

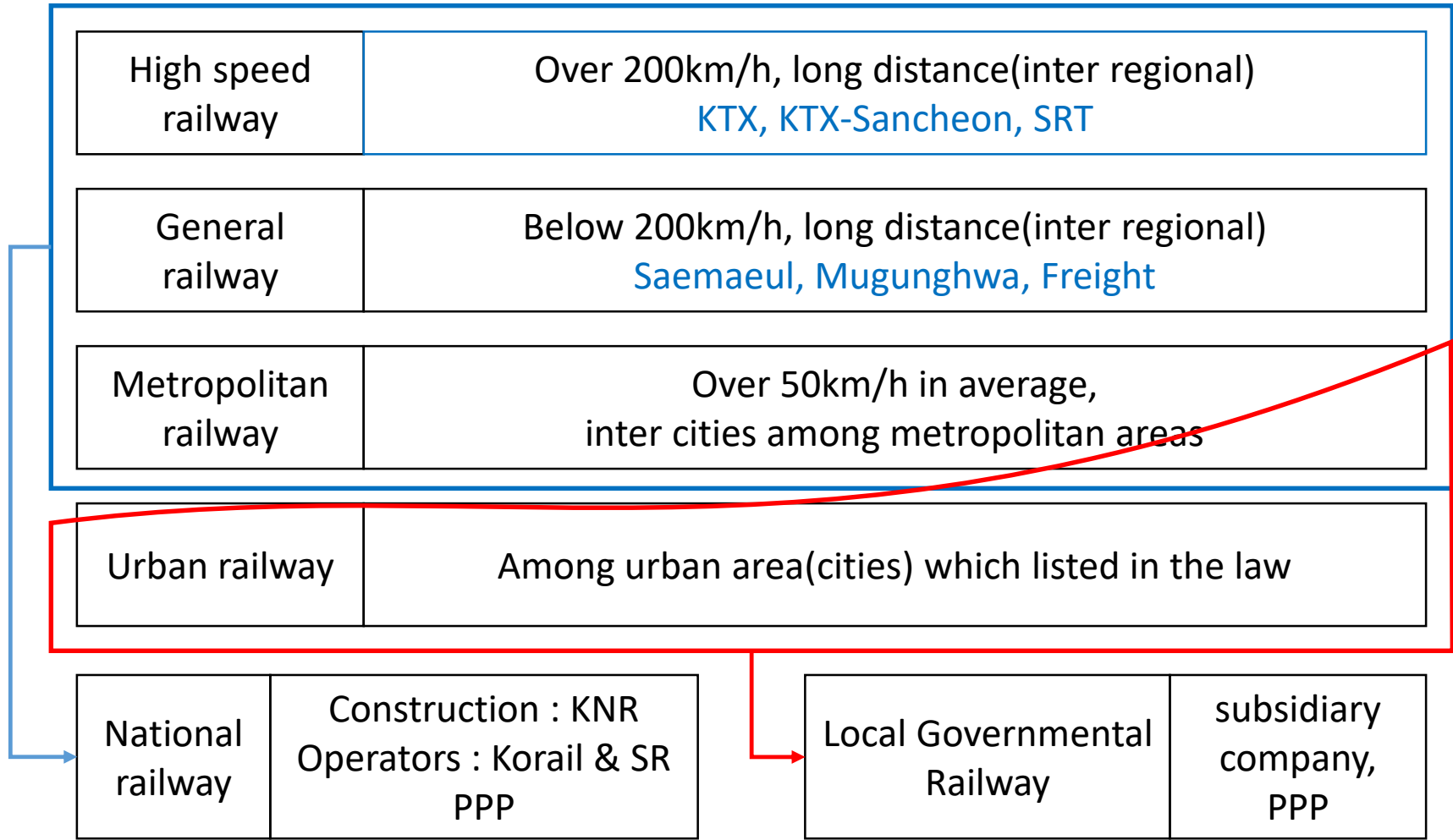
Overview of the Korean Railway Market: Challenges & Opportunities

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1. Overview of Korean Railway

Categories of Korean Railway

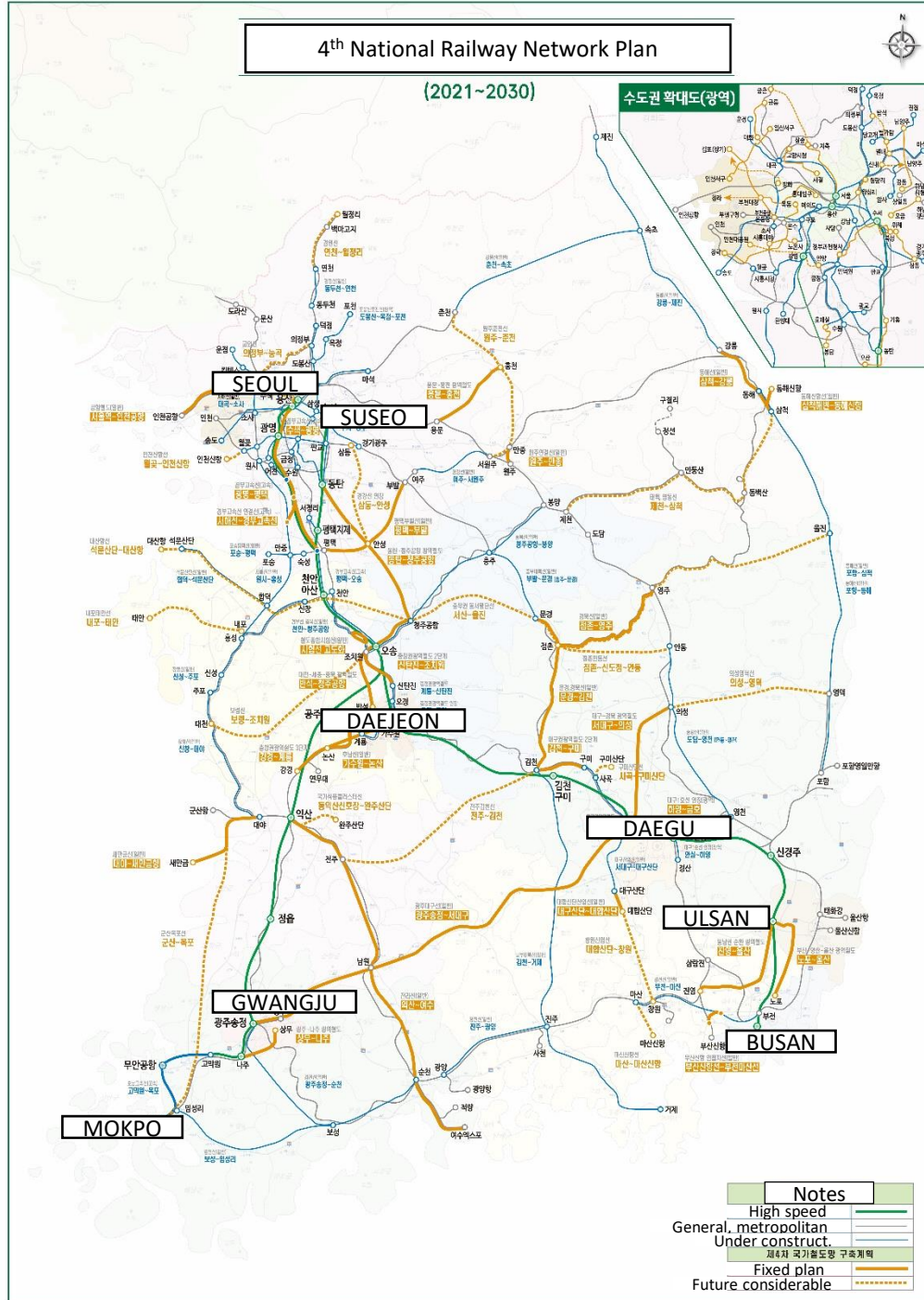


4th National Railway Network Plan

(2021~2030)



수도권 확대도(광역)

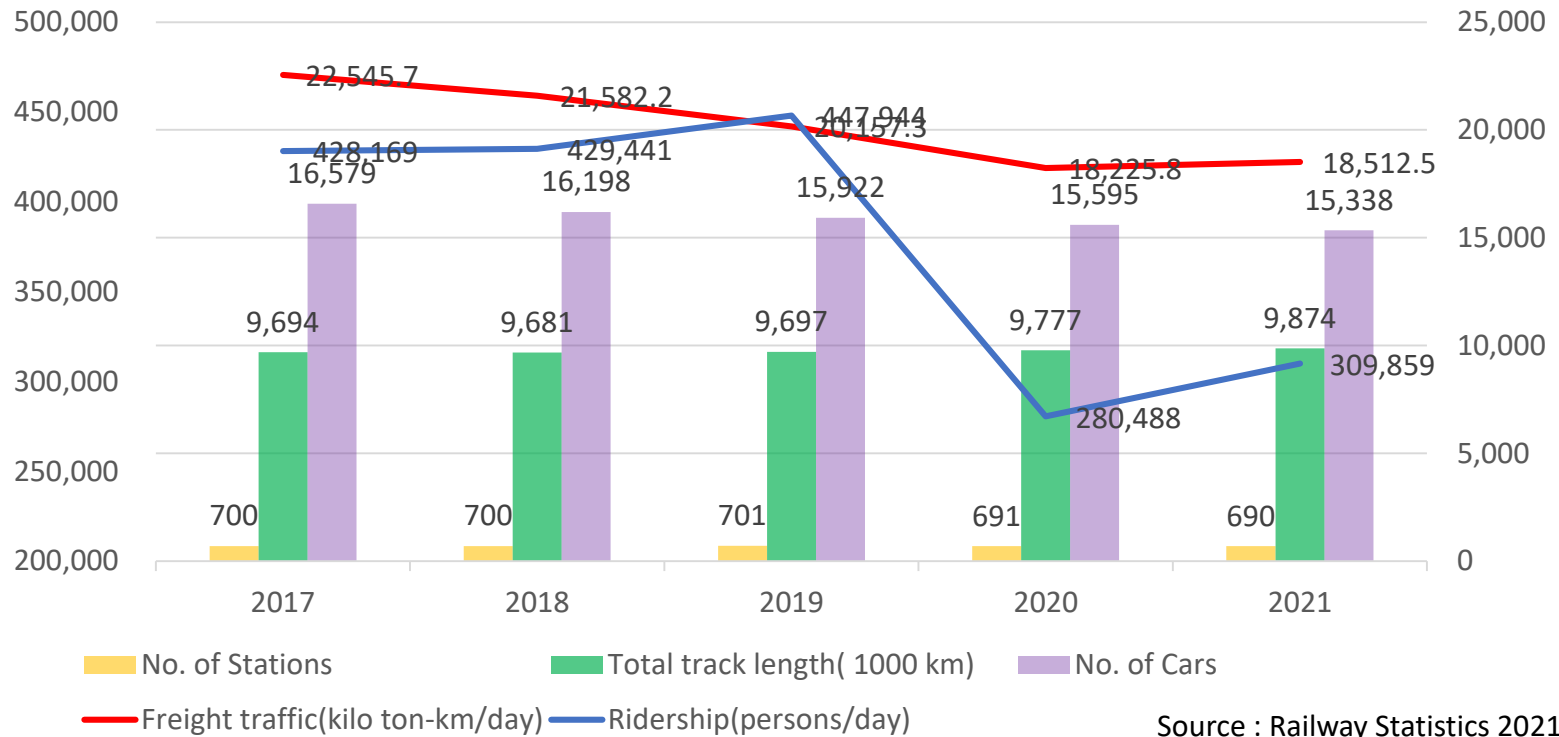


Notes

- High speed ——
- General, metropolitan ——
- Under construct. ——
- 제4차 국가철도망 구축계획 ——
- Fixed plan ——
- Future considerable

1. Overview of Korean Railway

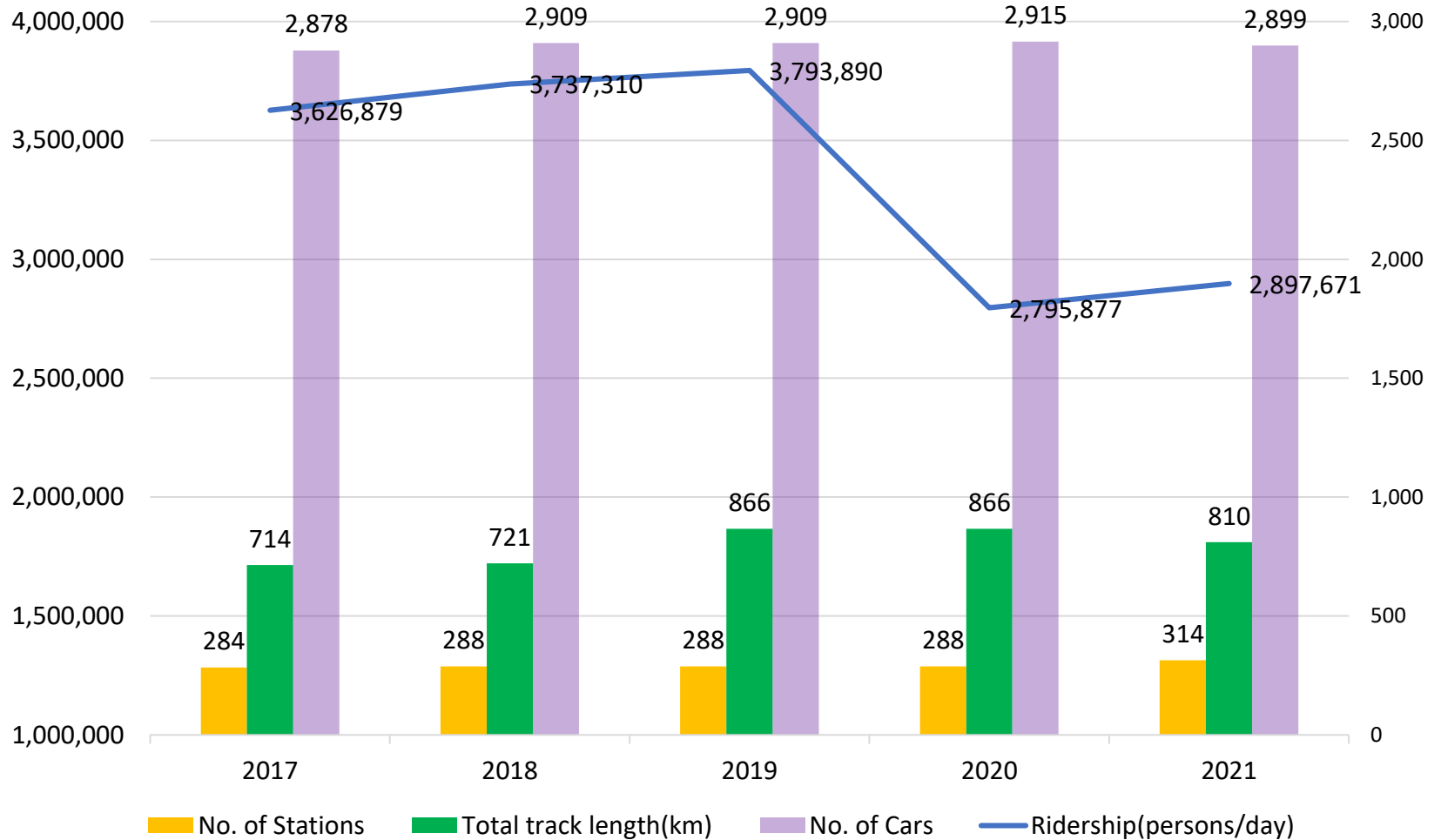
Inter regional Railways



- Transportation system heavily relies on roads (railway share 11.5%)
- Korea has plans to expand total of 5,340km railway by 2030
- 4,273km as of 2021 including 657km high speed
- About 1,500km long, 44 projects with 45.5 billion USD investment planned by 2030

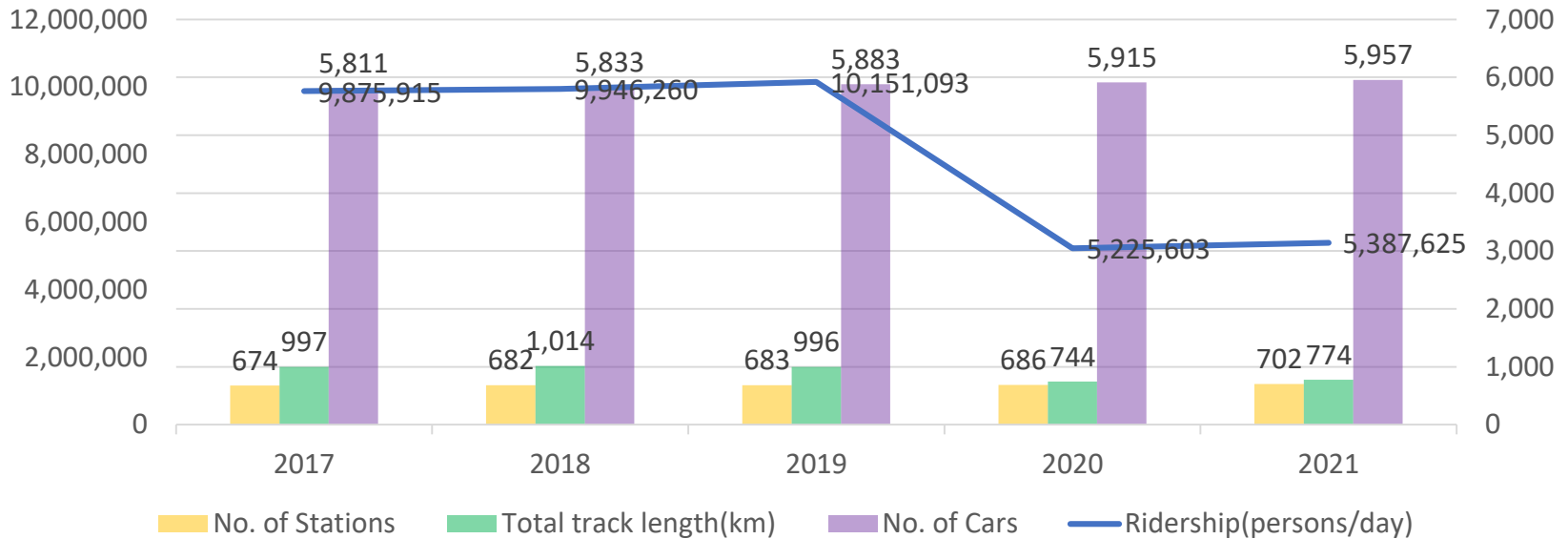
1. Overview of Korean Railway

Metropolitan Railways



1. Overview of Korean Railway

Urban Railways



Source : Railway Statistics 2021

- 26 routes, 740km as of 2021
- Central government supports up to 60% of construction cost
- 5 of 17 local governments(Seoul, Busan, Ulsan, Gyeonggi-do, Gyeongsangnam-do) have their own urban railway network plan
- 40 projects included but individual executable design should be followed

2. Key Players

Authorities

MOLIT (Ministry Of Land, Infrastructure and Transportation)	<ul style="list-style-type: none">- Handling High speed, General and National Metropolitan Railways.- Develops National Railway Plan for every 10 years.
Metropolitan Transport Commission	<ul style="list-style-type: none">- Commission under MOLIT- Handling Metropolitan and Urban Railways- Approves 10 year Urban Railway Network plan, and individual executable designs.

High speed, General and Metropolitan Railways

Korea National Railway	- Public company for national railway infrastructure construction
Korail	- Public company for national railway operation(high speed, general and metropolitan railway)
SR	- Public company for Suseo high speed railway operation
AREX	- Private company for Incheon Airport railway (PPP)
Neo Trans	- Private company for Shinbundang Metropolitan railway (PPP)

2. Key Players

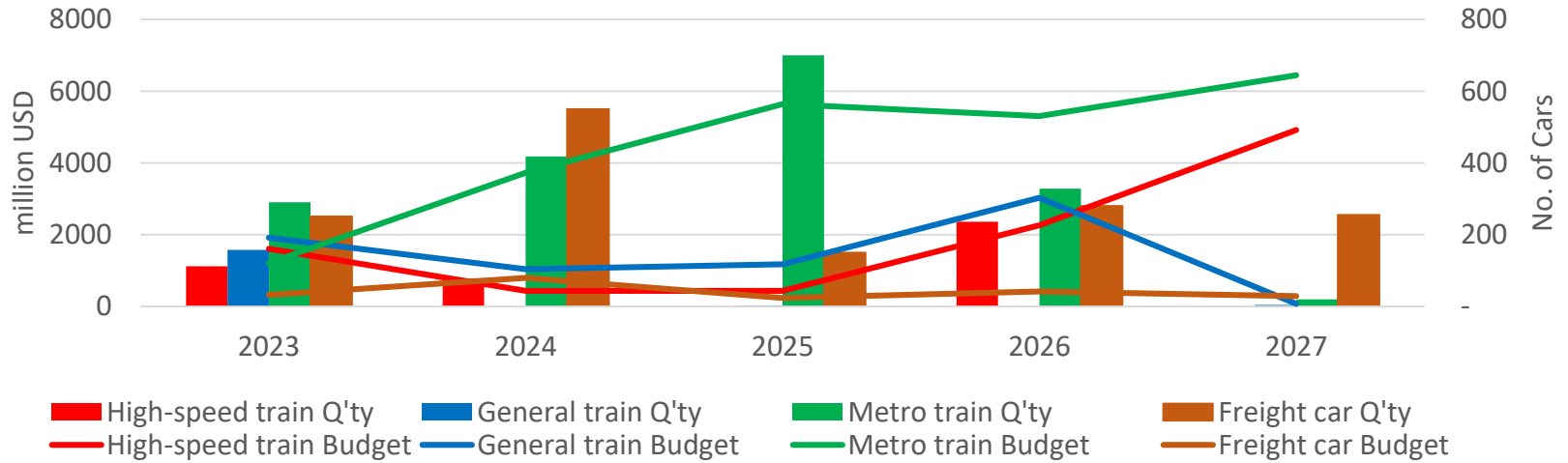
Manufacturers, Associations and research institute

Korea Railway Association (KORASS)	- Education & training, Foreign cooperation & Export support for Korean railway related business - cooperation body of 134 railway related companies and public bodies
Korea Rolling Stock Industries Association (KORSIA)	- Education & training, Information provision of rolling stock orders, Cooperation for Korean rolling stock industry - cooperation body of 90 rolling stock related companies and public bodies
Korea Railroad Research Institute	R&D of railways, public transportation and logistics. Railway certification
Hyundai Rotem	High-speed train, EMU, Locomotives
Woojin Industrial	Electric multiple unit (EMU), K-AGT, S-BRT
Dawonsys	EMU
Sungshin RST	EMU, cabin car, freight car
DaeaTI	E&M, signal system
Shalom Eng.	Signal, safety, maintenance
Yujin Machinery	rolling stock component, maintenance
VCTech	inverter, SIV
Vitzro Sys	SCADA, inverter, information systems
Hankuk Fiber	rolling stock exterior & interior
Sampyo Railway	slab, track, switch

- Market size is not big for physical shape of land
- Most companies produce not only railway related but also other industries
- Rotem, Wootin and Dawonsys pulling the most market

3. Market status

Rolling stock order plan



Rolling stock maintenance parts order plan

unit; million USD

Items	Sum	2023	2024	2025	2026	2027
Total	293.2	65.0	60.3	59.8	55.2	52.9
Major core parts	195.5	41.1	37.7	39.5	39.6	37.6
Frequent substitutes	89.2	20.2	21.2	19.2	14.5	14.2
Others	8.6	3.8	1.4	1.2	1.2	1.2

Source : Restructured from Korea Rolling Stock Industries Association and MOLIT

4. Challenges of Market Entry

WTO

- Switzerland is not eligible for KNR and Korail procurement by GPA Annex 7
- Direct export of Highspeed, General and Metropolitan railway ordered by KNR and Korail is not possible.
- PPP or urban railway projects are potential market.
- Technical licensing might be possible as well.

Price sensitive

- private projects in the Korean railway sector is relatively small.
- O&M market is quite price sensitive due to the predominant government support
- government procurement system is also quite price sensitive.

TRAM

- Current big trends of urban railway is 'TRAM'.
- 4 tram routes under designing and construction for Seoul, Daejeon, Hwaseong and Busan.
- Korea does not have systemic planning and operation technique of tram

5. Opportunities

Vehicles

- European companies are increasingly showing interest in the Korean market, particularly with the recent introduction of trams, where Korean manufacturers have insufficient experiences.
- Price of trams is still in formation, potential for price increase.

Construction

- Local companies has sufficient capacity.
- For trams, might be in demand due to lack of experience

Signal and operation

- Korean signal standards were developed recently.
- Signal system and optimized operation technique is not highly advanced yet.

6. Others

Climate change

- Revised NDC submitted to UN, 2021
- There isn't specific reduction goal for the railway sector.
- Korean government focuses on energy structure transforming rather than on transportation system transforming.
- KNR, Korail do not have specific plans as for combating climate change.

Projects in near future

- GTX (Great Train eXpress) : Deep underground fast Seoul Metropolitan Area railway.
- A,B,C 3 routes are fixed mixing PPP and government funded.
- D,E,F routes are considering.
- EMU 180 km/h



Thanks for your attention!