>- Foreign loans</li> <li>- Deposits received from government bond management funds</li> <li>- Other revenues</li> </ul>	<ul style="list-style-type: none"> <li>- Construction, operation, survey and research, and technology development for metropolitan transport facilities</li> <li>- Subsidies and loans for construction and operation of metropolitan transport facilities</li> <li>- Repayment of principals for deposits received and loans acquired</li> <li>※ Metropolitan transport facilities: metropolitan roads, metropolitan railroads, transfer parking lots, etc.</li> </ul>
Reserve	<ul style="list-style-type: none"> <li>- 10% of transport tax</li> </ul>	<ul style="list-style-type: none"> <li>- Allotted to necessary accounts according to budget</li> </ul>

Source: Hong Gap-seon, Estimation of the Transport Facility Investment Scale and Finance Expansion Measures, KOTI, 1998

### 3 STRATEGIC PLANS

There are two national plans which are important in referring to funding for transport infrastructure in Korea. The first one is the national intermodal transportation plan, which is a long-term master plan. Another plan is the Mid-term Transport Facility Investment Plan, which is an action plan to realize its upper plan, the National Intermodal Transportation Network Plan.

## **3.1 Long Term: National Intermodal Transportation Plan**

### **3.1.1 Overview**

The Comprehensive Public Land Development Plan and the SOC Expansion Plan were implemented as part of the first to sixth 'Five-Year Socioeconomic Development Plan' from 1962 to 1991, throughout which the number of vehicles and traffic demand surged explosively. The government established the transport facility special account in 1994, investing KRW5 trillion in 1994, KRW12.4 trillion in 2000, and KRW14.2 trillion in 2004. Transport facility investments increased from to 1.56% of the GDP in 1994 to 2.4% in 2000 and 2.1% in 2004.

Though investment in transport facilities surged after the 1990s, Comprehensive Facility Expansion Plan could not adequately meet the total transport demand. Moreover, connectivity between transportation modes such as roads, railroads, airports, and harbors was lacking. Expansion of transport modes was unbalanced, and the national transport policy goals could not be met. A systematic long-term comprehensive transport plan was needed to meet the onset of the Northeast Asian era. In March 1998, the government designated the formulation of the National Intermodal Transportation Plan as a state task. A taskforce was established for this purpose in April 1998. The National Intermodal Transportation Plan was formulated by planning for each transport mode, consultation with relevant agencies, and public hearings. In February 1999, the Transport System Efficiency Act (currently National Transport System Efficiency Act) was promulgated, while, the National Intermodal Transportation Plan (2000-2019) was finalized in December 1999 after deliberations by the Transport Policy Committee, which were led by the Prime Minister, commenced.

The plan was later revised to consider the transport system at a more comprehensive scale and to respond to changing circumstances. In 2007, the 1st Revised National Intermodal Transportation Plan (2000-2019) was formulated. Though mid- and long-term traffic master plans are fundamental, they have been found to be partially inadequate in its implementation. The revised plan was further revised with the formulation of the 2nd Revised National Intermodal Transportation Plan (2001-2020) in 2011, which comprehensively considered the National Railroad Network Plan, the Master Plan for Road Improvement, the 3rd Basic Harbor Development Plan, and the 4th Mid- and Long-Term Comprehensive Aviation Development Plan. Moreover, the 2nd Revised National Intermodal Transportation Plan also addressed strategies for green transportation associated with the climate convention and intermodal transport systems

### **3.1.2 Nature of the Plan**

The four objectives of the National Intermodal Transportation Plan geared towards globalization and informatization, are as follows: development of transport networks boosting national competitiveness in the 21st century; development of cost-saving logistical systems and high-efficiency multimodal transport systems; development of speedy, convenient, and environmentally friendly transport systems; and development of the Korean Peninsula's transport networks in preparation for the unification of South Korea and North Korea.

Formulated under the National Integrated Transport System Efficiency Act, the plan offers an efficient and comprehensive twenty-year development scheme for the national transport network involving land, marine, and air transportation. As such, it offers a long-term, comprehensive investment policy for key national transport facilities, encompassing roads, railroads, airports, and harbors. The plan includes the following major points:

- Overview of key national transport facilities and respective problems;
- Future transport circumstances, changes and prospects;

- Objectives and strategies of the plan;
- Strategies by task;
- Calculation of investment size and measures for securing finance; and
- Analysis of investment effects and prospects.

### 3.1.3 Plan Overview

Four objectives for globalization and informatization were set for the National Intermodal Transportation Plan as follows;

- Development of transport networks for boosting national competitiveness in the 21st century
- Development of cost-saving logistical systems and high-efficiency multimodal transport systems
- Development of speedy, convenient, and eco-friendly transport systems
- Development of the Korean Peninsula's transport networks in preparation for the unification

The plan divided the period into four stages until 2020, and indicated the direction for the development of key national transport facilities, as shown in the following table.

Table 20. Gradual Strategies of the National Intermodal Transportation Plan

Category	1 <sup>st</sup> Stage (1998-2002)	2 <sup>nd</sup> Stage (2003-2007)	3 <sup>rd</sup> Stage (2008-2012)	4 <sup>th</sup> Stage (2013-2020)
Development directions	<ul style="list-style-type: none"> <li>- Complete expansion projects</li> <li>- Address country's capacity issues</li> </ul> Establish foundation for key national transport network	<ul style="list-style-type: none"> <li>- Create framework of key national transport network</li> <li>- Expand/upgrade high-speed transport services</li> </ul>	<ul style="list-style-type: none"> <li>- Expand base for the national key transport network</li> <li>- Develop key transport network for high-speed/ mass carriage</li> </ul>	<ul style="list-style-type: none"> <li>- Complete key national transport network</li> <li>- Continue implementation of cutting-edge and enhanced transport system</li> </ul>

Source: Ministry of Construction and Transport<sup>2</sup>, the National Intermodal Transportation Plan, 2000

The National Intermodal Transportation Plan was formulated in 1998. The plan was first revised in 2007 in response to changes in international trade, such as the South Korea-USA FTA, and to the changes in the public land, such as the construction of Sejong city (Multifunctional Administrative City), innovative cities, and corporate cities, and to strengthen the country's sustainable transport system. Under the first revised plan, the objectives were revised as follows:

- Expansion of transport infrastructure encompassing roads, railroads, airports, and harbors to advance towards becoming a first-rate global transport and logistical power in the 21st century;
- Integration of land, sea, and aviation transport networks to develop an efficient comprehensive national transport system of connectivity between Transport modes;
- Reduction of socioeconomic costs associated with transport and logistical activities, such as traffic congestion, logistical, and traffic accident costs, to bolster the national competitiveness; and

<sup>2</sup> Former Ministry of Land, Transport and Maritime Affairs

- Development of a sustainable comprehensive national transport system for the present and future generations.

In 2010, the plan was revised for the second time to achieve the national goals of intermodal transport and low-carbon, green growth. The second revised plan is outlined as follows:

- The plan, the fundamental transport plan, was entirely improved to systemize the plans by category.
  - Create the basic transport framework involving roads, railroads, etc., and review the measures for devising the plans by category.
  - Review the measures for improving the individual plans for roads, railroads, and other categories, and for securing planning-time consistency, unity, and interconnection.
- It was necessary to set the goals and visions of the second revised plan oriented toward the future with of green growth and reduced energy consumption.
  - Expand investment of green transport, and link land, marine, and aviation networks that mutually complement one another, adjust their alternative relationships, and create synergies.
  - Develop a green transport and logistical system geared towards low carbon emissions and energy saving.
- Allocate appropriate transport finance and transport sector investment from the government budget.
  - Prioritize transport investment between means and within the same means in line with the infrastructure investment focused on the green-transport priority.
  - Review the mid- and long-term investment plans and finance procurement measures.

The second revised plan involves transport facility investment plans by category from 2011 to 2020. By 2020, expressways are targeted to have expanded to 5,470 km, and the operating-railroad distance to 4,955 km, and the target double-track achievement ratio is 77.7%, and the electrification ratio 83.6%. The passenger handling capacity of airports is targeted to have expanded to 95,850,000/year, and the container handling capacity of harbors to 34.12 million TEUs/year. The objective of the National Intermodal Transportation Plan is geared towards turning South Korea into the transport and logistical hub of Northeast Asia, and also realizing public land development.

Table 21. Index Goals of the National Intermodal Transportation Plan (2nd Revised Plan)

Category		2001	2005	2009	2015	2020
Roads	Length of express national roads (km)	2,637	2,968	3,776	4,290	5,470
	Length of general national roads (km)	14,254	14,224	13,820	14,312	14,384
Railroads	Operating length (km)	3,125	3,392	3,378	3,997	4,955
	Length of high-speed rails (km)	-	240.4	240.4	653.2	701.8

## **3.2 Mid Term: Mid-term Transportation Infrastructure Investment Plan**

### **3.2.1 Overview**

The Mid-term Transport Facility Investment Plan is formulated every five years based on a twenty-year period in accordance with Article 6 of the National Integrated Transport System Efficiency Act. The first plan (2000-2004), which began to be drafted in January 2000, was confirmed in March 2001 and completed in 2004. The second plan (2005-2009) began to be drafted in June 2004, was confirmed in February 2006, and was completed in 2009. The third plan (2011-2015) was devised and announced in September 2011.

The plan includes the following: (1) transport facility supply objectives and basic investment direction; (2) scale of the key national transport facility development project; (3) investment priorities and required finance; (4) appropriate modal share among the transport facilities; and (5) connectivity between key national transport and local transport facilities.

The said act includes provisions on the execution of the Mid-term Transport Facility Investment Plan. First, heads of the related agencies are required to reflect the Mid-term Transport Facility Investment Plan agenda in their transport-related plans, under different laws, as well as their respective business plans. Moreover, according to the Mid-term Transport Facility Investment Plan, finance must be appropriately allotted to each item of the transport facility special account as stipulated in the Transport Facility Special Account Act. If the transport facility development project included in the Mid-term Transport Facility Investment Plan is privately financed, it should be reflected in the privately financed investment project basic plan stipulated in Article 10 of the Private Finance Investment Act with regard to transportation infrastructure. To facilitate increased connectivity between the key national transport and local transport facilities, MLTM may devise and implement measures to connect and operate relevant investment finances according to the pertinent presidential decrees as deemed necessary.

The Mid-term Transport Facility Investment Plan is an execution plan and is thus evaluated according to the method stipulated in the aforementioned act, which requires the heads of relevant administrative agencies to evaluate the results of the Mid-term investment implementation by category before submission to the National Transport Committee. This committee should review the evaluation report and should notify the head of the relevant agency of the review results. The relevant agency head should, according to section 2, take the necessary action to efficiently implement the Mid-term Transport Facility Investment Plan depending on the results of the review.

### **3.2.2 Nature of the Plan**

The Mid-term Transport Facility Investment Plan is devised every five years to formulate a comprehensive investment plan and transport policies regarding key national transport facilities based on the National Intermodal Transportation Plan. Targeted facilities include key national transport facilities, such as express national roads, general national roads, detour roads replacing the national roads, state-supported local roads, high-speed rail lines, general railroads, metropolitan railroads, airports, ports of trade, and multimodal logistical terminals. Local transport facilities (linked to the key national transport facilities), such as metropolitan roads, congested roads, urban railroads, light rail, coastal harbors, and logistical complexes. The nature and function of the Mid-term Transport Facility Investment Plan are outlined as follows:

- An intermodal plan implementing the National Intermodal Transportation Plan on a five-year basis;
- An investment plan for nationwide transport facilities, including the key national transport facilities under the National Intermodal Transportation Plan, and the local transport facilities that are connected to the key national transport facilities;
- A five-year plan for the development of key national transport and local transport facilities, to address the country's overall transport problems and to efficiently respond to the various changing situations in the country;
- A five-year plan for determining the optimal investment size, finance allocation, and investment priority considering the limited finance, traffic demand forecasts, etc.; and
- A plan for preventing budget waste due to duplicate and excessive investment, for intensive investment for construction completion, and for the pursuit of green growth in a bid to maximize investment efficiency.

The Mid-term Transport Facility Investment Plan is further outlined as shown below.

- Analyze transport situations and problems
- Forecast future circumstances and traffic demands
- Set plan objectives and strategies
- Calculate key national transport facility investment size and investment ratios between transport modes
- Adjust investments in key national transport facility development projects
- Work out measures to secure and raise needed finances
- Devise measures to execute and manage plan

### 3.2.3 Major Outline of the Plan

#### 1) 1st Mid-term Transport Facility Investment Plan (1999-2004)

The Ministry of Construction and Transport<sup>3</sup> devised the 1st Mid-term Transport Facility Investment Plan (2000-2004) to efficiently invest in transport facilities, such as roads and railroads, in efforts to develop a high-efficiency, low-cost comprehensive national transport system. Under this plan, a total budget of KRW99.9 trillion (average yearly increase rate: 5.9 and 3.5% of the GDP) was allocated for the expansion of transport facilities during the plan period (2000-2004). Moreover, budget allocations for each transport mode were distributed as KRW54.7 trillion for roads (55%), KRW28.6 trillion for railroads (29%), KRW4.6 trillion for airports (5%), KRW9.9 trillion for harbors (10%), and KRW2.1 trillion for logistical facilities and others (2%). 65% of funds have been projected (KRW64.8 trillion) to come from the central government, with 5% (KRW4.6 trillion) from local governments, 19% (KRW19.4 trillion) from public enterprises, and 11% (KRW11.1 trillion) from private-sector capital.

Table 22. Investment Size of the 1st Mid-term Transport Facility Investment Plan (2000-2004)

Category	Total	Road	Railroad	Airport	Harbor	Other Logistics
Investment size (KRW trillion)	99.9	54.7	28.6	4.6	9.9	2.1
Percentage (%)	100	55	29	5	10	2

<sup>3</sup> 3 Former Ministry of Land, Transport and Maritime Affairs



Average annual growth (%)	5.9	4.1	11.7	-21.0	20.2	13.5
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Source: Ministry of Construction and Transport, 1<sup>st</sup> Mid-term Transport Facility Investment Plan, 2001

Under the first plan, appropriate finance allocations for the transport modes, such as a higher investment ratio for railroads and harbors, were proposed based on studies conducted by five state-run research institutes, including KOTI, on developing a highly efficient multimodal transport system that reduces logistical costs and bolsters national competitiveness. Moreover, to achieve efficient investment, such as preventing duplicate investments in transport facilities, the plan proposed intensive investment for construction completion as well as setting economic efficiency and balanced regional development as investment priorities.

By category, a total of KRW54.7 trillion (expressways, KRW24.1 trillion; general national roads, KRW28.9 trillion; metropolitan roads, KRW1.7 trillion) was allocated for the construction of key road networks. As proposed in the National Intermodal Transportation Plan, they include seven South-North axes and nine East-West axes in a grid-type expressway network, forty-five expressway projects with a total length of 2,889 km were planned (19 completion-intended projects, 1,515.3 km; 16 continuous projects, 890.6 km; ten commenced projects, 483.3 km). Moreover, to address bottlenecks on general national roads in urban segments, a total length of 2,321 km, including sixty-seven urban detour segments totaling 386 km in length, was projected to be constructed. They include 1,341 km for key national roads, 386 km for urban detour roads, and 595 km of state-supported local roads. In addition, the plan proposed the construction of eight harbor hinterland roads, twenty-seven roads servicing industrial complexes and metropolitan roads totaling 449 km in length that would facilitate transport and logistics further.

The mode split for environmentally friendly and more efficient railroads was projected to double from 7.6% to 14.2%. The plan proposed a budget of KRW28.6 trillion (high-speed rails, KRW8.3 trillion; general railroads, KRW7.9 trillion; metropolitan railroads, KRW4.1 trillion; urban railroads, KRW8.4 trillion), with the investment ratio gradually increasing from 25% in 2000 to 31% in 2004. For high-speed rails, the plan proposed the opening of the first stage of Gyeongbu High-Speed Rail (Seoul-Daegu) and the electrification of its Daegu-Busan segment to develop an X-shaped high-speed rail network traversing the Korean Peninsula. The construction of Honam High-Speed Rail was projected after the specific route was determined based on a master plan. For key general railroads, a total of thirty-three projects with a total length of 2,569 km (nine projects with a total length of 775.1 km intended for completion, seven continuous projects with a total length of 422.3 km, and eighteen commenced projects with a total length of 1371.7 km) were planned to be retrofitted with double tracks and electrified in a bid to connect them with high-speed rails. For metropolitan railroads, a total of thirteen projects with a total length of 363.4 km (four projects intended for completion with a total length of 73.9 km, six continuous projects with a total length of 262.6 km, and three commenced projects with a total length of 26.9 km) were proposed. Moreover, for urban railroads, the construction of railroads with a total length of 233 km (seven subways, including Seoul Line No. 9 and Busan Line Nos. 2 and 3 and two light electric rails) was proposed.

During the first investment plan period, Incheon Airport was opened, enhancing its profile as an international hub airport. With the opening of high-speed rail, travel time across the country was drastically reduced to half a day. By transport mode, 82.2% of the planned expressway construction and 111.3% of planned national road construction were carried out. For railroads, 98.5% of the planned increase in operating distance was achieved, with 86.5% of planned electrification completed and 101.3% of planned double-track conversion.

Table 23. Facility Development Achievements of the 1st Mid-term Transport Facility Investment Plan (2004)

Category		Set Goal	Results	Achievement (%)
Road	Expressway (km)	3,555	2,922.9	82.2
	National road (km)	12,804	14,246	111.3
Railroad	Operating distance (km) Double-track	3,425	3,374.1	98.5
	Development ratio (%)	38.6	39.1	101.3
	Electrification ratio (%)	46.0	39.8	86.5

Note: The road plan and results include the road expansion projects.

Source: Ministry of Construction and Transport, 2<sup>nd</sup> Mid-term Transport Facility Investment Plan, 2006

## 2) 2nd Mid-term Transport Facility Investment Plan (2005-2009)

During the 2nd Mid-term transport facility investment period, sixteen projects were completed, including 884 km of expressways and the opening of the entire Jungbu Inland Expressway. 637 km of national roads were constructed through 77 projects until 2009. Moreover, the expressway innovative traffic information system, dubbed FTMS, was installed in the newly constructed expressways with a total length of 1,359 km by 2010.

As for high-speed rail, the 2nd Gyeongbu High-Speed Rail Project involved the construction of the Daejeon-Daegu downtown segment (57 km) and the Daegu-Busan segment (117 km) as well as the continued construction of Honam High-Speed Rail. For general railroads, 81.6 km of railroads, including the Incheon International Airport railroad, were retrofitted with double tracks and electrified through three projects, while 482 km of railroads, including the Deokso-Wonju segment of Jungang Line, were expanded under eight projects.

Table 24. Transport Prospects after the Completion of the 2nd Mid-term Transport Facility Investment Plan (2005-2009)

Category		2004 (A)	2009 (B)	Remarks (B-A)
Road	Express-national-road length (km)	2,923	3,807	883
	General-national-road length (km)	14,246	14,883	637
Railroad	Operating distance (km)	3,374	3,455.6	81.6
	Double-track development ratio (%)	39.1	59.5	20.4
	Electrification ratio (%)	39.8	58.5	18.7

Source: Ministry of Construction and Transport, 2<sup>nd</sup> Mid-term Transport Facility Investment Plan, 2006

## 3) 3rd Mid-term Transport Facility Investment Plan

The 3rd Mid-term Transport Facility Investment Plan should be devised in line with the long-term goals stipulated in the National Intermodal Transportation Plan. The third plan should review and incorporate the goals proposed in the second plan. Thus, the third plan should aim to expand the country's transport facilities in a timely manner that also bolsters national competitiveness and welfare of the Korean public, while also developing

infrastructure to achieve balanced regional development and strive towards making South Korea the transport and logistical hub of Northeast Asia. Investment patterns should be changed to expand the key national transportation infrastructures, link public land into a network, and develop a cost-saving logistical system and an efficient multimodal transport system. Furthermore improvements in the safety, environmental, and maintenance functions as well as the efficiency of existing facilities should be made along with supply-oriented facility investment.

In addition, an integrated transport system should be developed to maximize the investment efficiency by allotting finance between the facility categories and within the same categories rationally and efficiently that work towards achieving the national management goals and balanced regional development.

Table 25. Transport Prospects after the Completion of the 3rd Mid-term Transport Facility investment Plan (2011-2015)

Category		2009 (A)	2015 (B)	B/A
Road	Express national road length (km)	3,776	4,282	1.13
	General national road length (km)	13,820	14,369	1.04
Railroad	Operating distance (km)	3,378	4,093	1.20
	High-speed rail length (km)	240.4	653.3	2.12

Source: MLTM, 3rd Mid-term Transport Facility Investment Plan, 2011

## 4 ASSESSMENT METHODOLOGY

### 4.1 Transport Investment Project Implementation Procedure

The implementation procedure for transport investment projects is sequentially conducted. Transportation infrastructure projects must be managed in terms of their entire life cycle. Though the project implementation procedure can vary according to the country or researcher, it usually consists of the planning, budgeting, execution, and management stages. These stages are segmented into seven steps, as shown in the following table.

A transport project takes a long time to implement, and its plan must be updated in the process to reflect changing circumstances. In South Korea, each stage is assessed using its own evaluation scheme, thus providing feedback and helping implement the project efficiently with the whole life cycle in perspective. In the planning stage, the National Intermodal Transportation Plan is devised so that a feasibility study is conducted for plural projects. A preliminary feasibility study is conducted during the budgeting stage, while a feasibility study is conducted during the execution phase, thus verifying the feasibility of the project. This can boost the efficiency of the transport investment project.

Table 26. Total Project Cost Management Procedure of the Ministry of Planning and Budget

Stage	Procedure	Description
Planning	Project planning	The central government agency ("CGA") head refers to similar projects and sets appropriate project size, total project cost, and project period
Budgeting	Preliminary feasibility study	If an estimated total project cost exceeds KRW50 billion, the CGA head, requests that Minister of Planning and Budget conduct a preliminary feasibility study.

Execution	Feasibility study and formulation of master plan	The CGA head conducts a feasibility study of the technology, environment, society, finance, site, and transport in terms of the whole life cycle of the facility. The CGA head devises a master plan considering the urban management plan, the project's environmental impacts, and the relevant laws.
	Basic design	The CGA head assigns an adequate period and cost to the basic design to prevent flaws from occurring in the construction process. Basic design generally must be approved by the PB Minister before proceeding with the execution design.
	Execution design	The CGA head should reflect the results of the environmental-impact assessment, traffic impact assessment, and consultation with municipalities; examine the experts' design details once or more times; request the Public Procurement Service administrator to examine the adequacy of the unit prices proposed in the execution design; and consult with the PB Minister on the project scale, total project cost, and project period.
	Order placing and agreement	The PB Minister notifies the CGA head and the PPS administrator of the adjusted total project cost. If there is a difference between the budgeted total project cost and the actual contract price, the CGA head should request that the total project cost be changed.
	Construction	If deemed necessary, the CGA head may consult with the PB Minister to adjust the construction cost, compensation cost, and supplementary facility cost according to the total-project-cost adjustment criteria (Management Guidelines, Article 51-87).

Source: MPB, Total-Project-Cost Management Guidelines, 2006

## 4.2 Evaluation System by Project Stages

### 4.2.1 Planning - Evaluating Feasibility of Plans

Based on such legal and system grounds, South Korea operates an infrastructure implementation evaluation system according to stages. In the planning stage, in which the National Intermodal Transportation Plan and the Mid-term Transport Facility Investment Plan are devised, a feasibility study of the infrastructure Investment Project Plan is conducted before a long-term plan is devised. The feasibility study of the plan is stipulated in Article 17 of the National Integrated Transport System Efficiency Act. The act requires a feasibility study of the plural public transport facility development projects included in the formulation of the National Intermodal Transportation Plan or the Mid-term Transport Facility Investment Plan. The feasibility study of the plan is conducted according to the comprehensive evaluation procedure stipulated in MLTM's Transport Facility Investment Evaluation Guidelines, as follows:

- Set national transport policy goals
- Allocate appropriate investment finance among transport modes
- Prioritize investment within the modes of transport
- Assess competition relation
- Review policy considerations
- Determine final priority

### 4.2.2 Budgeting - Preliminary Feasibility Study

In the budgeting stage, a transport investment project is evaluated through a preliminary feasibility study. This procedure was adopted by the Kim Dae-Jung administration, which

was launched in 1998 with the task of overcoming the national economic crisis, in an effort to reform the public sector. The government established Article 9-2 of the Enforcement Decree of the Budget Account Act in April 1999 to adopt the preliminary feasibility study system, which applies to any public construction project with a total cost exceeding KRW50 billion. The procedure aims to increase fairness and transparency in determining large-scale public-investment projects on a priority basis to prevent budget waste and to enhance financial efficiency. To secure the objectivity of the preliminary feasibility study, the preliminary feasibility study standard guidelines for road and railroad projects should apply.

The preliminary feasibility study is a draft study of large-scale development projects that analyzes their economic and policy feasibility and verifies their investment priority, adequate investment time, and financing methods, in an effort to ensure that large projects are embarked on based on solid grounds and that the projects shall be financially productive. The study targets projects with an estimated total cost of over KRW50 billion each (for municipalities' projects, a state-supported amount of over KRW30 billion). It is the central-agency head who requests that the PB Minister conduct the study.

The most important step of the preliminary feasibility study is the economic feasibility analysis, but policy analysis and comprehensive evaluation are also conducted. For the steps of the economic feasibility study, there is demands-and-benefits estimation, economic and financial feasibility study based on cost-benefit analyses, and sensitivity analysis. The cost-benefit analysis method is used to calculate the project's demands and benefits as well as its costs, including the total project costs and the maintenance costs. And if the benefit-vs.-cost ratio is greater than 1, the project is considered feasible.

Unlike the economic feasibility analysis, the policy feasibility analysis evaluates other considerations of the project and the project's social benefits or costs, which cannot be quantified. The policy feasibility analysis items are classified into common basic evaluation items and special evaluation items about the project's special characteristics and background. The basic items deal with general considerations and general items applied to all projects. They include undeveloped region for balanced regional development, regional economic-ripple effects, consistency with the relevant plans and policies, project imperativeness and preference, financing possibility, and environmental assessment. These and other factors are shown in Table 17.

Table 27. Categorization of Policy Analysis Items

Medium Category	Detailed Category
Balanced regional development	<ul style="list-style-type: none"> <li>· Undeveloped region</li> <li>· Regional economic-ripple effects</li> <li>· Additional evaluation items (optional)</li> </ul>
Policy consistency and project imperativeness	<ul style="list-style-type: none"> <li>· Consistency with relevant plans and policies</li> <li>· Project imperativeness and preference</li> <li>· Additional evaluation items (optional)</li> </ul>
Project risk factors	<ul style="list-style-type: none"> <li>· Financing possibility</li> <li>· Environmental feasibility</li> <li>· Additional evaluation items (optional)</li> </ul>
Special project characteristics· Additional evaluation items (optional)	

Balanced regional development under the medium category includes regional backwardness, regional economic-ripple effects, and additional relevant items. Policy consistency and project imperativeness include consistency with relevant plans and policies, project imperativeness and preference, and additional relevant items. The project

risk factors include financing possibility, environmental feasibility, and additional relevant items. Lastly, the special characteristics of the project include all other items.

The last step of the preliminary feasibility study puts together the economic and policy feasibility analysis results to finally assess the feasibility of the project. Towards that end, the analytic hierarchy process (AHP), a multi-criteria analysis methodology, is applied. AHP supports the evaluation of multiple decision-making goals and evaluation criteria, and of the different preference-based alternatives to individual evaluation criteria. AHP has been widely used in multi-criteria decision making since being developed by Thomas Saaty in the early 1970s. It clusters homogenous evaluation items that are necessary for decision making, organizes such items into multiple levels of a hierarchy, and analyzes and sorts them together by level, thus supporting the process of reaching the final decision. AHP performs the procedure shown below.

- i. Conceptualize project
- ii. Determine evaluation criteria and structuring the hierarchy
- iii. Weigh evaluation criteria
- iv. Score alternative preferences
- v. Synthesizing scores
- vi. Give feedback
- vii. Conclusions

From 1999 to 2005, a total of 224 projects were subjected to a preliminary feasibility study, and 70% of such projects belonged to the transport facility category. Only 55% of the proposed projects were considered feasible and were thus financed.

#### **4.2.3 Execution – feasibility study, etc.**

In the execution stage, the need for conducting a feasibility study and the total project cost are evaluated. The feasibility study is stipulated in Article 57 of the Enforcement Decree of the Construction Technology Management Act, which requires the order placement agency to conduct a feasibility study of the project. However, if a construction project, however, has a total estimated cost less than KRW50 billion and the order placement agency does not consider the feasibility study necessary given the characteristics of the project, a feasibility study can be waived. Likewise, the order placement agency is required to provide a warranty for the estimated construction costs as well as a construction cost increase ceiling to maintain the feasibility of the construction project.

This procedure aims to require the order placement agency – according to Article 57, section 2 of the Enforcement Decree of the Construction Technology Management Act – to evaluate the entire construction project process, from installation to removal in terms of the technology used as well as the environment, society, finance, site, and transport to enhance the financial efficiency of the project. Thus, the feasibility study aims to determine if the investment in the construction and expansion of public transport facilities is rational and objective. The order placement agency is required to conduct a feasibility study according to Article 57, section 2 of the said act. To ensure the objectivity of the feasibility study, which is performed mainly in the basic design stage, it should be conducted based on the Transport Facility Investment Evaluation Guidelines. The study should include the following details:

- Evaluation summary;
- Project overview (project outline and location map or situation diagram);
- History of Progress;
- Analysis of socioeconomic indices and other data;
- Economic feasibility analysis;

- Comprehensive analysis;
- Financial feasibility analysis (if deemed necessary); and
- Feasibility study results and recommendation.

Moreover, another feasibility study should be conducted if there is an unpredicted fall in the traffic demand (by over 30%) or an increase in cost (by over 20%). With regard to the preliminary feasibility study and the feasibility study, the guidelines for total project costs stipulate that large-scale public investment projects, which take a long time to execute from conceptualization to completion, have to be closely managed to effectively cope with a change in demand according to the project stage, increase the financial-investment efficiency and to prevent budgetary waste.

As such, the country's transportation infrastructure projects undergo several stages of evaluation and feedback, such as a preliminary feasibility study, a feasibility study, resurvey of the demand forecasts, and feasibility restudy, thus verifying their feasibility and adequacy and enhancing the transport investment efficiency.

### **4.3 Transportation Infrastructure Investment Evaluation Policy**

Economic feasibility is the most essential index in determining the feasibility of transport projects. It is determined mainly through the cost-benefit analysis method. The benefits are determined by structuring a transport demand forecasting model and calculating the benefits by item. The evaluator's subjective views, however, have a great impact on the application of the basic units for the calculation of the benefits or discount ratios for the economic feasibility analysis, thus causing errors.

To address this problem, the government, under the relevant law, stipulates that the same analysis method and basic units be used in the evaluation of the economic feasibility of all transport investment projects. Moreover, the Transport Facility Investment Evaluation Guidelines have been drafted and distributed. In evaluating the economic, financial, and comprehensive feasibility of transport facility development projects according to Article 18 of the National Integrated Transport System Efficiency Act, the aforementioned guidelines define the estimation process for the traffic demand, costs, and benefits as well as the investment evaluation items, evaluation criteria, and evaluation methods, so as to determine the investment feasibility, investment priority, and investment allocation to increase the efficiency of the investment. The said guidelines were revised for the third time in 2009 and are now being revised for the fourth time. The guidelines include the following details:

- Targets of the investment evaluation, and the evaluation system to be used;
- Phased project evaluation methods and procedures under a mid-term plan;
- Traffic demand forecast methods and procedures;
- Cost-benefit estimation items and methods;
- Economic-feasibility analysis method;
- Comprehensive evaluation method, including the evaluation of the investment priority;
- Financial-feasibility analysis method; and
- Other relevant matters.

The investment evaluation guidelines apply to public transport facility development projects with a total cost of over KRW30 billion, with an exception provided.

## Appendix A. Formulation of the National Intermodal Transportation Plan

① Formulation of the National Intermodal Transportation Plan (2000-2019) in December 1999

### 1. Plan formulation history

◦ March 1998	Formulation of the National Intermodal Transportation Plan selected as state task
◦ April-October 1998	Plan drafted
◦ October 1998	Hearings held to gather opinions from various sectors about plan
◦ Nov-Dec 1998	Draft plan formulated and consultations with related ministries regarding plan
◦ February 1999	the Transport System Efficiency Act promulgated as basis of plan
◦ March-August 1999	Whole plan complemented in line with said act
◦ Sep-Nov 1999	Consultation with related ministries municipalities (16 cities and provinces)
◦ November 1999	the Transport Policy Coordination Working Committee, headed by the Vice Minister of Construction and Transport, deliberated plan
◦ December 1999	the Transport Policy Committee, headed by the Prime Minister, deliberated plan



◦ December 1999	Plan finalized and announced (Ministry of construction and Transport No. 1999-386)
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## 2. Objectives of the plan

- Secure transport infrastructure to bolster the national competitiveness in the 21<sup>st</sup> century◦ Develop a cost-saving logistical system and a highly efficient multimodal transport system
- Develop a speedy, safe, convenient, and green transport system
- Develop a transport network in preparation for the unification of Korean peninsula

## 3. Gradual development strategies

- Phase 1 (2000-2009)
  - Completion of existing expansion project and addressing inter-region transport difficulties of highest priority Diversify key transport axes to distribute and adjust inter-region transport demands and drastically improve mobility and accessibility nationwide
  - Expand international transport facilities, such as building new airports and harbors, to establish foundation for South Korea's development as transport and logistical hub of Northeast Asia
  - Push to restore South Korea-North Korea transport network to support bilateral exchange and cooperation
- Phase 2 (2010-2019)
  - Continue expanding key road networks and develop rail-centered, high-speed, massive key transport networks.
  - Expand and upgrade high-speed transport services to respond to changes in transport demand quality.
  - Complete key national transport network, including expansion of South-North and East-West transport axes, and further road segment connections
  - Continue to implement transport system innovation and upgrades to enable South Korea to play role of transport and logistical hub of Northeast Asia.

## ② Formulation of 1<sup>st</sup> Revised National Intermodal Transportation Plan (2000-2019) in December 2007

### 1. History of plan formulation

◦ April 2006	Formulation of revised plan commenced
◦ May 2006	Ministry of Construction and Transport review meetings held
◦ July 2006	Strategy and Environment Evaluation Committee and Advisory Council meetings held
◦ October 2006	Advisory meetings held for calculating appropriate allocation of fund for the transport sector
◦ January 2007	Related agencies' combined planning working group launched
◦ Until August 2007	Ten meetings held on revised plan
◦ March 2007	Advisory meetings held for strategy and environment evaluation
◦ May 2007	Hearings held to gather opinions on research results from various sectors
◦ September 2007	Ministry of Construction and Transport NGO Advisory Group meetings, strategy and environment evaluation meetings, and Sustainable Development Committee deliberation meetings held
◦ Aug-Oct 2007	Consultation with related agencies

◦ October 19, 2007	National Transport Coordination Working Committee (head: Vice Minister of Construction and Transport) meetings held
◦ November 2007	Plan deliberated on by the National Transport Committee
◦ December 2007	Plan finalized and announced (Construction and Transport Notice No. 2007-539)

## 2. Plan objectives

- Expand transport infrastructure encompassing roads, railroads, airports, and harbors in leap towards becoming a first-rate global transport and logistical power in the 21<sup>st</sup> century
- Develop integrated network of land, sea, and aviation transport to form an efficient national comprehensive transport system with connectivity between Transport modes
- Reduce socioeconomic costs associated with transport and logistical activities, such as traffic congestion, logistical, and traffic accident costs, to increase national competitiveness
- Develop sustainable comprehensive national transport system for present and future generations

## 3. Major tasks

- Bolster efficiency and interconnectivity of the national transport system
- Improve mobility and accessibility to key land transport routes
- Expand global transport and logistical networks
- Gradually create Northeast Asia's single transport and logistical market
- Realize a sustainable national transport system
- Develop transport technologies and an intelligent national transport system
- Boost competitiveness of South Korea's transport and logistics industries

## **Appendix B. Formulation of the Mid-term Transport Facility Investment Plan**

① Formulation of the 1<sup>st</sup> Mid-term Transport Facility Investment Plan (2000-2004) in March 2001

### 1. History of plan formulation

◦ February 1999	Transport System Efficiency Act was enacted (Enforcement Decree enacted in August 1999)
◦ December 1999	the National Intermodal Transportation Plan confirmed implemented
◦ February-July 2000	Each relevant agency submitted a Mid-term Transport Facility Investment Plan (draft)
◦ April 2000	Taskforce established for formulation of Mid-term Transport Facility Investment Plan
◦ August 2000	Draft Mid-term Transport Facility Investment Plan prepared
◦ October 2000	Public hearings held to gather opinions
◦ November 2000	Taskforce meetings were held for the formulation of the Mid-term Transport Facility Investment Plan.
◦ December 2000	Transport Policy Coordination Working Committee (headed by Vice Minister of Construction and Transport) deliberated plan
◦ Dec 2000-Feb 2001	Transport Policy Committee (headed by Prime Minister) deliberated plan
◦ March 2001	Plan finalized and announced

## 2. Plan Objectives

- Secure transport infrastructure facilities necessary for bolstering national competitiveness
- Realize cost-saving logistical system and high-efficiency multimodal transport system
- Realize speedy, safe, convenient, and eco-friendly transport system

## 3. Plan Strategies

- Make appropriate transport facility investments considering the financial and economic conditions, facility supply goals, etc.
- Prioritize investments, such as putting first priority on the completion of the existing projects and on addressing the inter-region transport difficulties, in an effort to achieve efficient investments.
  - Enhanced priorities
    - Make investment in state projects a top priority, such as construction of Incheon International Airport and Gyeongbu High-Speed Rail, in order for completion within planned period, and intensively invest in individual projects to ensure completion.
    - develop a rational modal share system, strengthen connectivity between transport investment projects, and consider a balanced regional development effect
    - Enhance transport operational efficiency, such as through ITS projects along with transport facility investment projects, in a bid to maximize use of country's transport facilities
    - Strengthen investment considering new policy objectives (i.e., environment and safety), and expand investment in maintenance, repair, and safety of country's transport facilities
  - Lowered priorities
    - Cancel or defer unessential and non-urgent projects, and boldly adjust duplicate investment projects
    - Exclude inadequate projects with inadequate plans

## ② Formulation of the 2<sup>nd</sup> Mid-term Transport Facility Investment Plan (2005-2009) in February 2006

### 1. History of plan formulation

◦ December 1999	Transport System Efficiency Act enacted (Enforcement Decree enacted in August 1999)
◦ December 1999	The National Intermodal Transportation Plan finalized and announced
◦ March 2001	1 <sup>st</sup> Mid-term Transport Facility Investment Plan (2000-2004) finalized and announced
◦ June 2004	Outsourced formulation of 2 <sup>nd</sup> Mid-term Transport Facility Investment Plan (2005-2009) completed
◦ July 2004	Taskforce established for formulation of Mid-term Transport Facility Investment Plan
◦ August 2004	Draft Mid-term Transport Facility Investment Plan prepared
◦ Sep-Dec 2004	Plan discussed within ministry and with Ministry of Fisheries and Maritime Affairs
◦ December 14, 2004	Public hearings held to gather opinions

◦ December 2004	2 <sup>nd</sup> Mid-term Transport Facility Investment Plan (draft) prepared
◦ January-May 2005	Consultation with Ministry of Planning and Budget
◦ June-August 2005	Detailed investment plans coordinated by category
◦ September-October 2005	Plan discussed with related ministries
◦ October 2005	Strategy and Environment Evaluation Committee deliberated on and approved plan
◦ November-December 2005	National Transport Coordination Working Committee (headed by Vice Minister of Construction and Transport) deliberated plan
◦ Dec 2005-Feb 2006	National Transport Committee (headed by Prime Minister) deliberated plan
◦ February 2006	Plan finalized and announced via gazettes

## 2. Objectives of the plan

- Expand transport facilities in a timely manner to bolster the national competitiveness and to increase convenience for and enhance welfare of Korean public
  - Develop infrastructure to achieve balanced regional development and establish South Korea as transport and logistical hub of Northeast Asia
  - Realize a cost-saving logistical system and a high-efficiency multimodal transport system
- Allocate finance rationally and efficiency among facility categories and within same categories to maximize investment efficiency and develop an integrated transport system

## 3. Strategies of the plan

- Expand key national transportation facilities to construct a network-type public land system.
- Develop hub ports as logistical bases of Northeast Asia in the 21<sup>st</sup> century
- Develop a high-efficiency, high-value-added logistical system
- Promote public transport in large cities, and properly manage traffic demands therein
- Increase the operational efficiency of the existing transport systems using sophisticated technology

### ③ Formulation of the 3<sup>rd</sup> Mid-term Transport Facility Investment Plan (2011-2015) in September 2011

#### 1. History of plan formulation

◦ March 2001	1 <sup>st</sup> Mid-term Transport Facility Investment Plan (2000-2004) finalized and implemented
◦ February 2006	2 <sup>nd</sup> Mid-term Transport Facility Investment Plan (2005-2009) finalized and implemented
◦ November 2007	1 <sup>st</sup> Revised National Intermodal Transportation Plan (2000-2019) finalized and implemented
◦ December 2010	2 <sup>nd</sup> Revised National Intermodal Transportation Plan (2001-2020) finalized and implemented

◦ January 2011	3 <sup>rd</sup> Mid-term Transport Facility Investment Plan revised and research conducted
◦ February 2011	Taskforce launched and operated for plan formulation
◦ May 2011	Mid-term Transport Facility Investment Plan drafted
◦ June 2011	Policy discussion meetings held
◦ June-July 2011	Draft plan discussed with relevant ministries and municipalities
◦ Aug-Sep 2011	National Transport Committee deliberated confirmed plan
◦ September 2011	Plan finalized and announced (MLTM Notice No. 2011-508)

## 2. Necessity of Plan Formulation

Revise and complement 3rd Mid-term Transport Facility Investment Plan in line with 2nd Revised National Intermodal Transportation Plan Change plan goals, strategies, and period Formulate five-year execution plan (2001-2005) to implement the National Intermodal Transportation Plan

## 3. Plan Objectives

- Develop a green transport system to lead low-carbon and green-growth era.
- Develop intermodal transport system focused on efficiency, connectivity, and integration
- Expand transport in a timely manner to bolster national economic competitiveness
- Reduce socioeconomic costs, such as traffic congestion and logistical costs.
- Bolster country's global competitiveness by expanding and improving transport and logistical facilities

## 4. Plan Strategies

- Develop and expand an eco-friendly, energy-saving, green transport system
- Expand country's seamless, interlinked transport network to enhance network efficiency
- Adjust inter-sector stocks efficiently to bolster national competitiveness

Increase efficiency of transport facilities using sophisticated technology Expand global networks to bolster South Korea's international transport and logistical capabilities

## **Appendix C. Transport Facility Special Account Act**

### ◦ Background and Overview

- This act aims to facilitate the expansion of roads, railroads, airports, and harbors, and to ensure the efficient management and operation of these facilities by establishing the transport facility special account.
- The account is classified into the road, railroad, public transport, airport, Metropolitan transport facility, and harbor accounts. These are managed and operated by MLTM.
- Revenues for each account come from transfers from general accounts, state transfers from road tolls, airport service charges, and local and foreign loans, varying from one count to another. Moreover, the expenditures consist of the management and operation and the survey and research costs for the management and operation of roads, railroads, and airports; repayment of principals for foreign and local loans; various investments; and operation costs for other accounts.
- Transfers from general accounts consist of entire transport tax revenues under the Transport Tax Act; the passenger vehicle special consumption tax under the Special Consumption Tax Act; and the tariff on cars, parts, and components, except those for railroads and tracks, under the Tariff Act.

- The Enforcement Rule of the Transport Facility Special Account Act was also promulgated.

◦ History

In December 1993, the Road, Etc. Transport Facility Special Account Act was promulgated to stably secure the investment finance for transportation facilities, which are crucial for national economic development, and to incorporate various relevant accounts, thereby efficiently managing and operating the relevant budget.

In December 1995, the said act was renamed Transport Facility Special Account Act. Moreover, transport tax sharing ratios for each account were allowed to be determined under MLTM decrees instead of presidential decrees, and other provisions were improved. Adjusted sharing ratios adjustment was intended to stabilize the investment for transport facilities such as roads, railroads, airports, and harbors, and to boost the account operation efficiency.

In line with the Special Act on Large City and Metropolitan Transport Management promulgated in April 1997, the metropolitan transport facility account was added to the transport facility special account to stably finance the costs for the construction and improvement of metropolitan roads, metropolitan subways, and other metropolitan transport facilities.

In July 2005, the urban railroad account was changed into the public transport account, creating the bases for stably supporting the finance for fostering and supporting the public transport system, including buses, in addition to urban railroads. Moreover, transferred to the fisheries development fund stipulated in the Special Act on Support for Fishermen, Etc. and the Fisheries Industry in Line with the Conclusion of the Fisheries Accord were the occupation and use charges imposed on the collection of stone and sand from the Exclusive Economic Zone out of those imposed on the use of public waters (belonging to the current harbor account tax revenue), under the control of MLTM, or on the collection of minerals, under the Mining Act.

In December 2006, the validity term of the Transport Facility Special Account Act was extended from December 31, 2006 to December 2009, provided that the ratio of transferring the transport, energy, and environmental tax to the transport facility special account was reduced from 0.858 to 0.800.

◦ Overview of Revenues and Expenditures

1. Road Account

Road account revenues are comprised of a number of sources, including transfers from general accounts, revenue from investment and loans, and deposits received and transfers from other accounts. Additional revenue sources consist of local and foreign loans acquired under the Act on the Introduction and Management of Public Foreign Loans, deposits received from public funds under the Public-Fund Management Act, and the station portion of the revenue generated under Article 55 and 73 of the Road Act and Article 22 of the Toll Road Act. Finally, revenue from road construction, improvement, management, and road operation are allocated to the road account. Expenditures, on the other hand, consist of the expenses for road construction and improvement, management and operation, survey and research, and technology development; investment and stake participation in and loaning to government-invested agencies towards supporting road projects under the Basic Government-invested Agency Management Act; repayments of principals for deposits received and of foreign and local loans acquired; and other expenses for the operation of the account.

2. Railroad Account

Railroad account revenues consist of transfers from general accounts, payments to the state coffers under Article 33 of the KR Act, revenue from loans, and deposits

received and transfers from other accounts. Additional revenue come from local and foreign loans acquired under the Act on the Introduction and Management of Public Foreign Loans, deposits received from the public funds under the Public-Fund Management Act, proceeds from the sale (under Article 39 of the State-owned Property Act) of state-owned properties that are under the responsibility of and are designated by MLTM, and other revenues. Railroad account expenditures are comprised of expenses for the construction, improvement, and management of general railroad and high-speed rail infrastructures and for the modernization of facilities and equipment. Investment and stake participation in and loaning to KR, etc., for the construction, improvement, and management of general railroad and high-speed rail infrastructures and modernization of facilities and equipment also account for railroad expenditures. Moreover, expenses for survey and research and technology development in connection with the construction and operation of general railroads and high-speed rails, repayments of the principals for deposits received and of foreign and local loans acquired, and other expenses for the operation of the account also comprise expenditures

### 3. Public Transport Account

Public transport account revenues consist of transfers from general accounts, loans, and a deposit received and transfers from other accounts. They also include local and foreign loans acquired under the Act on the Introduction and Management of Public Foreign Loans as well as deposits received from public funds under the Public-Fund Management Act. Finally proceeds from the sale (under Article 39 of the State-owned Property Act) of properties that are under the responsibility of and are designated by MLTM and other revenues account for public transport account revenues. The myriad of expenditures of the public transport account, on the other hand, consist of expenses for the construction, improvement, and management of urban railroad infrastructures and for the modernization of facilities and equipment; subsidies and loans for urban railroad construction and operation; and investment and stake participation in and loaning to KR, etc., devoted to constructing and improving urban railroad infrastructures and to modernizing facilities and equipment. Further expenditures include expenses for survey and research and technology development in connection with the construction and operation of urban railroads; subsidies and loans for the upgrading and diversifying of public transport facilities under Article 2, section 3 of the Act on Fostering Public Transport and Promotion of the Use Thereof; and subsidies and loans for the expansion and improvement of public facilities under Article 2, section 3 of the preceding act, and expenses for survey and research and technology development for the promotion of the use thereof. Lastly repayments of the principals for deposits received and of foreign and local loans acquired; repayment of the principal for the debt of Busan Transport Authority acquired by the government under Article 4 of the Supplementary Rule of the Busan Transport Authority Annulment Act as well as other expenses for the operation of the account are accounted expenditures of the public transport account..

### 4. Airport Account

Airport account revenues are comprised of transfers from general accounts, navigation safety facility service charges among the service charges stipulated in Article 86 of the Aviation Act, noise charges under Article 109 of the said act, and aviation development project revenue under Article 2, section \_\_\_ of the said act. Additionally, proceeds from the sale of relocation complexes in line with the implementation of relocation measures related to aircraft noise damage prevention projects under Article 107 of the said act are allocated to the airport account. Transfers from other accounts, repayments of the principals for deposits received and of local and foreign loans acquired under the Act on the Introduction and Management of Public

Foreign Loans, deposits received from the public funds under the Public-Fund Management Act, and other revenues are devoted to the airport account. Expenditures consist of expenses for airport construction and expansions, navigation safety facility improvements and expansions, and aircraft noise prevention measures. Further expenditures include subsidies, stake participation in, and loans acquired by the implementers of airport construction projects under Article 6 of the Seoul Metropolitan Airport Construction Promotion Act, expenses for survey and research and technology development airport construction and operation, repayments of the principals for deposits received and of foreign and local loans acquired, and other expenses for the operation of the account.

#### 5. Harbor Account

The harbor account revenue consists of transfers from general accounts; harbor facility service charges under the responsibility of MLTM under Article 32 of the Harbor Act; service charges for state-owned properties that are under the responsibility of and are designated by MLTM under Article 25 of the State-owned Property Act; proceeds from the sale of properties under Article 40 of the said act; occupation and service charges under the responsibility of MLTM under Article 9 of the Public-Waters Management Act; payments to the state coffers under Article 31 of the Korea Container Terminal Authority (KCTA) Act; payments of loans, repayments of the principals for deposits received, and transfers from other accounts; payments of local and foreign loans acquired under the Act on the Introduction and Management of Public Foreign Loans; repayments of deposits received from public funds under the Public-Fund Management Act; and other revenues. The expenditures of the harbor account, on the other hand, consist of the expenses for harbor survey and research and technology development; the expenses for the construction and improvement and maintenance and repair of harbor facilities; the investment in loaning to KCTA; repayments of the principals for deposits received and of foreign and local loans acquired; and other expenses for the operation of the account.

#### 6. Metropolitan Transport Facility Account

Revenues for the metropolitan transport facility account include transfers from general accounts, loan payments, repayments of the principals for deposits received, and transfers from other accounts. Other revenues include payments of local and foreign loans acquired under the Foreign Capital Introduction Act, repayment of the principals for the deposits received from public funds under the Public-Fund Management Act, metropolitan transport facility charges under Article 11-6, section 1 of the Special Act on Large City and Metropolitan Transport Management, and other revenues. Expenditures consist of expenses for the construction and improvement and management and operation of metropolitan transport facilities and for relevant survey and research and technology development; subsidies and loans for the construction and operation of metropolitan transport facilities; and transfers to the railroad project special account, etc. Other expenditures include repayments of the principals for deposits received and of foreign and local loans acquired, transport facilities whose segments and locations are designated by the Metropolitan Transport Committee under Article 11-6, section 3, paragraph 2 of the Special Act on Large-City and Metropolitan Transport Management, and other expenses for the operation of the account.



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