One Nation, One Transport City

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The Korea Transport Institute

KOTI enriches the future by securing harmony among human, environment and transport
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1. History of Korea’s Public Transportation
2. Paradigm Shifts in Public Transportation
3. Current Intercity Public Transportation
4. Necessity of Establishing a Nationwide Integrated Public Transportation System
5. Principles and Objectives for Integration
6. Schemes and Designs for Implementation
7. Future Implementation Schedule
Diversified public transport modes in response to technological development and increasing customer demands

- Increase in transport modes in consideration of costs, time, and convenience

CNG low floor bus
M bus
Eco Electric bus
Light rail
Airport rail
High-speed rail
Increase in Transport Infrastructure (2)

Railway network expansion and KTX(Korea Train Express) opening

- Beginning of half-day life zone with continuous railway network expansion and KTX opening

<1970s>  < KTX opened in 2004>  <2020 national railway network>

3,141 km  3,374 km  4,934 km
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Inconvenient Public Transport: Routes

KOTI – Cheongju City (about 170km)

Case 1. Public Transport

- 5 mins
- 32 mins
- 2 hours 20 mins
- Total 3 hours 19 mins, 12,800 won/person (3 persons 38,400 won)

* Except transfer waiting time

Case 2. Automobile

- 2 hours 32 mins, 39,963 won
- Toll 10,800 won
- Gas price 29,163 won

Total 2 hours 32 mins, 39,963 won
Inconvenient Public Transport: Fare

KOTI – Cheongju City

Subway → Inter-city bus → Intra-city bus

No transfer discount

or

Transport card

or

Credit card

or

Transport card
## Inconvenient Public Transport: Connectivity

Lack of integrated transport systems and facilities at transport nodal points

<table>
<thead>
<tr>
<th>Notes</th>
<th>Distance</th>
<th>Time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxi</td>
<td>7Km</td>
<td>14 mins</td>
<td>Terminal-Baeksuk rotary-Sangyongdong rotary-Cheonan Asan Station</td>
</tr>
<tr>
<td>Bus</td>
<td>9.65Km</td>
<td>38 mins</td>
<td>1(Getting off at Green Peel hospital) 990(Getting off at Cheonan Asan station)</td>
</tr>
<tr>
<td></td>
<td>8.29Km</td>
<td>38 mins</td>
<td>12(Getting off at Bongmyung Cheongsol A) 20(Getting off at Cheonan Asan station)</td>
</tr>
<tr>
<td></td>
<td>11.06Km</td>
<td>39 mins</td>
<td>990(Getting off at Cheonan Asan station)</td>
</tr>
<tr>
<td></td>
<td>10.16Km</td>
<td>39 mins</td>
<td>13(Getting off at Cheonan Asan station)</td>
</tr>
<tr>
<td></td>
<td>9.83Km</td>
<td>39 mins</td>
<td>20(Getting off at Cheonan Asan station)</td>
</tr>
</tbody>
</table>
Inconvenient Public Transport: Information system
Private car or Public transportation?
Changes in public transport demands (1)

Public transport ridership changes by year

- Sustainable increase in public transport traffic volume by 90s
- Rapid decrease in public transport traffic volume since 90s in accordance with car ownership increase
- Weak mode transition from auto car to public transportation in response to KTX opening in 2004 (absorption of air transport demands)

<Traffic volume by public transport mode>

<No. of registers automobiles>
Changes in public transport demands (2)

Traffic volume by transport mode and mode share by distance

- Downward trend of ridership for intercity bus, express bus and rail since 1990s
- Fall in public transport ridership according to increase in the number of registered automobiles since 1990
- About 40% of mode share of automobiles for long-distance trip over 200km

<Change in traffic volume by transport mode>

<Mode share by distance>

* Changes in traffic volume by year since 1970

* Changes in public transport demands (2)
Business deterioration of bus companies and increase in government subsidies

- Demand decrease due to the lack of connectivity
- Plenty of overlapping routes and inefficient route
- Bus business deterioration – Increase in government subsidy
- Many buses having 3-4 passengers during weekday daytime

<Annual changes in passengers by bus>

<Changes in No. of buses and passengers>

Note: Converge No. of buses and passengers in 1991 into 100
Increase in Gov’t Subsidy for Public Transport

Gov’t subsidy has been increasingly scaled up since 2001.

Source: The Anti-Corruption & Civil Rights Commission (ACRC), 2010
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Balanced Regional Development Policy in Korea

Necessity of inter-city transport system oriented to public transportation

- 176 government bodies will move to 12 cities by 2015.
- The movement will bring about 130,000 job creation and induce production worth as much as 13.3 trillion won.
- Max. 900,000 persons, including about 30,000 employees of the gov’t bodies will be transferred to suburban cities

Administrative City
- Yeongi·Gongju (Gov’t ministries will be moved.)

Company City
- 7 cities such as Gangwon, Wonju, etc.

Innovative City
- 10 cities such as Jeonbuk, Wanju, etc.
National Intermodal Transportation Plan

Road-oriented → Eco-friendly public transport system

4th Revised Comprehensive National Development Plan
- Low carbon green growth transport system establishment
  - Implementing rail-oriented, streamlined transport policy
  - Intensifying integration among major public transport nodes

2nd Revised National Intermodal Transportation Plan
- Vision of National Intermodal Transportation Network
  - Within 90min access to Metropolitan region
  - Within 30min commuting zone in Metropolitan region
  - Slash in energy consumption and CO2 emission by establishing sustainable transport system
  - Nationwide public transport mobility for the elderly and the transport vulnerable
- For national Intermodal Transportation Plan for balanced regional development
- For eco-friendly and sustainable transport system
- For universal transport service provision for inter-regional mobility
- For the efficiency of national transport system

Nationwide integrated public transport system and reform is an inevitable, pending issue!
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Implementation Principles and Directions

**Physical Continuity**
- Securing seamless transport in terms of transport facilities
- Establishing an integrated transport system between KTX, rail and long-distance bus

**Time Minimization**
- Rationalizing operation schedule and headway to minimize transfer, access and waiting time
- Securing connectivity between hub and spoke

**Economic Utility**
- Securing a competitiveness of public transport fare (transfer discount, seasonal pass, and other various fare policies)
- Maximizing a payment convenience by one card all pass system in the nation

**Informative Convenience**
- Increasing user convenience by providing information on transport modes, transport facilities and transfer stations
- Providing real-time information on transport operation and transfer stations

**Administrative Efficiency**
- Integrating administrative service by securing inter-regional transport modes and transport service facilities
- Securing a capability to cope with unified management of fare, discount, financial resources and conflict and a fast decision-making process
Five Points of Integration

- Physical Integration
- Network Integration
- Fare Integration
- Institutional Integration
- Information Integration

Nationwide Integrated Transportation System
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Network Integration (1)

Necessity of revamping intercity public transport routes

Directly connection-oriented public transport system among cities cause degradation of service and operating inefficiency

- Profitability and overall operating efficiency can be declined due to the small number of passengers for a certain route

Higher use of automobiles compared to public transports for inter-city travel causes inefficiency of transport system

- Car users for long-distance travel cause the increase in traffic congestion, energy consumption and CO2 emissions, etc. which undermines national competitiveness

Directions to revamp inter-city public transport system

- Revamp public transport system in accordance with nation’s KTX-centered arterial public transport route revision
- Improving operating efficiency and increasing ridership by transforming inter-city public transport routes into KTX and express bus-centered hub & spoke shape
Nationwide Public Transportation Routes Revision

- Equitable route distribution of inter-regional public transport
- Adjusting detour routes and overlapped routes across the region and transport modes
- Establishing a nationwide hub and spoke bus system which is oriented to hubs

< Present >

<After revision>
Nationwide Public Transportation Routes Revision

User’s Aspect

• Improving service in various aspects such as reduced travel time, convenience, etc.
• Measuring economic value of reducing 30 minutes for bus travel
  - Economic value of travel time (Ex: saving about 5 billion KRW/day for every 1 million public transport users)
• Transport mode transition effect in accordance with reduced travel time of public transport
• Improved social equity
  - Social welfare achievement with route adjustment in small- and medium-sized cities and farming and fishing villages

Operator’s Aspect

• Improving social inefficiencies such as route overlapping and few provision of routes
• Reduction in operation costs for vehicle x km by streamlining overlapping routes and improving inefficiency
  - Efficiency, time-saving, convenience and many other benefits by streamlining overlapping routes from large city to large city
Physical Integration (1)

Establishing a nationwide integrated public transport system and securing transport facilities

- Integrated operation for rail stations, airports, and terminals
  - Service improvement and increase in ridership
  - Reducing public transport fare and improving traffic congestion
  - Drastic improvement of public transport service in small- and medium-sized cities and fishing and farming villages

Effect of establishing expressway rest areas (i.e. Hoengsung, Seonsan, Jeongan)

- Monthly use of 18,840 people; 4,860 peoples, 25.8% of this figure, changed their transport mode choice from automobiles
- 32-46 minutes (11.6-23.5%) of travel time reduction
- 1,608-4,013 KRW(7.4~19.9%) of travel fare reduction

* Effects will be amplified if it will be applied to inter-city bus and intra-city bus, other than express bus
Establishing a nationwide integrated public transport system and securing transport facilities

Modal shift effect responding to establishing intermodal transit system and facilities

- Establishing intermodal transit centers at nation’s major nodes (23 places) would cause that 33% of car users will shift to public transport modes.

<table>
<thead>
<tr>
<th>Transport modes</th>
<th>Before revision</th>
<th>After revision</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermodal transit center establishment (Improved intermodal transit system)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cars</td>
<td>18%</td>
<td>12%</td>
<td>-6%</td>
</tr>
<tr>
<td>Public transport modes</td>
<td>66%</td>
<td>69%</td>
<td>2%</td>
</tr>
<tr>
<td>others.</td>
<td>16%</td>
<td>20%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Modal shift effects caused by establishing intermodal transit centers

GHG reduction effect by establishing intermodal transit centers

- Decrease in car VMT will cause GHG emissions to be reduced to 249,481 ton/year.

<table>
<thead>
<tr>
<th>Intermodal transit center</th>
<th>Reduction in car traffic (travel-km/year)</th>
<th>GHG reduction (ton/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the nation</td>
<td>954,336,337</td>
<td>200,887</td>
</tr>
<tr>
<td>Over wide area</td>
<td>199,119,546</td>
<td>41,914</td>
</tr>
<tr>
<td>Total</td>
<td>1,185,185,087</td>
<td>249,481</td>
</tr>
</tbody>
</table>

GHG reduction effect by establishing intermodal transit centers

Source: Korea Transport Institute, “Basic Plan for Intermodal Transit Center Establishment,” 2011
Establishing a nationwide integrated public transport system and securing transport facilities

- Making Hubs and Sub-hubs at places where transfer happens frequently
- Establishing a seamless public transport system
  - Hub of public transport: KTX stations, national rail stations, big cities’ express bus terminals
  - Sub-Hub of public transport: expressway rest areas, small- and medium-sized city terminals and metro stations
Fare Integration (1)

Introduction of nationwide integrated fare system

Limits of current public transport fare system

- Current public transport fare system is integrated on the basis of metropolitan regions
- Separate operating fare system between intercity public transport fare and destination’s transport fare
- As fare structure is oriented to service providers and costs, fares are different by transport mode and there is a limit to implement various fare discount policies.
- Inconvenience in long-distance travel undermines competitiveness of public transport.

Necessity of a nationwide integrated fare system for public transport

- Make different fare system among local governments into fare and systematic system
- Service based fare system to improve users’ transport welfare, diverse discount benefits, etc.
- Nationwide integrated fare system for public transport is necessary to secure competitiveness of public transport
Establishing a nationwide integrated fare system for public transport (1)
- Introduction of a new nationwide integrated fare system for public transport which charges people in proportion of travel distance and service level
- Establishing a transfer discount fare structure and an integrated fare system to promote the competitiveness of public transport
Establishing a nationwide integrated fare system for public transport (2)

Suggestions on nationwide integrated fare system for public transport

• Analyzing fare structure in the perspective of user, service provider and financial sponsors
• Preparing standards for integrated fare charging and revenue distribution

Suggestions on fare policy in increase public transport users’ convenience and ridership

• Shift to user-oriented and service-based fare
  - New fare policy such as seasonal ticket, etc.
  - Two-tier Pricing
  - Maximizing efficiency with fare policies such as peak-hour fare

• Tax incentives and other measures to promote public transportation use
  - Seasonal ticket, upgrade in ticketing, transfer discount and advanced purchase discount, etc.
  - User-oriented fare policy such as service-based fare

Implementation and improvement measures for integrated fare system

• Detailed measures of revenue allocation for related stakeholders
• Identifying problems to adopt the integrated fare system and establishing system improvement measures
### Information Integration (1)

#### Establishing a nationwide integrated public transport information and payment system

- **National public transportation Itinerary & e-Ticket service based on mobile**

#### Processes:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Information search</strong></td>
</tr>
<tr>
<td></td>
<td>Seoul → Uleungdo</td>
</tr>
<tr>
<td></td>
<td>Confirmation on research outcome</td>
</tr>
<tr>
<td>2</td>
<td><strong>Choosing a travel route</strong></td>
</tr>
<tr>
<td></td>
<td>Confirming an itinerary including all transport modes to transfer</td>
</tr>
<tr>
<td></td>
<td>Real-time navigational information check through a mobile</td>
</tr>
<tr>
<td>3</td>
<td><strong>Travel (Seoul-Pohang)</strong></td>
</tr>
<tr>
<td></td>
<td>(Seoul) Bus → (Gimpo)Airplane → (Pohang)Bus → (Pohang)Arrival</td>
</tr>
<tr>
<td>4</td>
<td><strong>Travel (Pohang-Uleungdo)</strong></td>
</tr>
<tr>
<td></td>
<td>Pohang-Uleungdo by sea: every 9:40am</td>
</tr>
<tr>
<td>5</td>
<td>Arrival at Uleungdo</td>
</tr>
</tbody>
</table>
Establishing a nationwide integrated public transport information and payment system

Directions on national public transportation Itinerary & e-Ticket service

• Providing information on departure and transfer time
• Providing information on available seats and boarding information
• Providing service to comprehensively reserve various transport modes to transfer and benefits of transfer discount
• Information provision in consideration of road distance and waiting time
• Personal service for itinerary revision

Directions on a nationwide integrated public transport information and payment system establishment

• Development of new service and contents based on mobile by using nationwide integrated public transport information
• Design and construction of developed service and contents on a trial basis
Establishing a nationwide integrated public transport information and payment system (2)

- Integrated public transport information system establishment to implement traffic demand management based on green transport

Information convergence

- Managing major roads and traffic flows
- Management of linkup transportation and public transport operating information
- Weather condition monitoring and managing incidents
- Distributed intelligence by local government

Nationwide Integrated Public Transport Center Establishment

- Integrated operation DB system
- Monitoring, Operation, Management
- Integrated logistics management and swift emergence response
- Centralized information system management

Information Integration (3)
Integrated administration and operation methods for a nationwide integrated public transport system

- Setting up a sustainable nationwide integrated public transport system such as metropolitan or national public transport management system
- Suggestions on revising methods of law and regulation for a rational financing and streamlined operations

**National Transport Authority Establishment**

- National Transport Authority under the supervision of MLTM
  - Public Private Partnership between central government, local government, and related agencies
  - Subdivisions of metropolitan zone units
- Operating a committee
  - Improving national transport and facility
  - Operating transport modes and financial support
  - Clearing service for profits and revenues

**Law and regulation revision**

- Deregulation on passenger transport business
- Improvement and support methods development for public transport-related system
- Methods to commonly use and manage public transport facilities

※ Revision of related law and regulation
- Passenger Transport Service Act
- Support and Promotion of Utilization of Mass Transit System Act
- Act on Special Accounts for Traffic Facilities, etc.
Institutional Integration (2)

Integrated administration and operation methods for a nationwide integrated public transport system

Role of an administrative bodies for integrated public transport

• Adjusting and consolidating dispersed transport-related tasks
  i.e.) MLTM (express bus), local governments (inter-city bus, intra-city bus), operating agencies (rail), etc.

• Making a synergy effect by establishing cooperative ties

• Managing revenues and clearing service cooperatively

• Conflict resolution between public transport operators
Expected Impacts of Integration

- Mobility maximized
- Realizing a human-oriented transport welfare
- Optimized social systems
- Establishing an integrated public transport system
- Find new economic development engines
- Public transport technology development
- Eco-friendly, green transport system establishment
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Future Implementation Schedule

Phased implementation plan

2012
- Basic concepts
- Establishing an implementation plan for a nationwide integrated public transportation system

2013
- Pilot study
- Diagnose and evaluation of a nationwide integrated public transportation system

2014~2015
- Establishing a nationwide integrated public transport system
Key Items for Discussion

-Cooperative operation and interest conflicts management among public transport operators?
  - Bus (Private)
  - Rail (Public company), etc.

-Integrated administration body for various public transport modes and its problems?
  - Express bus, Rail: Under the supervision of MLTM
  - Intercity bus, Intra-city bus: Under the supervision of local governments

-Solution for integrating urban transport and inter-city transport?
  - Urban transport: intra-city bus, urban metro
  - Inter-region transport: inter-city bus, express bus, rail, plain

-Low public transport fare vs government’s subsidy increase?
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