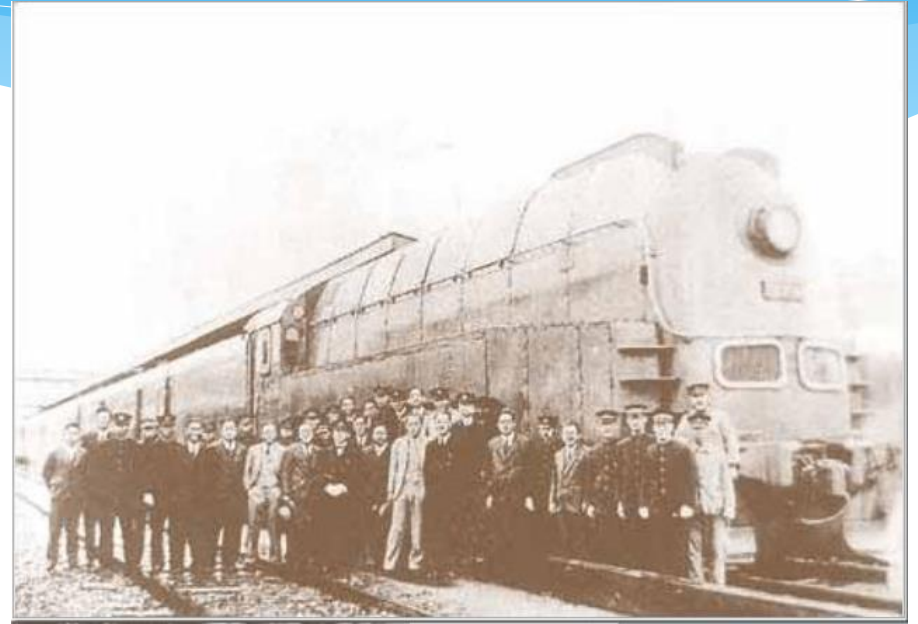


Korea High-Speed Rail & Future Land-Bridge



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[The 2nd Workshop on Railway Operation for Safety and Reliability](#)

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1. Railway system in S. Korea

Railway Policy in Recent Years (Since 2001)

□ Rail Reform

● Vertical Separation of Rail Industry ('04)

- Vertical separation of Korean National Railroad into KORAIL (train operator) and KR Network (facility manager)

□ Stimulate Competition & Efficiency to Rail Operation

● Suseo-departing Gyeongbu and Honam KTX to be launched in '16

● Lease agreement for rail operation

● Decreased basic fare by over 10%

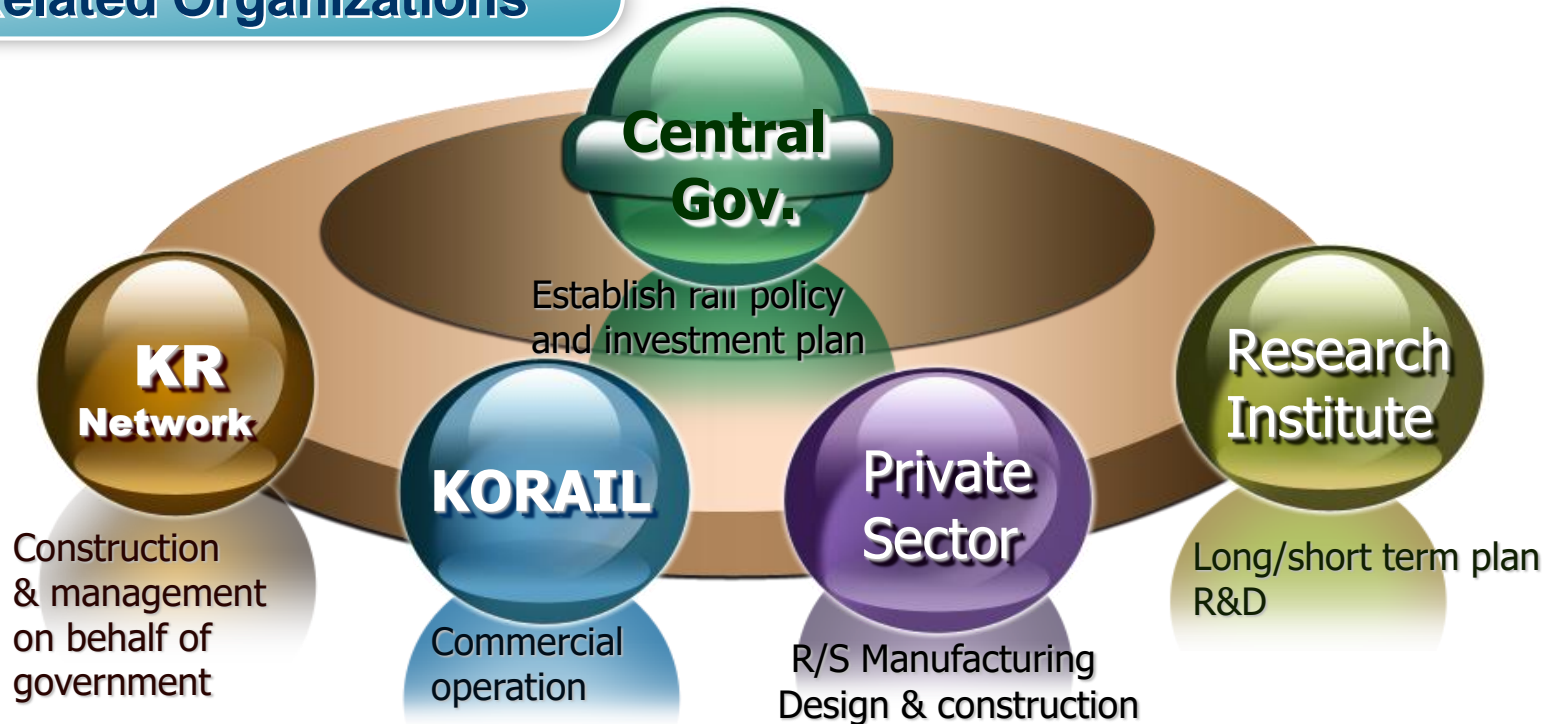
● Increased track access charge of minimum 40% of revenue (up 9% from KORAIL's 31%)

HSR Operation in 2016



Railway in Korea

Related Organizations



Local gov. is responsible for construction and operation of local railways (Urban railways)

□ Railway Reform

● Vertical Separation of Rail Industry ('04)

- Vertical separation of Korean National Railroad into KORAIL (train operator) and KR Network (facility manager)

□ Competition/Efficiency in Rail Operation

- Suseo-departing Gyeongbu and Honam KTX to be launched in '16
- Lease agreement for rail operation
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HSR Operation in 2016



SRT-Toilet incident or, accident?



Infrastructure Index of ROK Railway

세계경제포럼 글로벌경쟁력지수(GCI) '철도 인프라의 질' 상위 10개국

Rank/101	Country / Economy		Score	Trend	Distance from best
1	Switzerland	ⓘ	6.6	—	██████████
2	Japan	ⓘ	6.6	—	██████████
3	Hong Kong SAR	ⓘ	6.3	—	██████████
4	Singapore	ⓘ	5.9	—	██████████
5	France	ⓘ	5.8	—	██████████
6	Netherlands	ⓘ	5.8	—	██████████
7	Korea, Rep.	ⓘ	5.7	—	██████████
8	Finland	ⓘ	5.6	—	██████████
9	Germany	ⓘ	5.5	—	██████████
10	United States	ⓘ	5.5	—	██████████

자료 : World EconomicForum, *Global Competitiveness Report 2017-2018*
 (<http://reports.weforum.org/global-competitiveness-index>)

Re-Export to France



* IT & ITS

* * Comparative advantage

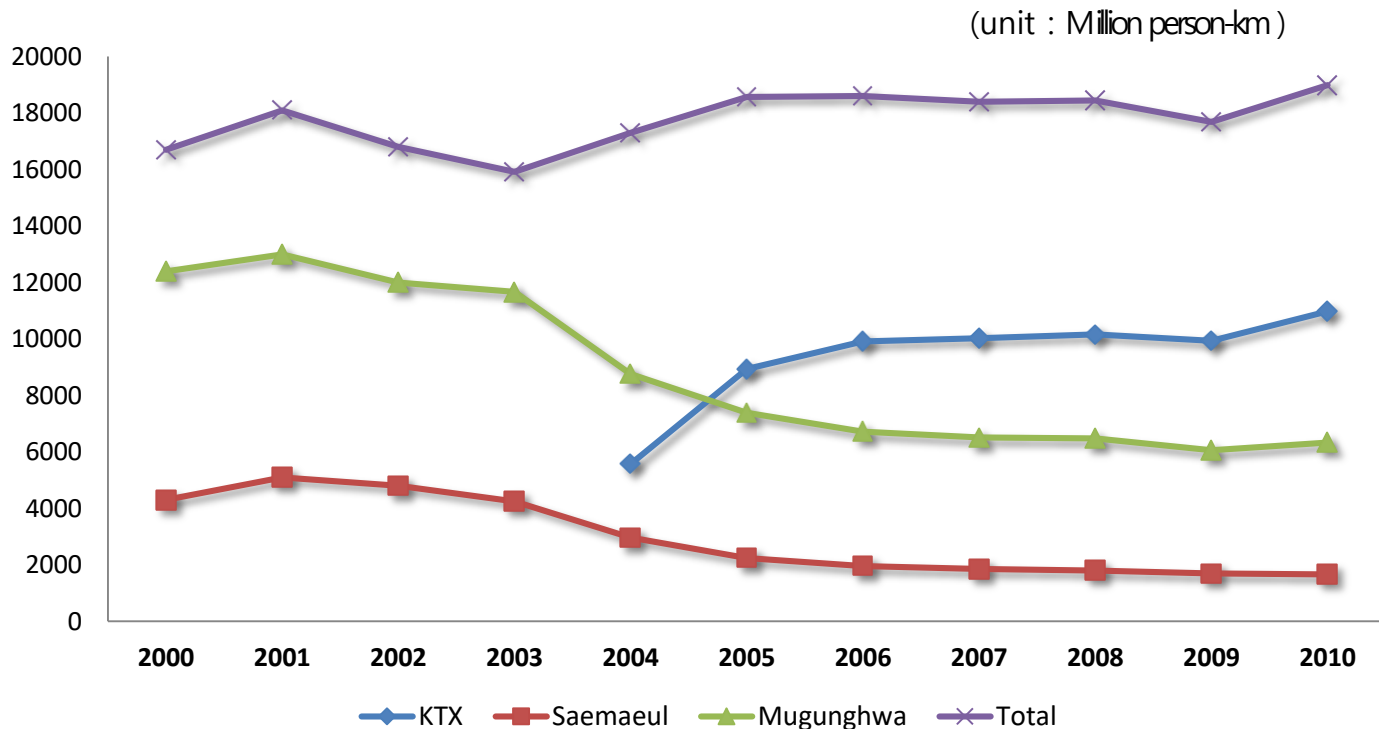
* * Platform of mutual coop.



2. Korea's High-Speed Rail, KTX

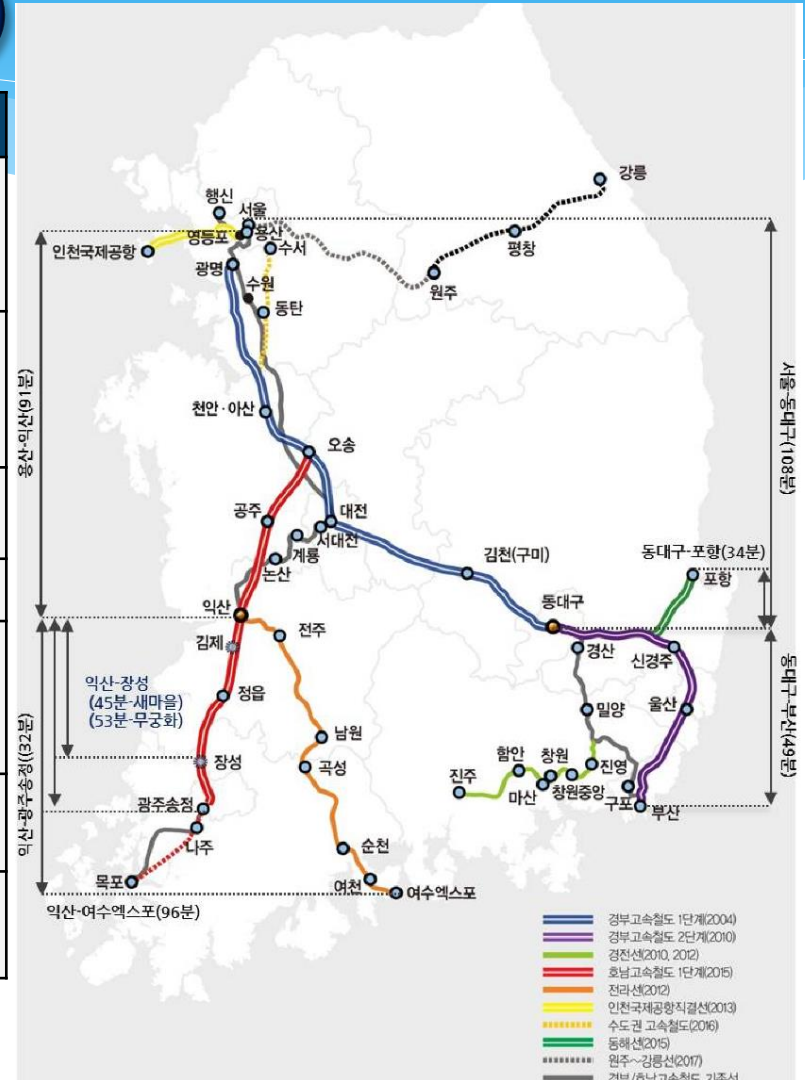
Railway Passenger (Inter-Regional)

- Railway passenger for inter-regional traffic does not show a noticeable change
 - Conventional rail is decreasing whilst KTX increasing



High Speed Rail in Korea

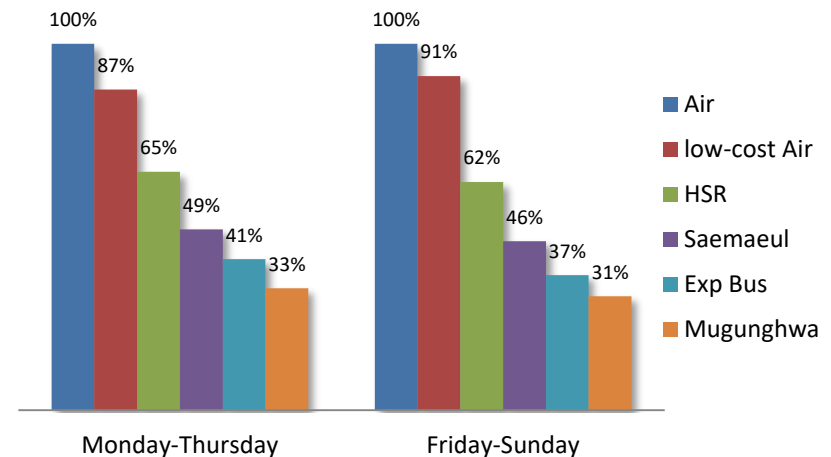
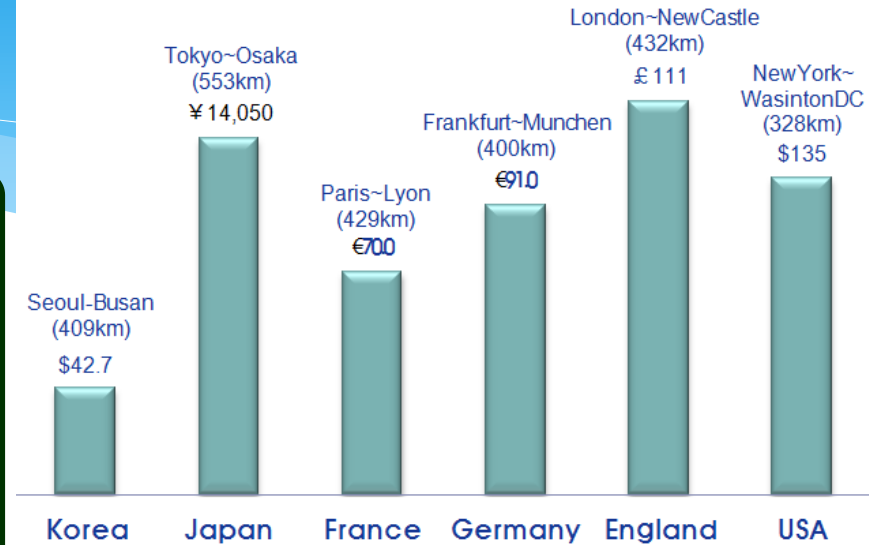
Details of Gyeongbu HSR	
Operation	<ul style="list-style-type: none"> ·1st stage(Seoul~Daegu) : 2004. 4 ·2nd stage(Daegu~Busan) : 2010. 11 ·Completion(Daejeon and Daegu city areas) : 2014
Length	<ul style="list-style-type: none"> ·Seoul~Busan : 423.8km - HSR Line : 406km(including Daejeon and Daegu) - Existing line : 17.8km(Seoul~Siheung)
Number of Train Oper.	.59(weekdays), 77(weekend)
Max. Speed	.300km/h ~ 350km/h
Stations	.Seoul, Gwangmyeong, Cheonan-Asan, Osong, Daejeon, Kimcheon(Gumi), Dongdaegu, Singyeongju, Ulsan, Busan
Operating time	.2hr 30~40min
Fare	.Seoul-Busan : 42USD~60USD (around 20% higher on weekend)



* Honam high speed line (249.1km) is partly completed (around 9 bn. USD), Suseo high speed line (61.1km) will be in operation in 2016 (around 2.5 bn. USD)

Fare

- Fare for HSR in Korea is relatively low compared to other countries
- However, HSR fare is higher than that of Car or Express Bus in Korea
 - HSR is more expensive than Car for more than 2 people (on average 2 people in a Car on Express way)



Development of High Speed Train

KTX-II



- Project Period : 4 Years ('06.6~'10.6)
- Max. speed : 350km/h
- Concentrated Power System

HEMU – 400x

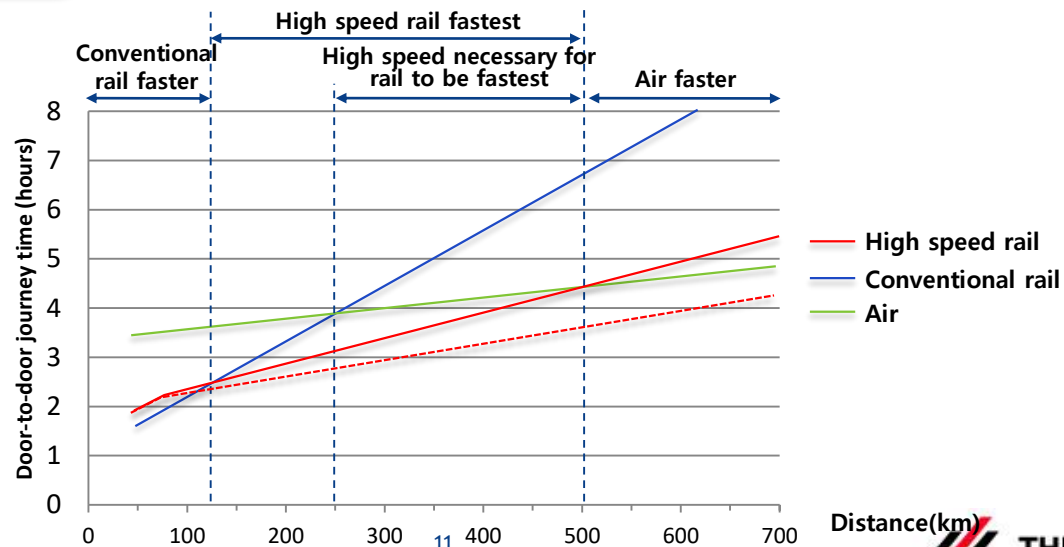


- Project Period : 6 Years ('07.7~'13.7)
- Max. speed : 430km/h
- Distributed Power System

Tube Train



- Project Period : ?
- Max. speed : 700km/h



GTX for Seoul Metro Region

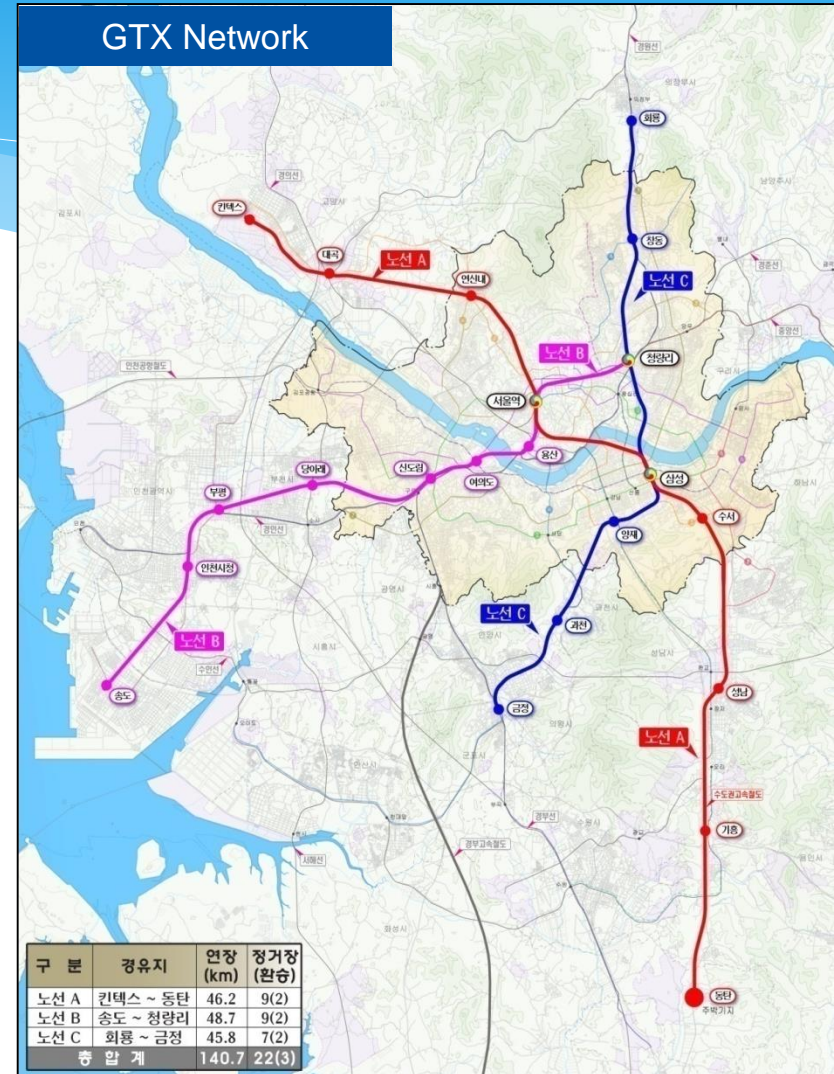
Accessibility Improvement

Construction of Faster Urban Railway Line(GTX)

- Phenomenal increase of train speed in SMA: 30~35km/h \Rightarrow 100km/h

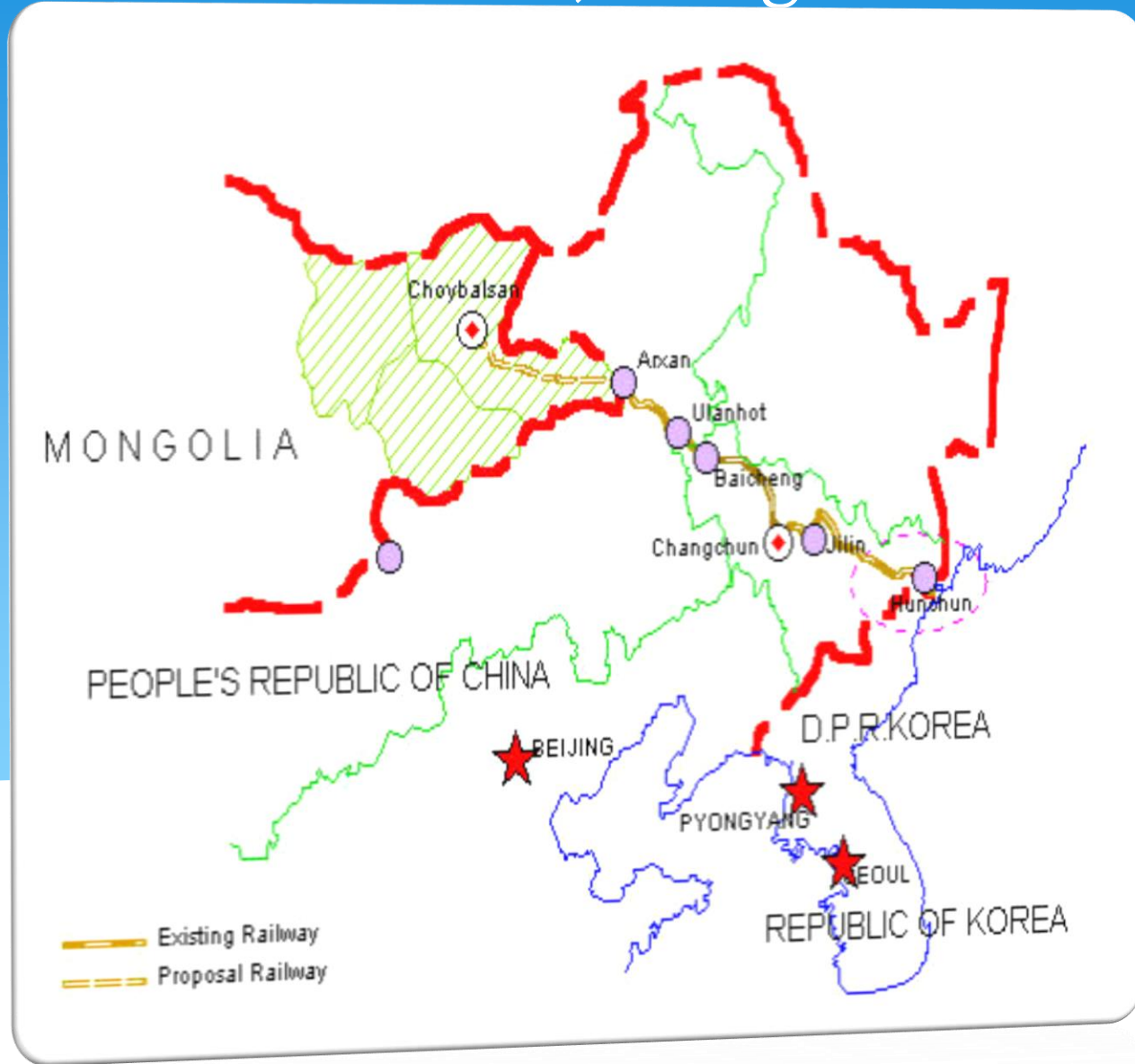
Efficient Train Operation

- Speed increase of existing train services through Skip & Stop, Direct Train Operation, and etc.



Dream of 'Continental Railway'

(HSR to Northeast China, Mongol and Russia)



3. KTX in Comparison with Taiwan THSRC



台灣高鐵

TAIWAN HIGH SPEED RAIL



KTX and THSRC different

Items	KTX	THSRC
Train Formation	Push-Pull type Power concentrated in both end locomotives	EMU type power distributed in some cars
Numbers of cars	One train set 12 cars Can be two train Multiple in one train	12 cars fix in one train
Doors	Two steps to platform	No gap to platform
Station	No gate to platform and train	The gate control the ticket before entrance to platform
Seat arrangement	Normal class 2-2 in row, Business class 1-2 in row	Normal class 2-3 in row, Business class 2-2 in row

KTX and THSRC (2)

Items	KTX	THSRC
Toilet system	Circulation type	Vacuum type
Ticket control	Intelligent system (No need check ticket)	SMIS system(seat map system Real time No need check ticket)
Design speed	350KM/H	350KM/H
Operation speed	305KM/H	300KM/H
Service in Business class	Snacks free charge ??	Snacks and Drink newspaper free

KTX and THSRC (3)

Items	KTX	THSRC
Passengers/ day	168,000	160,800
Profitable	Balance	4,5 Billions NT\$ profit/ 2016



Key Performance; Safety & Reliability

SAFETY

0

No passenger fatalities and severe injuries due to train accident during 7 service years.

99.66%

PUNCTUALITY

Average delay time less than 15 sec per run.

99.9%

RELIABILITY

Less than 2 trains cancelled in one month.



4. Railway Safety & Cooperation

- * Problems of KTX; Mixed Use of Conventional Tracks
- * Learning from Each Other
- * Collaboration between 'Middle-Powers'
- * 互惠 共生, 平和繁榮

● Rail Accidents Investigated by Korea's NTSB (Air & Rail)

○ Both fields of Aviation & Railway merged in July 10, 2006

○ Role of NTSB;

○ Subject of Investigation (cases)

- Derailment accident

- Train stop the operation due to the fire on the train/ wagon

- Fatal accident with more than 3 fatalities

- Accident with more than 50 mil. KRW (about 50,000 USD) worth of property damage

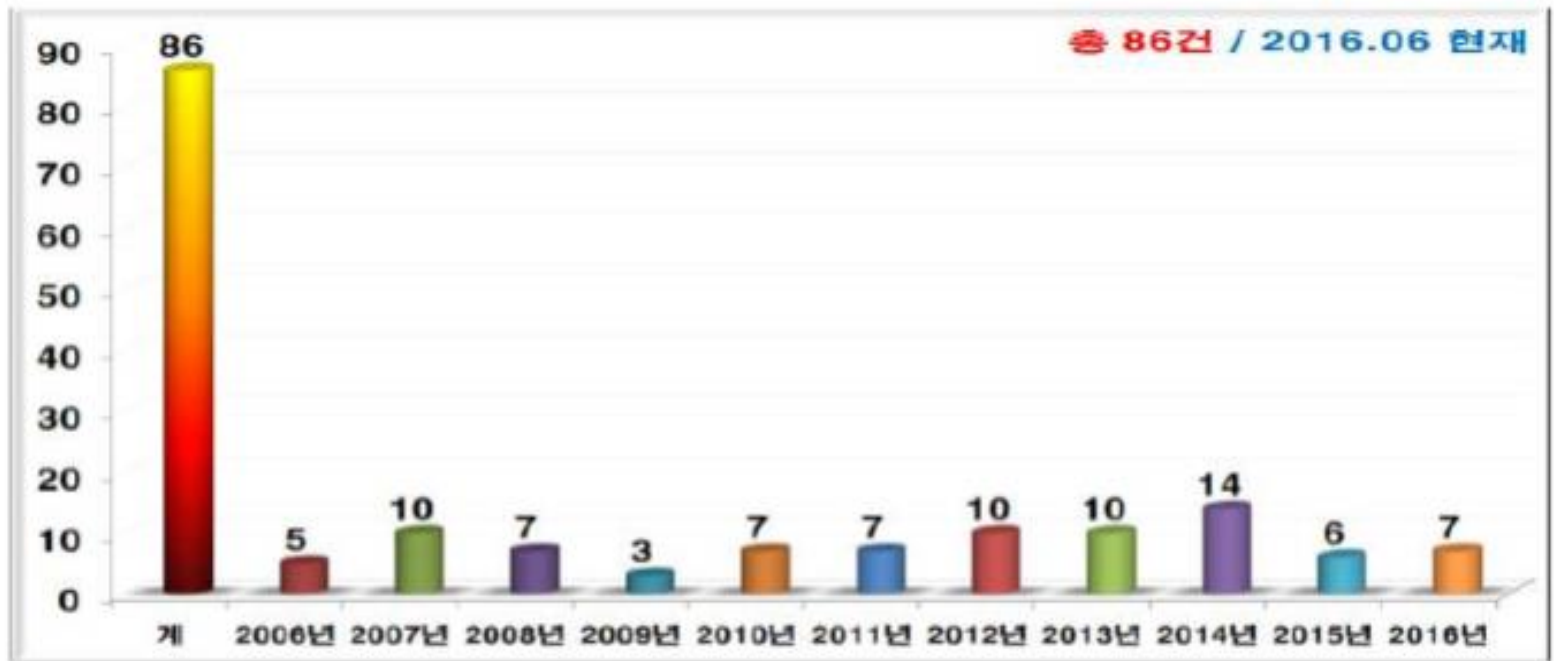
○ Total number of accidents investigated : 86 cases (YR 2006 ~ June, 2016)

* Source: Case Study Book on Rail Accidents in 2016 (NTSB, 2016.7.17)

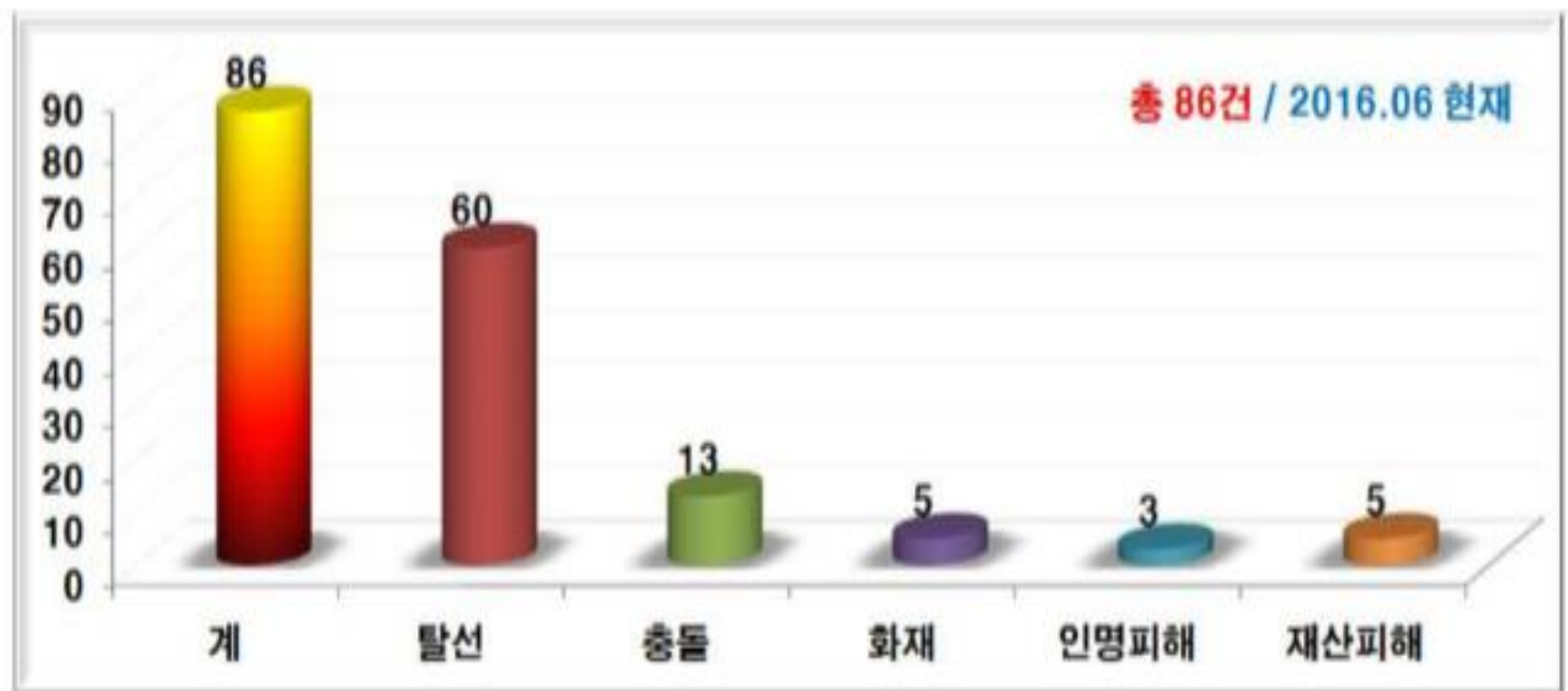
- Quoted by Min-Gyu Lee, Director of Passenger Services, KORAIL

○ Total Number of Accidents (86)/ as of June, 2016

- Yearly Situation



○ By Accident Type



Total//

Derail//

Collision //

Fire //

Fatal //

PDO *

* PDO; property damage only

ROK Railway for Export

Strengths >>

- Sales Efforts Initiated by Public Sector
- Experience & Price Competition in Certain Sector
- Preferences to ROK from Developing Countries
- For Economic Growth Model



Weaknesses

- Lack of Language Skill & Technical Achievements Compared to Advanced Countries
- Insufficient Experience or Accomplishments in Overseas Rail Projects
- Lack of International Human Network/Information
- Difficulties in Rail Export & Tech. Innovation for Limited Capacity of Subsidiary Rail Companies
- Lack of Funding Capacity & Management
- Smaller Size of ODA Budget

SWOT

- Growth in Overseas Market
- ODA expansion for DAC membership
- Government Policy of Positive Financing Strategy
- Cultivation of Global Infra Fund
- Increasing Private Turn-Key Projects

Opportunities >>

- Rail Markets Pre-Occupied by Advanced Countries
- Aggressive Marketing by Competitors
- Expanding Un-tied Assistance
- Growing Business Risk by Expanding Private Projects



Threats

5. Concluding Suggestions

- * International Cooperation in Rail Developments (Nut-crackers.. OR, facilitators ??)
- * ‘New Southern Policy’ by ROK president Moon;
2 bill. USD for Indonesian LRT
- * 絕長補短// 四海同胞 – ROK, Taiwan, Hong Kong
- * Networking, ‘We are Connected’

ONE ROAD, ONE BELT



TEMEEN JIN



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