30th Anniverary

Transport Investment and Management in Korea

Ha Jung Yoon
KRIHS

Korea Research Institute for Human Settlements 국토연구원

Contents

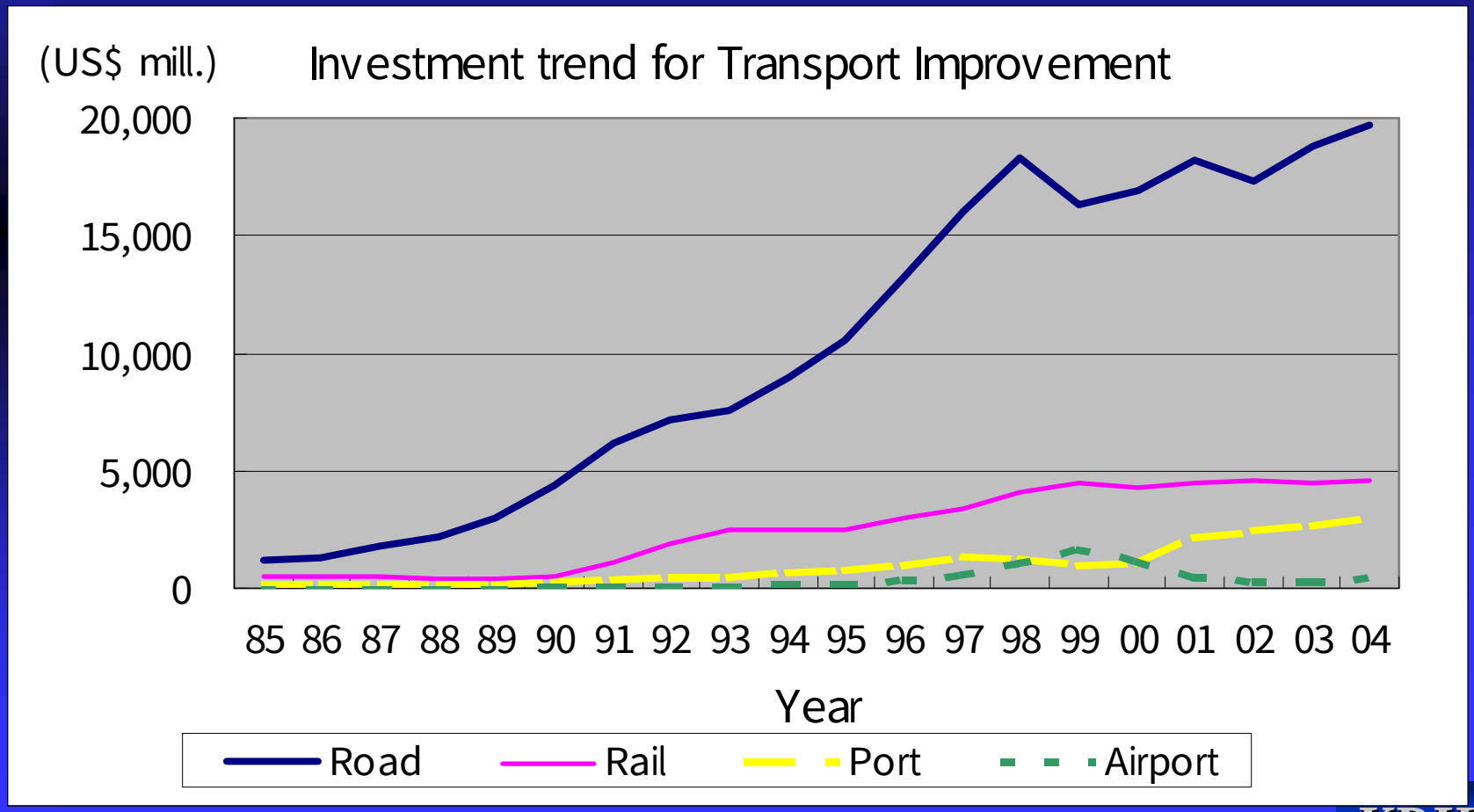
1. Trends and Prospects

2. Outlook for Change

3. Major Goals and Implementation Plan

1. Trends and Prospects

1) Investment trend



KRIHS

Type	’90(A)	’05(B)	(B)/(A)
Over 4 Lane in Road (km)	**4,823**	**19,375**	**4.01**
Dual Carriage Length in Rail (km)	**847**	**1,343**	**1.59**
Highway Length(km)	**1,559**	**2,972**	**1.91**
Port Capacity (Mill.ton/year)	**190**	**514**	**2.70**

2) Current Status and Problems

- Shortage of transportation facilities due to decrease of investment
  - → Roads, rails, harbors, airports : all facilities has bottlenecks and impeding national economic growth
  - → Supply of infrastructure has fallen behind fast-growing transport demand
    - In the 80's investment amount was small (2% of GDP)
    - In the 90's investment allocation was inappropriate

- Weak interactive consideration of regional development, transport network, transport modes
  - → Investment centered around metropolitan areas and Seoul-Pusan corridor
  - → Transport network along East-West axis is relatively weak compared to South-North axis
  - → Instead of a comprehensive solution, a point specific remedy was prescribed, creating new bottlenecks
  - → Sector-specific investment resulted in weak coordination among transport modes

- Deteriorating environment and safety
  - → 38% of large city air pollution is vehicular
  - → Increased human and property losses from auto accidents (2005: 12,000 deaths)
    - ॐ Deaths per 100,000: U.S. 15.6, Japan 8.5, Korea 27.7
- Ineffective operation and regulations
  - → Insufficient use of traffic information comparing to investment
  - → Facility provision from supplier`s point of view
  - → Regulations that complicate efficient supply

3) Outlook for Change

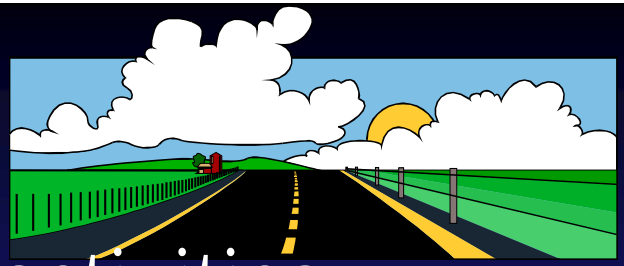
- Continuing increases in traffic demand
  - → Car ownership expected to climb to developed country standards (1 car per 2 persons)
  - → Rising incomes, industrial diversification increase passenger, cargo demand
  - → Increasing N/S Korea exchanges expected to raise traveling distances and traffic demand

Traffic Demand Projections

Traffic type	2003	2020	Annual growth (%)
Domestic passenger [1]	279,804	408,545	2.25
Domestic cargo [2]	97,448	269,480	6.17

[1] millions of passenger-km [2] millions of ton-km

KRIHS



- Globalization of Economic activities
  - → Internationalization of industry, liberalization
  - → Growth in Northeast Asian cooperation
- Demand for Upgrading, “greening” of facilities
  - → New technology developments: ITS , etc.
  - → Reduction of work traffic through information & communication and increase in leisure travel
  - → Energy conservation, pollution controlled development of new modes

- Increasing recognition of aging society and Consideration for the Handicapped
  - → Rising demands of traffic information and door-to-door service for elderly
  - → Projected growth in demand for facilities and services for handicapped and children

2. Outlook for Change

Aim For Globally Integrated
Comprehensive transport network

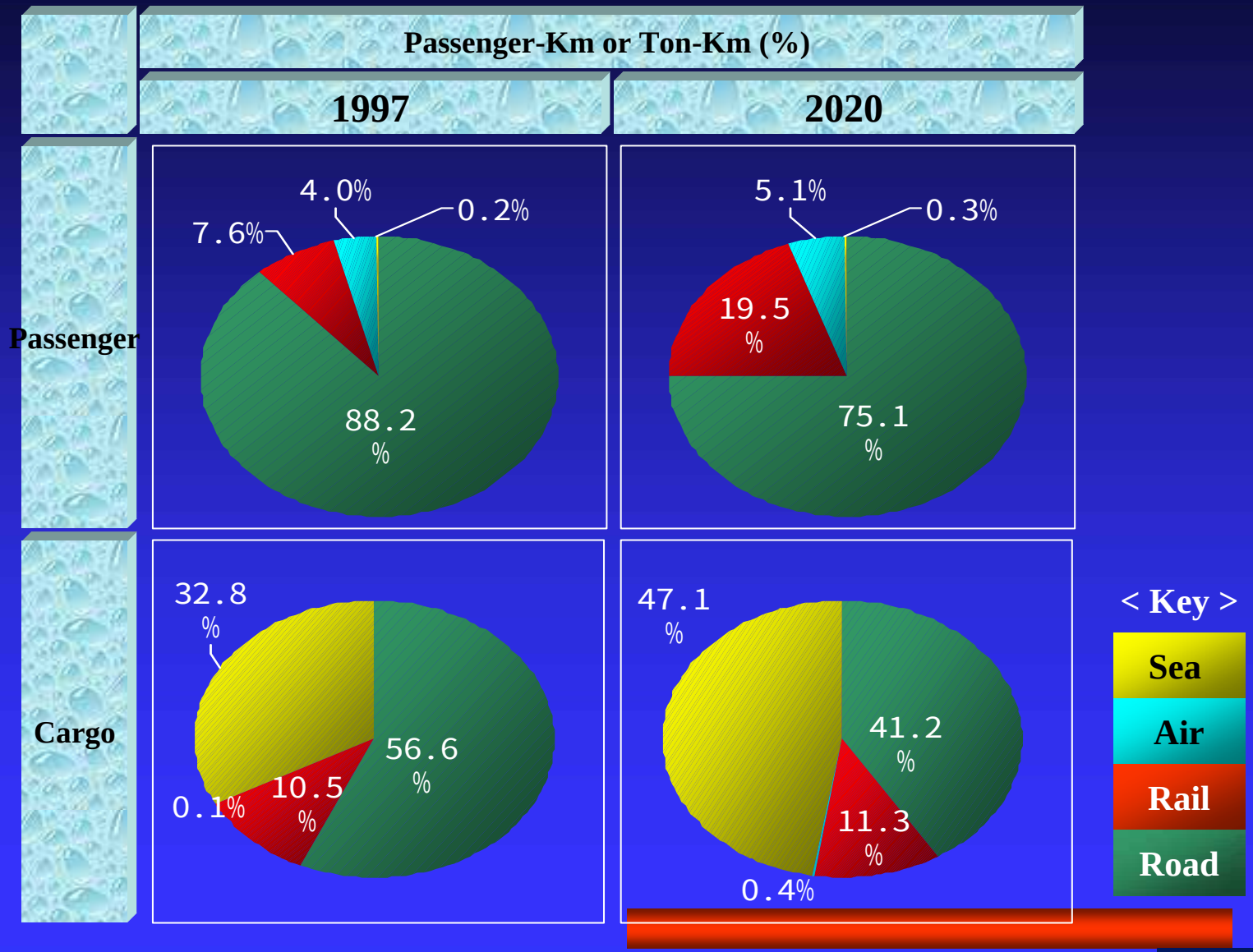
1) Rational modal allocation of traffic demand
2) transportation system of nationwide integrated
3) International transport infrastructure to become "Gateway to Northeast Asia"
4) Safety-oriented, environment-friendly facilities
5) Lower cost transport network to increase investment efficiency

3. Major Goals and Implementation Plan

1) Rational Modal Allocation of Traffic Demand

- Demand allocation recognizing Characteristics of different modes
  - → Roads for short passenger trips, Railways for long-haul cargo
  - → Main road network completion and expand railway network
  - → Increase in airport investment to handle medium and long-distance demand

2020 Domestic Transport Demand



KRIHS

- Hierarchical development of airports and harbors to form “Gateway to Northeast Asia”
  - → Incheon International Airport handle global demand, regional hub-spoke airport system support medium to short distance overseas travel
  - → Pusan-Gwangyang mega-hub ports handle transit cargos and major import/export, regional ports for medium- and short-haul domestic and int’l cargo

- Increased investment for intermodal transport linkages and high-efficiency facilities
  - → Integrated transport systems at key transport facility points such as ports and industrial complexes
  - → Metropolitan transport network linking road and rail networks
- Phased preparation for N-S Korea exchange
  - → Initially harbor/airport linkages, then road links
  - → Ultimate goal of Eurasia linking network

2) Nationwide integrated transportation system

Nationwide 30-minute access to core transport network

- Roads
  - → Integrated road network plan for expressways and national roads to provide balanced development of nation
  - → Expressways
    - 7 south-north and 9 east-west expressways to reflect transport demand and balanced development

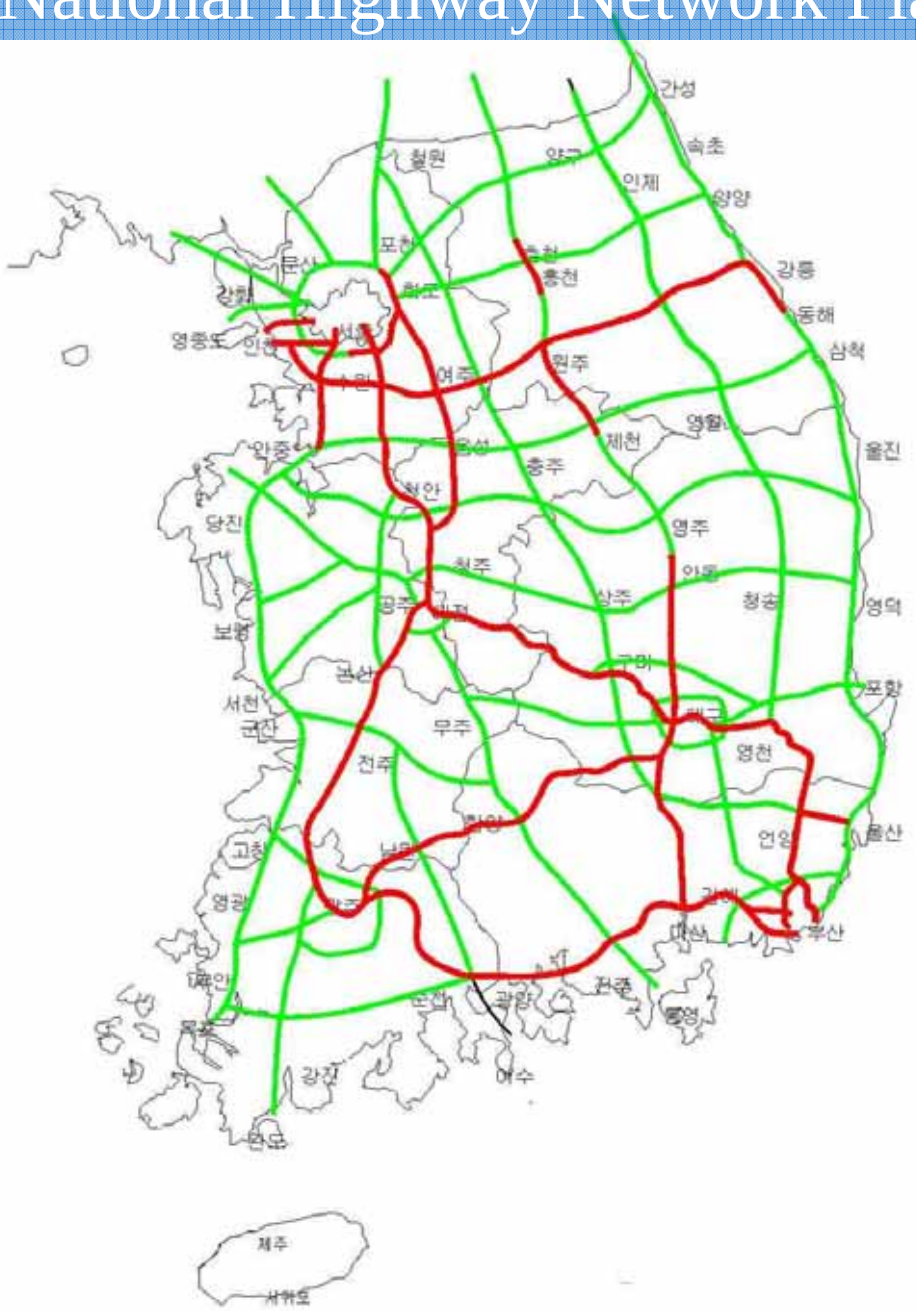
→ National roads

- Reduction in logistics costs and passenger discomfort through continuous construction of national roads and alleviation of bottlenecks
- In particular, construction of over 2,000 km of alternate roads for towns, townships, and counties to reduce interaction of local and pass-through traffic

→ Completion by 2020 of national road network: 87,000 km (current) to 200,000 km

- Expressways - 1,900 km → 6,100 km
- National roads - 12,500 km → 19,000 km

National Highway Network Plan



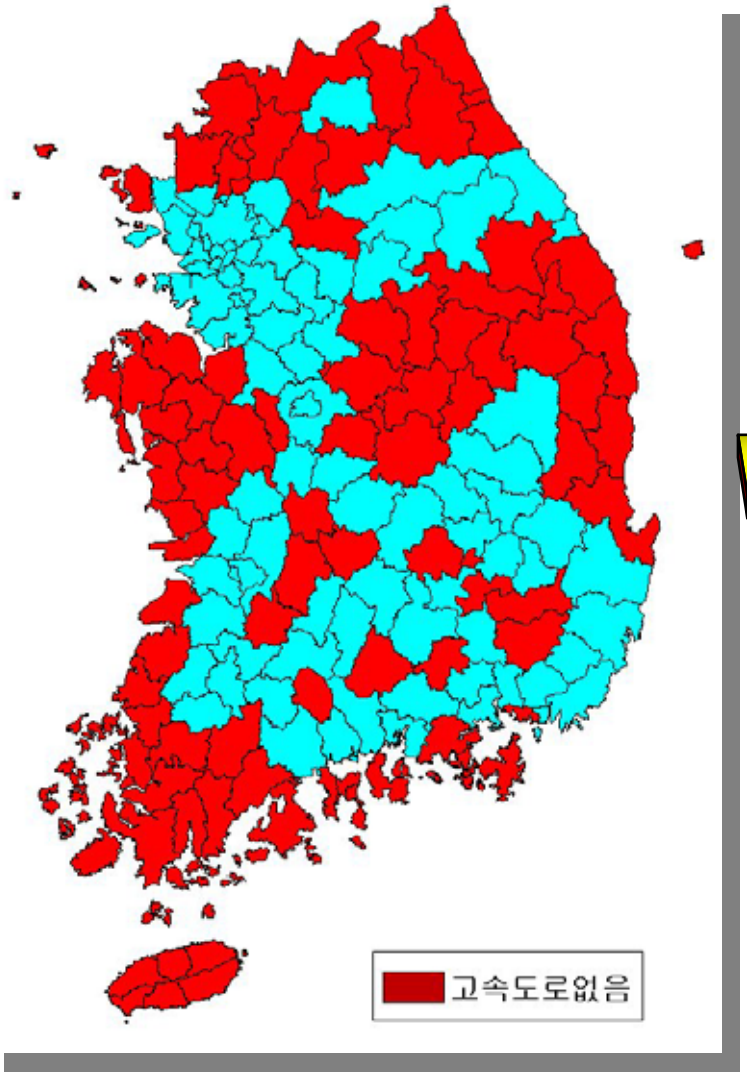
Key

Existing

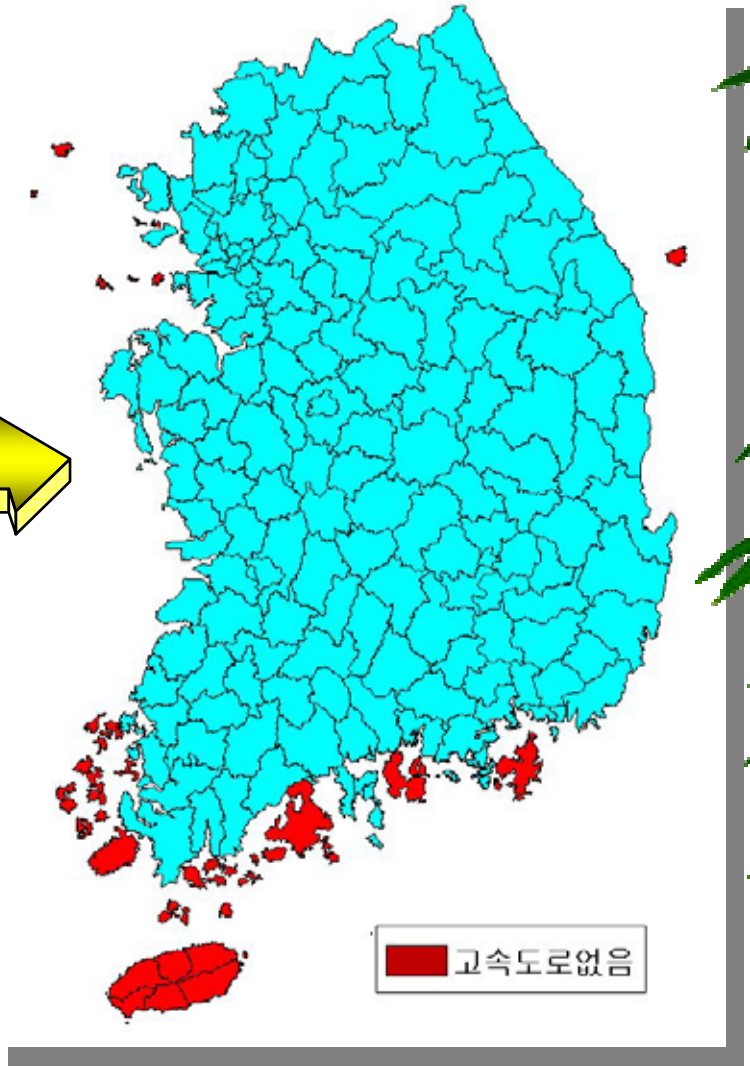
Planned

KRIHS

Main Network Access Roads (1999)



Main Network Access Roads (2020)



No Expressways w/i 30 minutes distance

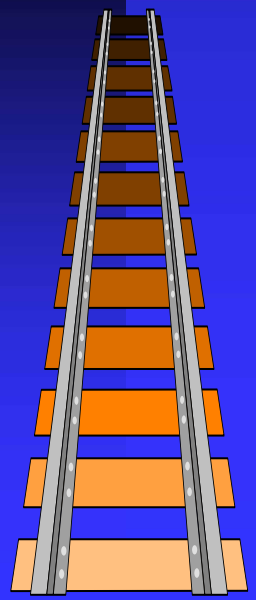
KRIHS

Railways

→ Gradual increase in use of railroads through expansion and improvement

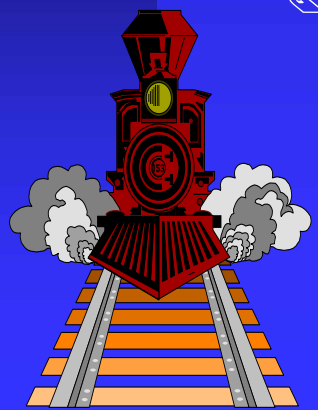
→ High-speed rail network expansion

- Seoul-Pusan High-Speed Line completion in 2010
- Steady progress on Honam High-Speed Line to accommodate West Coast development needs
- Double-tracking and electrification of existing lines, connection to high-speed network
- In the long-term connect to Northeast Asia rail network



→ Expansion of regular rail network

- Straightening, double-tracking, electrification of existing lines to increase capacity, usefulness
- Double-tracking, electrification of Gyeongbu, Honam, Jeolla, Jungang, Choongbook
- Renovation and extension of Gyeongjeon, Gyeongchun, Janghang lines
- Linkage of NE Capital Area and Gwangyang Port through construction of Asan ~ Capital Area line
- Construction, expansion of East Coast lines, Gyeongui, Gyeongwon, Mt. Keumgang lines for North – South relations

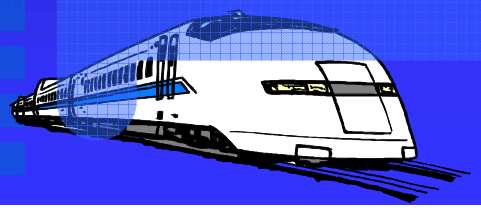


→ Development of Wonju ~ Gangneung and other east-west lines for East-West area transaction, balanced regional development

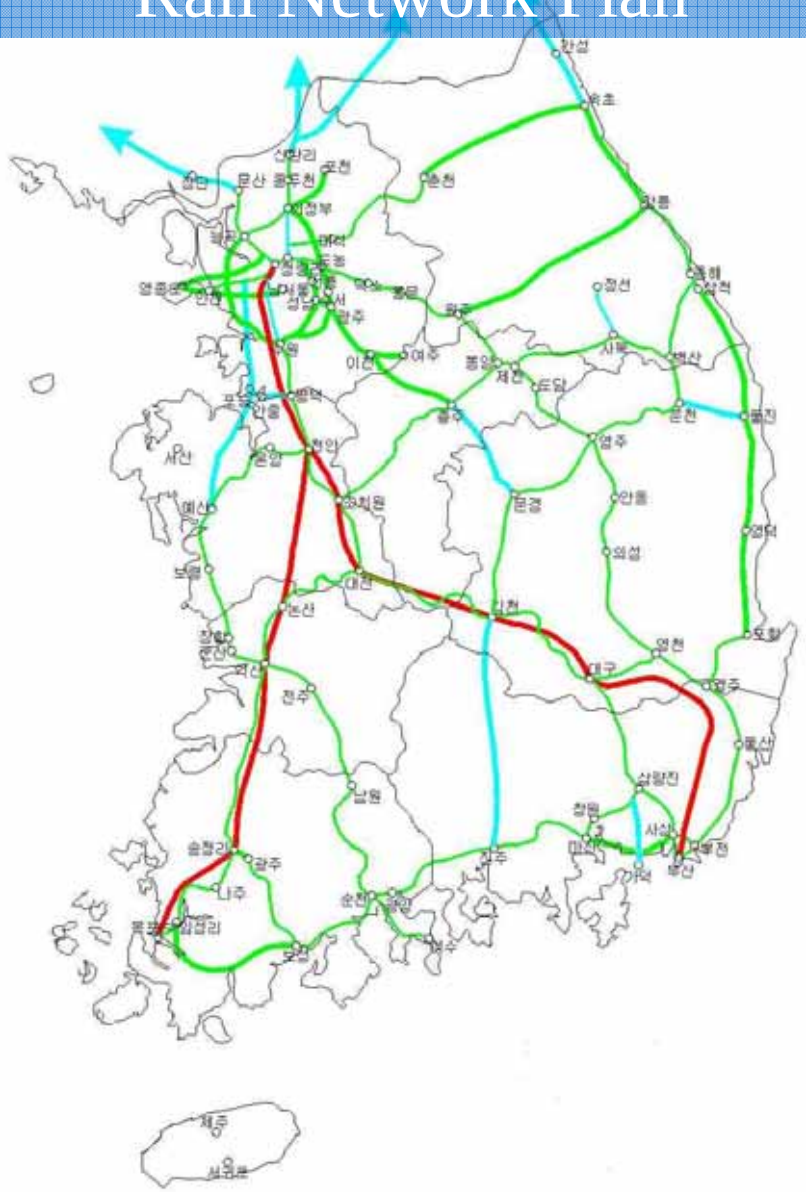
→ Construction of industrial rail network for Daebul Industrial Complex; and Asan, Gunjang, Gwangyang, and Busan ports

→ By 2020, expand rail extension by 40% to 4,200 km

- double-tracking increased by 2.6 times to 74%
- electrification increased by 4 times to 85%



Rail Network Plan



Key	New	Modification
Regular		
Electrified		
High-speed		

KRIHS

Ports

→ Development of Pusan, Gwangyang Port into large-scale hub port

- Consider combined administration of the two ports to increase competitiveness, facilitate ease of use

→ Expand Incheon, Asan, Gunjang, Mokpo, Masan, Ulsan, Pohang, Gangwon ports as regional hubs

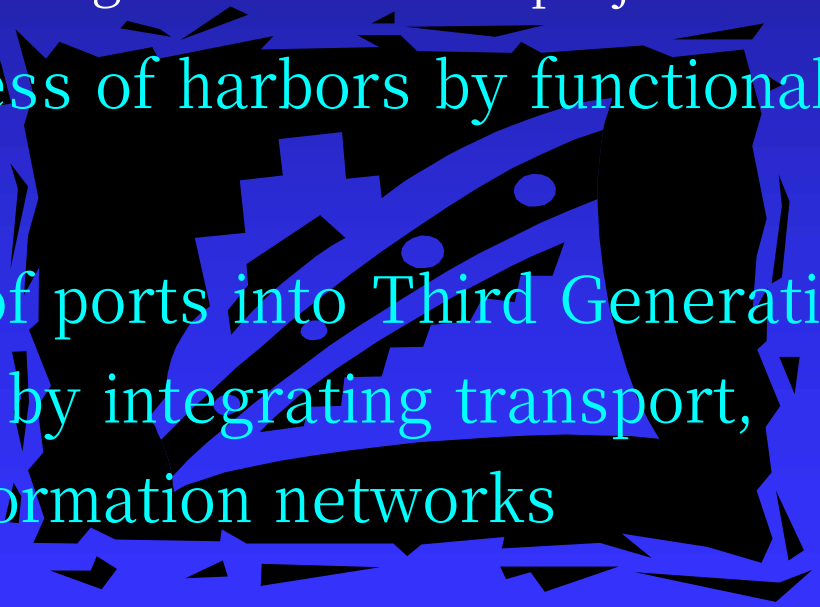
- Construction of North Incheon, Mokpo New Outer, Ulsan New, Pohang Yeongil New ports
- Ongoing construction of Pyeongtaek (Asan) and Gunjang ports, renovation of Incheon South, Mokpo and other ports to improve efficiency

→ Expansion of local ports

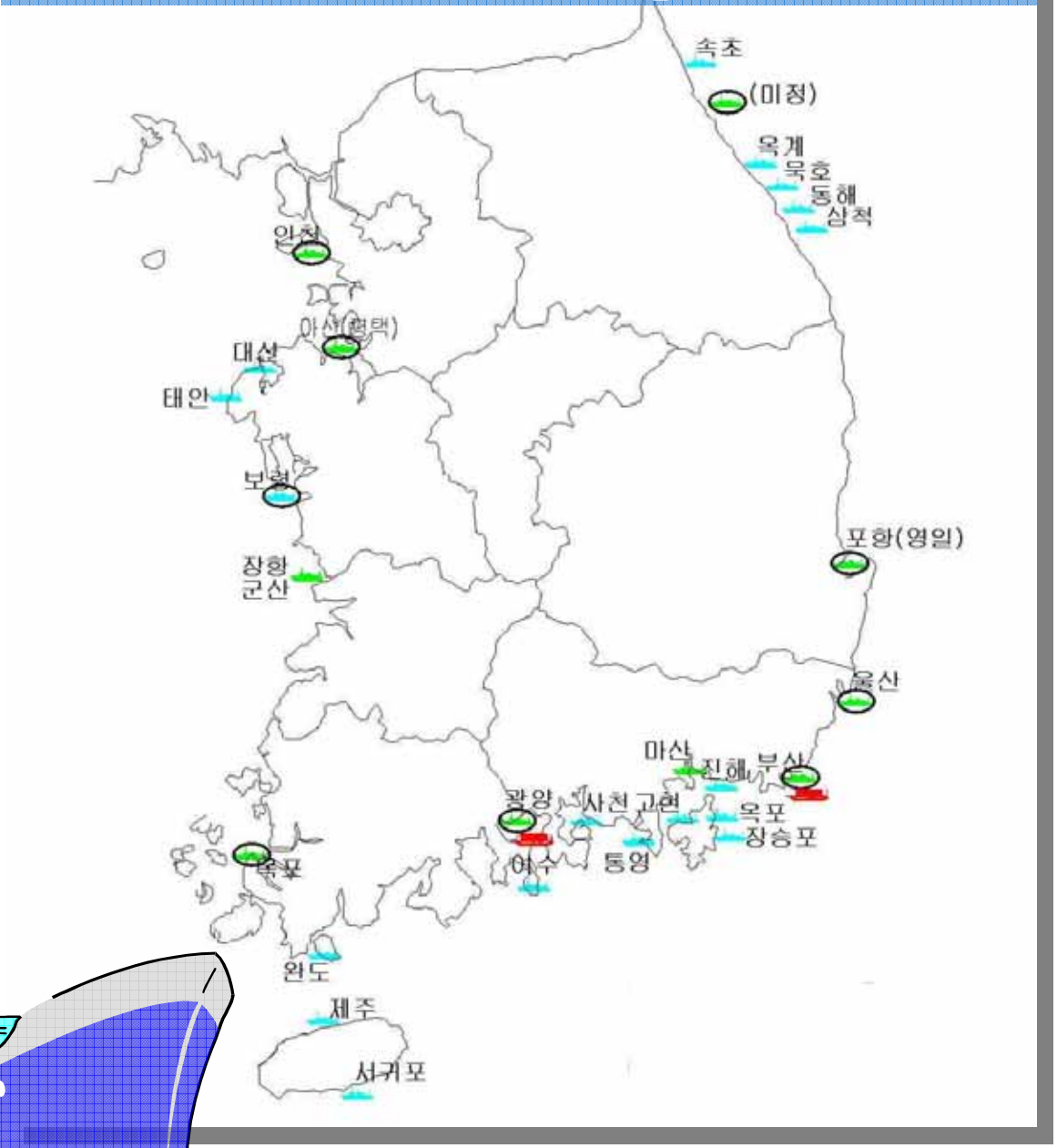
- Construction of Boryeong New Port, renovation of existing ports (East Sea, Jeju, etc.)
- Feasibility study of Saemangeum New Port in relation to Saemaengum reclamation project

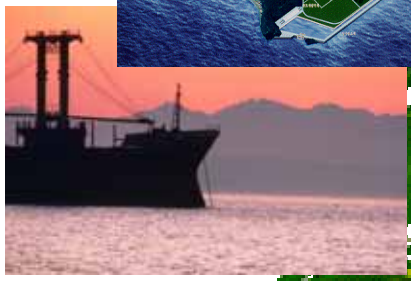
→ Raise effectiveness of harbors by functional differentiation

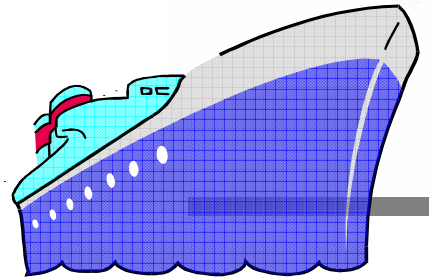
→ Transformation of ports into Third Generation logistics centers by integrating transport, logistics, and information networks



Harbor Map







Key

- Local port
- Hub port
- Main port
- New port

KRIHS

Airports

→ Incheon International Airport, opened in 2001, to become NE Asia hub by 2020

→ Construction and expansion of local hubs to meet demand for shorter international flights

Capital Area	**Gimpo Airport upgrade and use as main domestic hub**
Busan	**Gimhae Airport new runway and international passenger terminal**
Daegu	**Daegu Airport new mooring field and international passenger terminal**
Central	**Cheungju Airport enhancement through foundation construction**
Honam	**Muan New Airport construction**
Yeongdong	**Yangyang New Airport construction**
Jeju	**Jeju Airport major facility expansion to handle international tourists**

→ Expansion of local airports

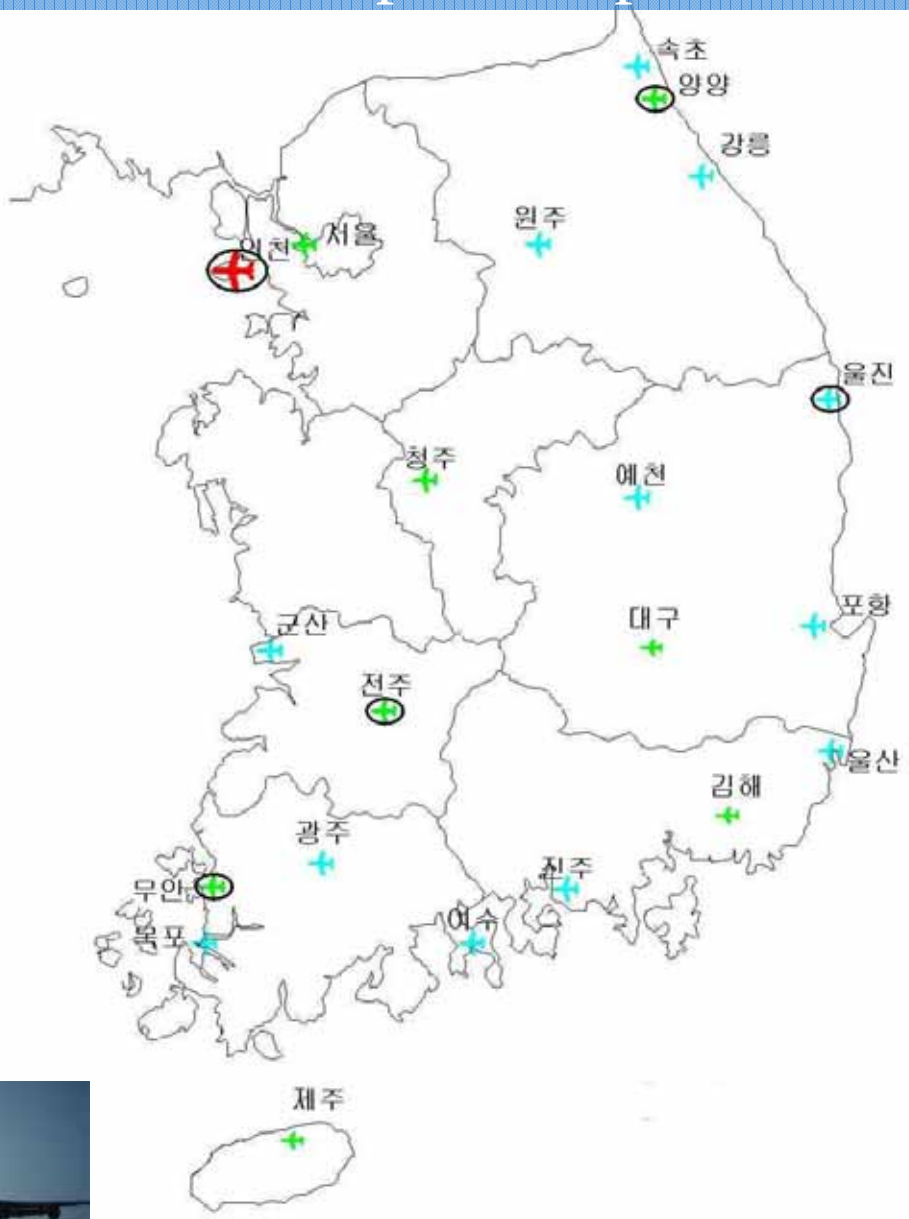
- Ulsan, Sacheon, Pohang, Yecheon, Yeosu, etc. airport expansions
- Current feasibility study on demand for Cheonju Airport, construction of light plane airfield at Uljin

→ Development of short and medium-haul routes for small and medium planes, helicopters to enhance intercity transport, coastal tourism

→ Expansion of flight and air traffic control functions, and major overhaul of flight safety

→ Planning to enhance facility convenience

Airport Map



Key

- **Local airport**
- **Hub airport**
- **Main airport**
- **New airport**

KRIHS

Logistics

→ "National hubs => Local hubs => Consumer" network construction(Hub & Spoke)

→ Building of key national logistics hubs

- Capital Area, Busan and Gwangyang Ports are national logistic hubs : Expand ICDs and integrated cargo terminals, cargo handling facilities
- Central·Yeongnam·Honam inland hub expansions

→ Construction of inland ~ coastal network

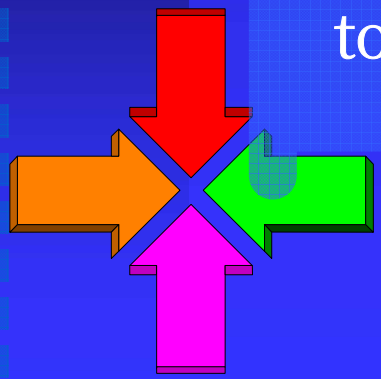
- Logistics center network of 10 regions, 38 hubs
- Competing, complementing ICDs and integrated cargo terminals

→ Linking of hub ports and hub airports to handle Northeast Asia traffic through Sea-Air integrated transport system

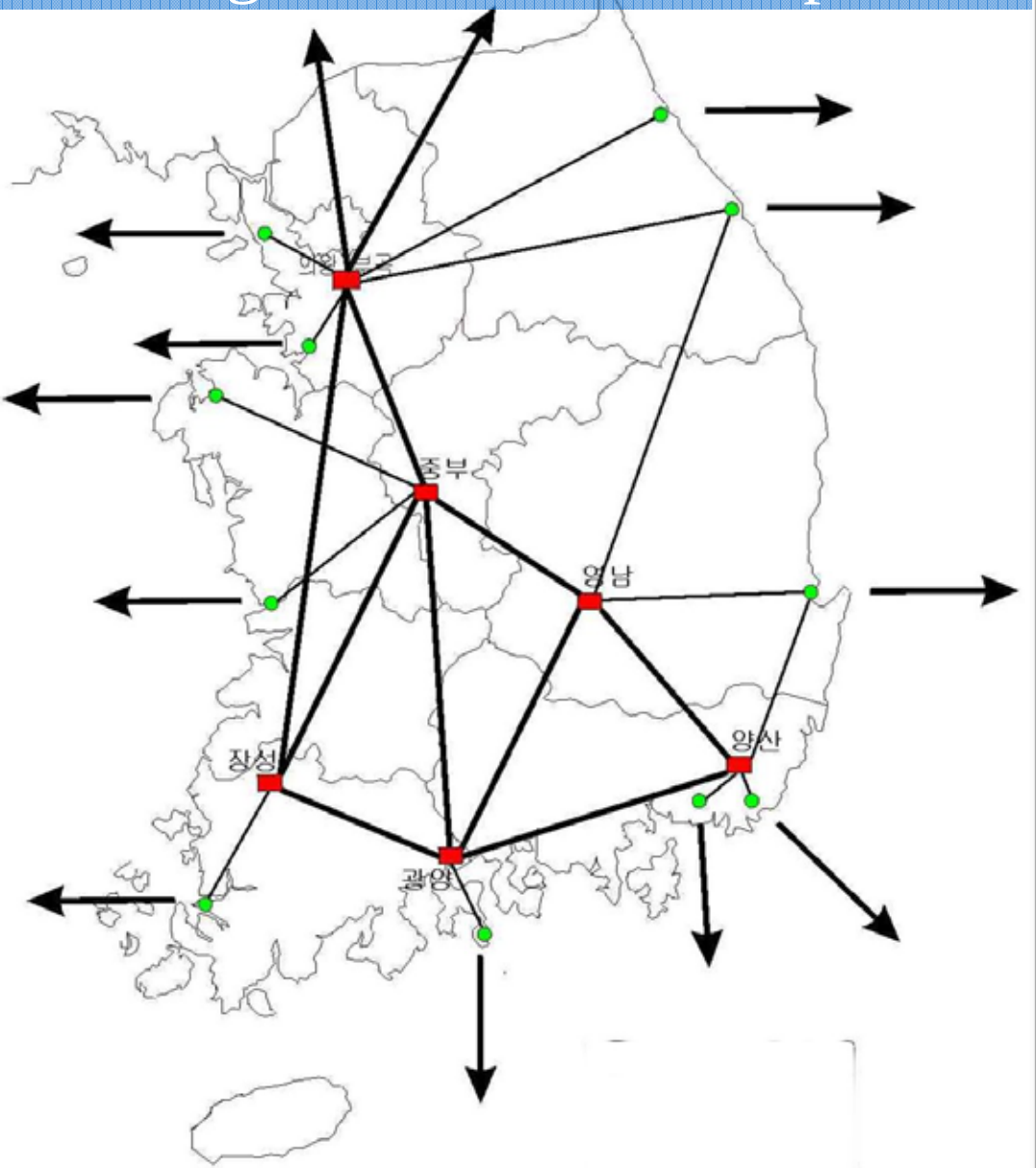
- Incheon Port & Airport, Busan Port ~ Gimhae Airport, etc.

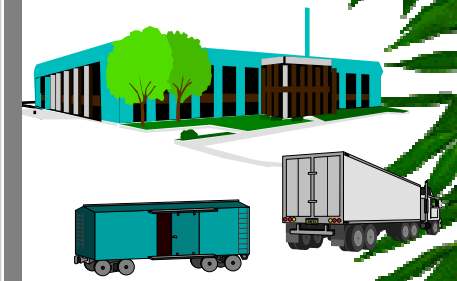
→ Information, modernization of logistics industry

Reduction of logistics costs from 16.5% of GDP to developed country level of 10% by 2020



Logistics Facilities Map





Key

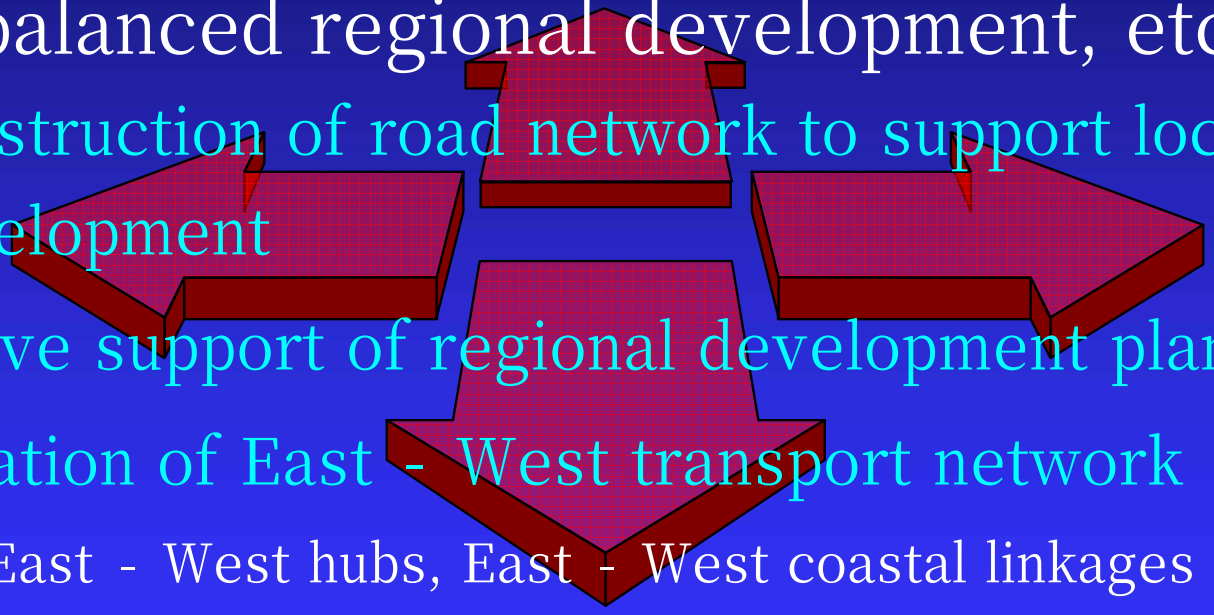
Main facility

Logistics center

KRIHS

A transport network to lead regional development

- Transportation network supporting development strategy for new territorial axes, balanced regional development, etc.
  - → Construction of road network to support local development
  - → Active support of regional development plans
  - → Creation of East - West transport network
    - East - West hubs, East - West coastal linkages
    - Wonju ~ Gangneung rail line, E-W axes of 7 x 9 road network

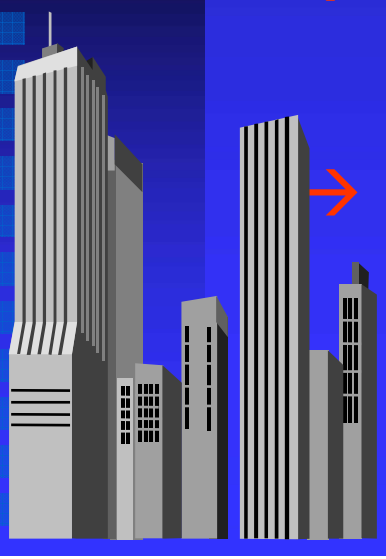


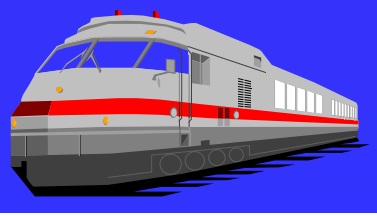
- Local cultural and nature development
  - → Improved access to historical, tourist, traditional, cultural sites
  - → Southwest coast islands development through bridges, rail lines, etc.
- Strategic industrial area support
  - → Transport network system enhancement for Special Economic Zones
  - → Support for transport facilities to promote development of disadvantaged regions

A better transport system to reflect metropolitan growth of large cities

- Road and rail enhancement plans
  - → Major increase in high-speed transport capacity for large cities through construction of circulatory expressways, arterial road lattice networks
  - → Increase in urban railway capacity through introduction of diverse services such as express trains

- New facilities to handle transfer demand
  - → Increase in construction of transfer parking lots and integrated transfer centers
- More effective implementation system through metro traffic administration
  - → Cooperative systems with neighboring local governments
  - → Strengthening of countermeasures for facilities that greatly increase traffic demand



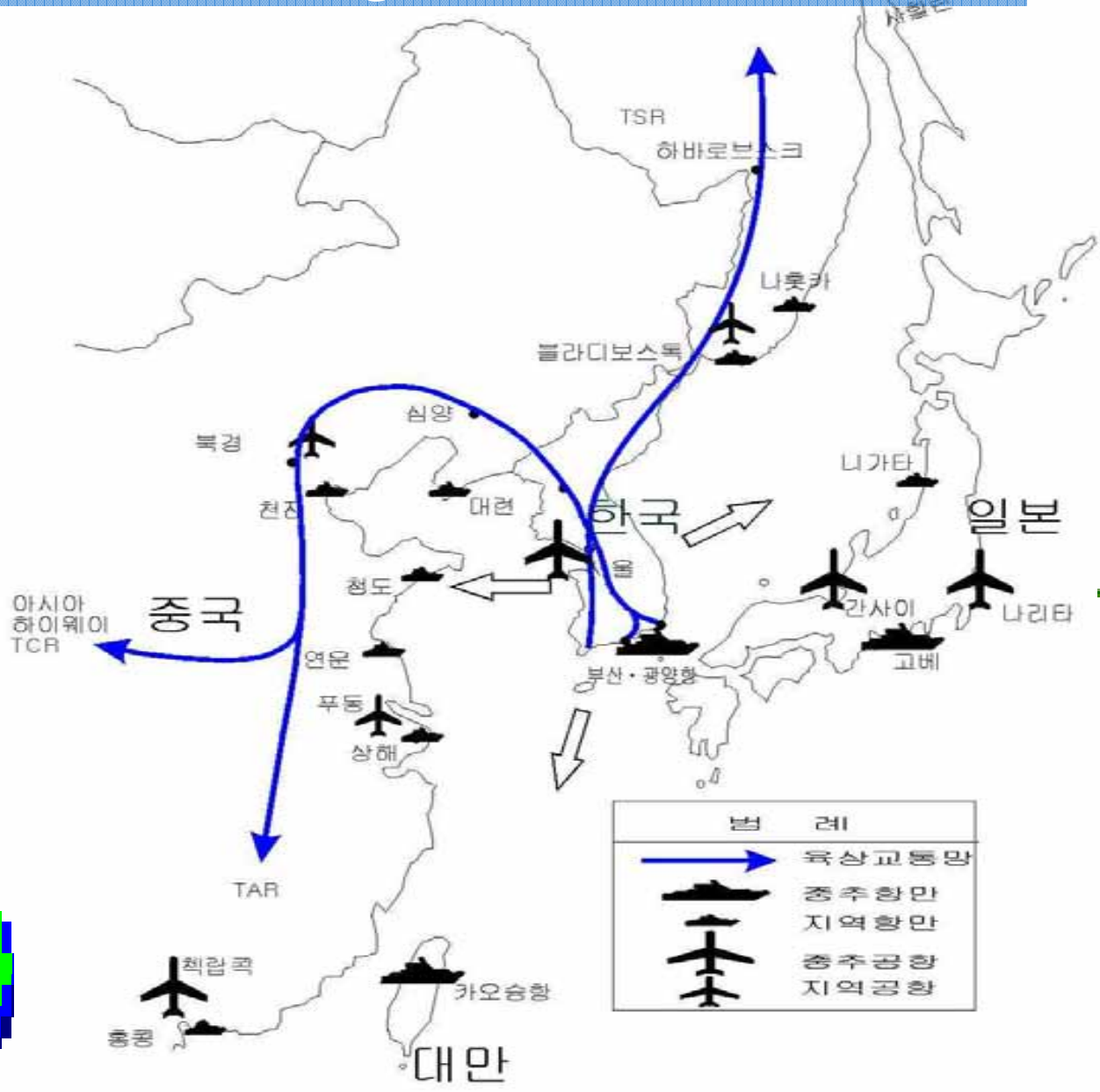


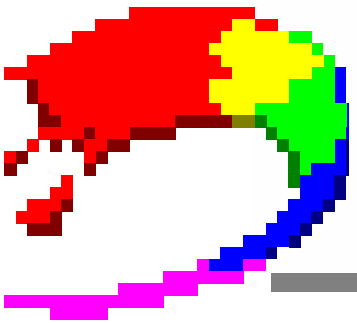
3) International transport infrastructure to become "Gateway to Northeast Asia"

- Cultivation of Incheon International Airport as central NE Asia airport
  - → Development of Incheon's integrated port, IT, logistics, business and leisure facilities
- Large-scale container port development
  - → Busan ~ Gwangyang ports developed into central ports for NE Asia
- Plan for NE Asia-linked rail network
  - → 2 N-S (Mokpo-Seoul-Shinuiju, Busan-Seoul-Cheongjin) routes linked to TCR, TSR, TAR

- Road network expansion for N-E relations
  - → Priority connection of 6 severed National Roads including #1 (Freedom Bridge - Panmunjeom) and #7 (Goseong - Hyujeonseon)
  - → Eventual plan for 7 North-South arterial roads, connection to Asian Highway
- Coastal transport network with NK ports
  - → International marine transport network with main ports of neighbors such as Russia, China

NE Asia Logistics Center Plan

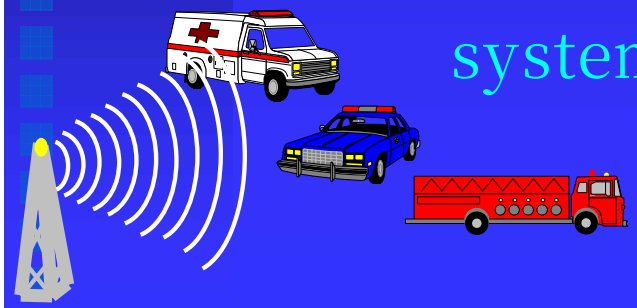




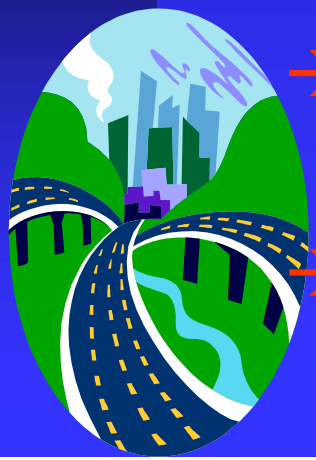
KRIHS

4) Safety-oriented, environment-friendly facilities

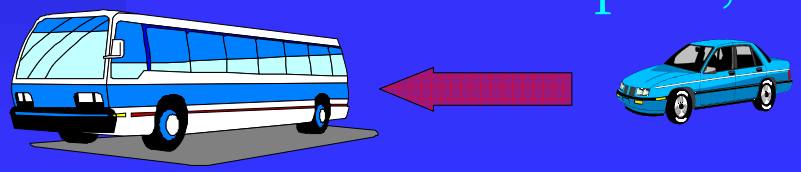
- Traffic systems to raise citizen safety
  - → Highest priority consideration for safety in planning transport systems
  - → Designation of hazardous material transport prohibited zones, transport guidelines
  - → Development of emergency disaster relief systems



- Transport policy for elderly, handicapped
  - → Development of new systems such as traffic information facilities for older drivers
  - → Expanded facilities such as crosswalks, elevators for handicapped and elderly
- Environment-friendly traffic systems
  - → Consideration of environment, scenery, bio aspect when constructing roads, railroads
  - → Pollution reduction through increased use of railroads, development of cleaner fuels, etc.
  - → Long-term strengthening of pollution discharge standards through new Clean Air Act

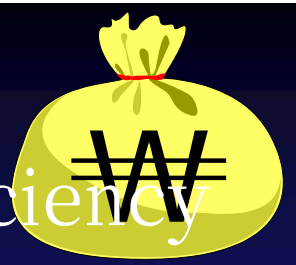


- Stronger traffic demand management
  - → Short-term policy reduction of passenger car use through traffic taxes, congestion fees, etc.
  - → Public transportation-centered system
    - Expansion of high-speed transport alternatives to reduce passenger car use
    - Support for "green" transport (e.g. bicycles) for short trips
  - → In the long-run, minimize daily traffic by city land use plan, etc.



5) Lower-cost transport network to increase investment efficiency

- Transport technology R&D and support
  - → Road use maximization through information of transport facilities, maintenance cost minimization through ITS
  - → Standardization of traffic information
  - → Support and development of Korean high-speed trains, maritime traffic control system, satellite navigation systems



Transport facility investment efficiency

→ Integrated investment management

- Unify government facility investment plans for each mode of transport
- Investment priority considering both efficiency and balanced regional growth

→ Raising effectiveness of facility investment

- Preparation of investment priority evaluation and fund allocation systems for project selection
- Focus on investment offering largest benefits
- Evaluation and consideration of current project results in fund allocation process

<Table> Projected Investment Demands for 4th Plan (2000-2020)

Unit: KRW trillion

Mode of Transport	Road	Rail	Air	Port	Logistics	Total
Total Investment (%)	196 (57.1)	73 (21.3)	16 (4.5)	38 (11.1)	20 (6.0)	344 (100.0)

- Including operation, maintenance, R&D, etc., total projected KRW 378 trillion (~2.6% of GDP)
- Government contributions under KDI growth projections amount to KRW 344 trillion, with the balance to come from increased budgetary effort or private investment

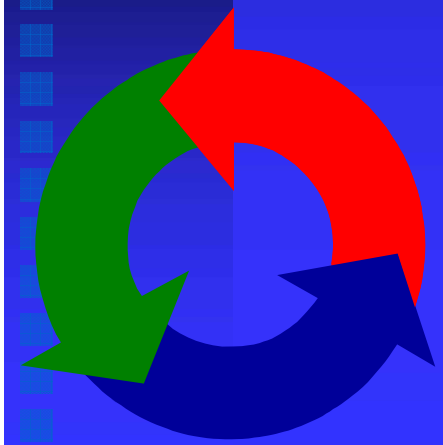
→ Research into expanded financing methods such as gasoline taxes, adjusted user fees, privatization, construction cost savings, etc.

KRIHS

→ Attraction of private capital

- Priority study of private capital for high-profit projects
- Active promotion of private investment for roads, metro subways, hub airports, port facilities, public transportation, etc.
- Establishment of bidding, concession systems incorporating international best practice

- Transport restructuring, privatization
  - → Introduction of private sector creativity, efficiency into transport facilities
    - Partial privatization policy of government construction, private sector operation, administration and maintenance
    - In some cases, full privatization
  - → Regulatory reform, deregulation
    - Introduction of fair competitive systems by removing regulatory barriers to promotion of private participation, market entrance of new industries, price and service standards



Thank you !