

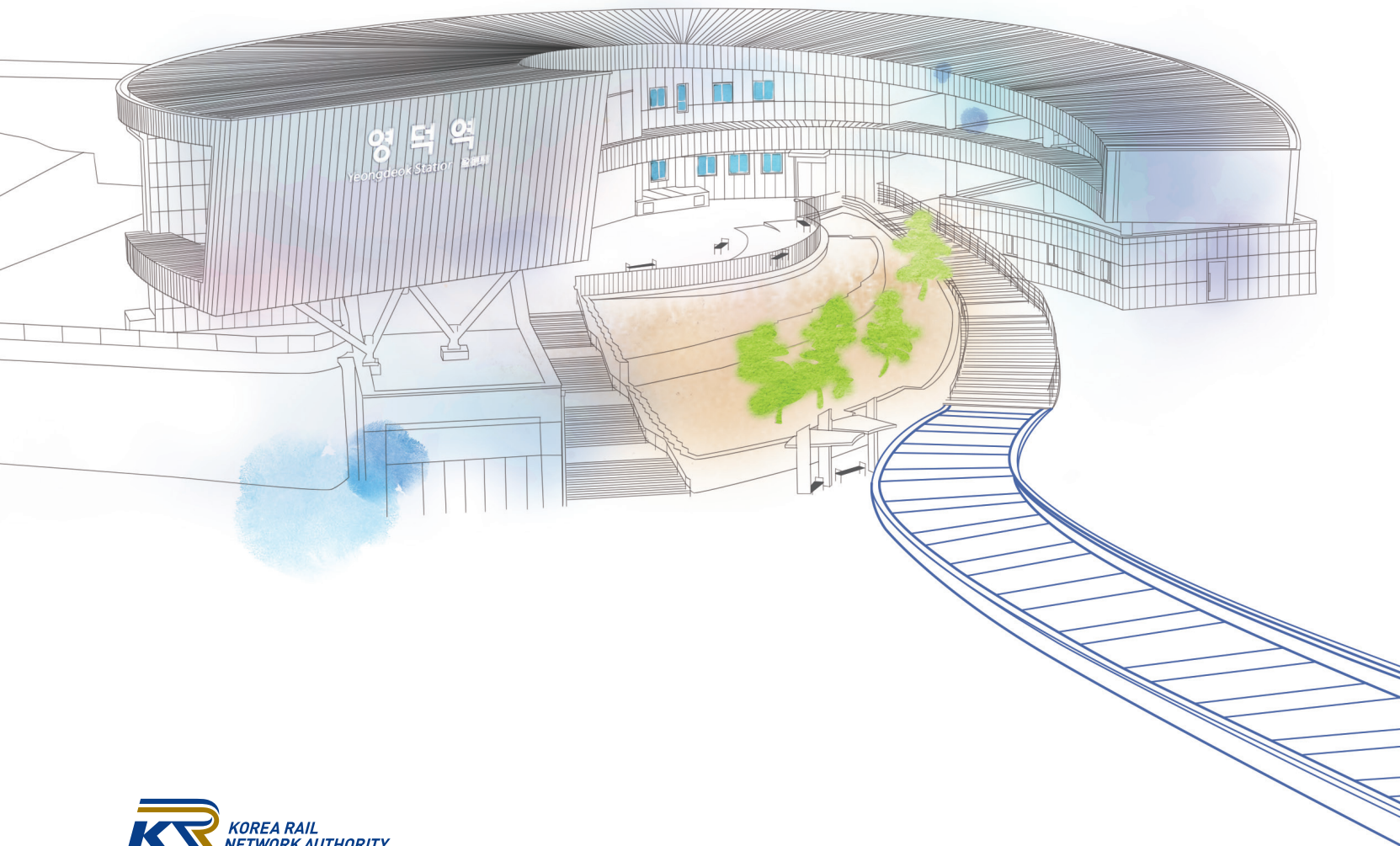
International
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11TH REPORT

RAIL, HOPE TOWARD TOMORROW

Sustainability Report 2019





ABOUT THIS REPORT

Overview

Korea Rail Network Authority (KR) is committed to fulfilling its social responsibility and role as a state-owned rail infrastructure manager in charge of efficient construction and management of the national rail network including high speed, conventional and urban railways. KR has been sharing its activities and performances with stakeholders for transparency through sustainability reports since 2007 and this is the 11th report.

Reporting period and boundary

This report contains sustainability management activities and performances of KR's head office and regional offices for 2018 from 1 January to 31 December. Data for past three years are used to chart performances of key quantitative items for better understanding and activities from the first half of 2019 have been included for vital issues. In particular, management approach (MA) to key issues identified through materiality assessment in accordance with GRI Standards has been enhanced and described as their impacts on stakeholders and control methods.

Reporting standards

This report was prepared in accordance with the GRI (Global Reporting Initiatives) Standard's Core Option. Reporting contents were prioritized based on the level of stakeholder interest and impact identified through stakeholder engagement and materiality assessment process. We also disclosed our management approach to reporting issues and relevant indicators and separately specified unit and calculation methods.

Assurance

The contents of this report were verified by an independent agency to ensure quality and reliability. For more detailed information regarding assurance, please refer to the assurance report in the Appendix.

Distribution and feedback

More detailed information on KR's sustainability management activities can be found on the corporate website. Our sustainability report in both Korean and English is available in PDF format for download. If you have any opinion or inquiry on this report, please use the contact information below.



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CEO Message



Dear stakeholders,

KR is pleased to publish the 11th sustainability report since it joined the UN Global Compact in 2007 through the support of stakeholders and continual effort of KR employees to fulfill the social responsibility.

KR is expanding the rail network and modernizing railway facilities for balanced national development and improvement of transport convenience for the people with as the highest priority. KR is also implementing sustainable management by utilizing the railway asset for shared growth with local communities and entering overseas markets jointly with private sector enterprises.

KR pledges to fulfill customer satisfaction and social values through open communication by approaching stakeholders with the open mind of asking “What can we do for you?” Internally, KR intends to establish innovative organizational culture under the motto of 3-ZERO (ZERO accident, Zero corruption, and ZERO carryover of budget) to strengthen its role and status as “the enterprise specializing in railway construction and facility management” that is trusted by the public and renowned worldwide.

Korea Rail Network Authority is committed to preparing
for long-term national prosperity by constructing
“faster, safer, and more comfortable railway” that people can enjoy and trust

KR will expand the rail network to improve transportation convenience for people and prepare for the inter-Korean rail network construction project to lay the foundation for prosperity and peace on the Korean Peninsula.

KR completed the construction of Pohang-Yeongdeok section of Donghae Line that connects the eastern coastal corridor in January 2018 and the double-track railway between Sosa and Weonsi that runs across the southwestern part of the capital region in June 2018. KR plans to extend the total railway length to 5,020km by 2025 by completing the planned railway construction projects such as Phase 2 of Honam High Speed Rail and the link between Seojeong-ri and Jije. Moreover, KR intends to make a thorough plan to construct the integrated rail network of Korean Peninsula and implement the blueprint for the future railway that extends to transcontinental railways.

KR will establish railway environments that protect people from disaster and accident.

With “safety of people and workers for sustainable management” as its priority,” KR will strengthen the organization and workforce dedicated to safety and improve professionalism in disaster and accident control. KR will designate management staff of project employers as field supervisors and operate preemptive safety management systems to eliminate potential risk factors at sites. Moreover, KR will control risk factors in advance by building the Fourth Industrial Revolution Technology-based safety management system such as the smart railway facility management system to ensure methodical maintenance and improvement of outdated facilities. KR pledges to establish zero-defect and zero-accident railway environment so that all people can use railways safety and comfortably.

KR will strengthen public utilization of railway assets in cooperation with local communities to fulfill its social responsibility.

KR intends to promote the local economy and create jobs by creatively utilizing idle railway and lands according to regional characteristics. KR will also be proactive in creating resident-friendly spaces such as eco-friendly forest trails based on communication with local communities and expanding youth startup spaces and daycare centers. Going forward, KR will continue to pursue coexistence with local communities through creative utilization of railway assets.

KR will strengthen partnership with private sector companies for greater participation in global railway projects.

In 2018, KR was awarded a project in Egypt to lay the foundation for entry into the Middle East and North Africa region and successfully completed the Lucknow Metro project in India. By capitalizing on overseas business capability accumulated over the years, KR will be proactive in winning new projects in Mongolia and Indonesia. Moreover, KR will strengthen our position in the world railway market by building the ecosystem for robust public-private joint railway export through customized supports such as joint technology development and consortium formed with SMEs, and funding.

KR will create ecosystem of fair economy for win-win partnership based on integrity and transparency.

KR strives to become a transparent public institution by pursuing enterprise-wide practice of integrity. KR will firmly establish transparent and fair trade practice by continually identifying and correcting corruption risks and unfair systems and practices. Moreover, KR will build the railway business ecosystem for shared growth with suppliers and social enterprises.

It is said that trees that survived the pain of rain and snowstorms in the rugged valleys become the best material for the resonance of the world’s premier violins. KR asks for your continued interest so that KR may grow into a world-class organization leading in sustainability based on the knowhow and outcomes accumulated over the past 15 years by overcoming many difficulties along the way.

Thank you.

Kim Sang-gyun

Chairman & CEO



KR Sustainability Highlights 2018

01.

Groundbreaking of the inter-Korean rail network project



KR held the groundbreaking ceremony of the inter-Korean rail network project at the Panmun Station in Gaeseong in December 2018 after conducting joint survey of 1,200 kilometers of railways (Gyeongui Line and Donghae Line) extending from Gaeseong to Tumen River in November 2018. According to phased strategy of the inter-Korean rail network project, our dedicated team conducted a joint survey of rail connection section in preparation for survey train operation, and then, established the basic plan to modernize the North Korean railway. Active exchange through multilateral cooperation system allowed us to secure a driving force for the project. KR will lead the inter-Korean rail network project to open the era of transcontinental rail network.

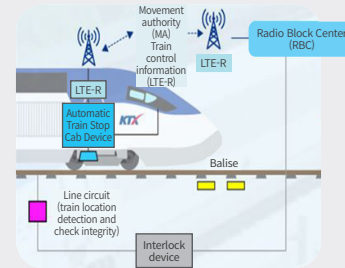


02.

World's first development of "LTE-R based train control system"



KR developed the world's first train control system (KTCS2*) using LTE-R* as part of the national R&D program. KTCS2 completed field demonstration test on testbed in Honam HSR using next generation high speed train HEMU-430 at speeds up to 350 km/h and has undergone verification for interoperability with ETCS by an independent agency. Going forward, KR will expand the application of the KTCS2 to increase train operation efficiency and standardize and localize the railway communication system to reduce costs and to replace imported technologies with Korean technologies, thereby securing the national competitiveness in the world railway market.



03.

First public institution in infrastructure sector to receive ISO 37001



In October 2016, KR became first public institution under the Ministry of Land, Infrastructure and Transport to receive ISO 37001, the international standard for anti-corruption management system. KR prepared anti-corruption risk management manual, built corruption risk management process, and appointed heads of each department as corruption risk managers to produce in-house examiners. We also identified risks in different sectors and carried training, monitoring and internal examinations in order to be issued the ISO certification. KR will endeavor to become even more transparent by applying ISO 37001 to its anti-corruption management system.



04.

Won the Safety Management Award and the Presidential Award for National Disaster Management in 2018



KR won the "2018 Safety Management Award" in recognition for dissemination of culture of voluntary safety management. Our efforts for voluntary safety control resulted in achieving the lowest accident rate at construction site. KR also received the Presidential Prize for national disaster control in recognition for our contribution to disaster management from the Ministry of Public Administration and Security. KR achieved zero natural disaster and accident for three years in a row by enhancing prevention activities in accordance with the 4-step disaster management (prevention, preparation, response, and recovery) process. Going forward, KR will focus on site-centered voluntary safety management.



* LTE-R (LTE based Railway wireless communication system) : The world's first system developed in Korea to optimize LTE, the 4th wireless communication technology, for the railway environment
 * KTCS (Korean Train Control System) : The train control system developed in Korea that is compatible with the international standard and can control trains that move at up to 400km/h
 * ETCS (European Train Control System) : The train control system developed in 1991 by the International Union of Railways to be standard system applied to countries in Europe

05.


Received award in the ICQCC for four years in a row

KR won the Gold Prize and Special Prize at the 2018 International Convention on QC Circles (ICQCC) held in Singapore in October 2018. At the ICQCC, KR introduced "winning orders for the LRT* project in Jakarta, Indonesia, through collaboration with SMEs" and "reduction of environmental complaints by enhancing the process of national property operation" to share management innovation cases. Winning the award for four years in a row has proven the excellence of Korea's railway technologies and KR's innovative management. KR intends to do its best to spread its railway technologies and innovation capability.



06.


First public institution to be named "Excellent State Asset Management Institution"

KR was awarded the Minister Prize of Strategy and Finance in October 2018 as the excellent public institution in state-owned asset management. KR has been highly recognized for efficiently utilizing 53.1% of idle railway sites until 2018 with the establishment of guideline. Particularly, we have created people-friendly spaces and startup support offices under bridges by selecting 24 ideas about utilizing idle railway sites submitted by 20 local governments, greatly contributing to social value. KR intends to contribute to the promotion of the local economy and improvement of people's quality of lives based on the efficient asset operation strategy.



07.


Developed the soundproof facility optimization technology and eco-friendly bridge technology

Considering that the railway noises mostly generated under the train, KR developed the soundproof facility optimization technology. The technology reduced construction cost and improved prospect right by installing the soundproof wall closer and lower to the track, resulting in winning the "Top 10 Railway Technologies for 2018" hosted by the Korean Society for Railway. Moreover, KR developed the eco-friendly bridge technology using low carbon material, which improved the safety and strength of bridges and slowed down corrosion. It received the Steel Structural Technology Award in June 2018. KR will continue R&D to construct safe and comfortable railways.



08.


Received 2018 Korea Voluntary Service Award

CEO of KR received the Korea Grand Award for Voluntary Service by the United Nations Volunteers Korea in November 2018. KR has been carrying out community-based sharing programs for the neglected groups such as KR Hope Project to support the welfare of the youth with the social contribution fund created by employees. Moreover, KR employees visited sites of natural disaster in countries such as Indonesia, where KR is carrying out a project, to provide materials and services for recovery. KR intends to continue to carry out voluntary social activities actively to help shared growth and development of local communities.



* LRT (Light Rail Transit): Electric train that is lighter than a subway train or conventional electric train, operates in urban routes, and has the advantage of excellent passenger capacity and lower construction and labor cost

KR Sustainable Way

Railway Construction

KR is here to provide people safe, fast and convenient rail transport services based on advanced railway technologies and safety.

Total length of railways
4,230km

Job creation
6,566 persons

Social Contribution

KR engages interactively with local communities and stimulates local economies by promoting public services and community-friendly sharing activities utilizing railway assets.

Facility Maintenance

Safety factor of railway facilities
0.31%

* Safety factor :
Number of railway facility related accidents/total length of railways (km)

KR strives to realize advanced railway facility maintenance by expanding facilities focused on safety and convenience of people and building the culture of voluntary safety control at sites.

Revenue from railway asset utilization
KRW 924.8 billion

Asset Management



KR makes efforts for efficient management and diverse development of state-owned assets to optimize the use of railway assets, thus improving profitability and social value.

Overseas projects (accumulated)
KRW 310.9 billion
61 projects in 18 countries

KR creates sustainable ecosystem for rail exports by expanding global networks and strengthening capacities of railway professionals.

Overseas Business



Opened the era of high speed rail (300km/h)

- 2004**
 - Korea Rail Network Authority established
 - Gyeongbu High Speed Rail - Phase 1 opened
- 2005**
 - Awarded HSR construction supervision contract in China
 - Electrified and double-tracked Jungang Line (Cheongryangni-Deokso) opened
- 2006**
 - Entire Gyeongbu Line electrified
 - Electrified and double-tracked Gyeongwon Line opened
 - Railway Traffic Control Center opened
- 2007**
 - Best rating received for construction supervision services in China
 - Trial operations run on inter-Korean railway
 - Tunneling between Wangsimni and Seolleung under Han River completed

Increased the speed to 350km/h

- 2008**
 - Electrified and double-tracked Cheonan-Onyong Oncheon-Sinchang Line and Janghang Line opened
 - Electrified and double-tracked Jungang Line (Paldang-Guksu) opened
 - Awarded overseas contracts valued at KRW 10 billion
- 2009**
 - Electrified and double-tracked Gyeongui Line (Seongsan-Munsan) opened
 - Electrified and double-tracked Jungang Line (Guksu-Yongmun) opened
- 2010**
 - Awarded HSR construction supervision contracts in China worth KRW 36.5 billion
 - Gyeongbu High Speed Rail - Phase 2 opened
 - Electrified double-tracked Sinsangbong-Chuncheon and Samryangjin-Masan sections of Gyeongchun Line opened

Preparing the era of speed of 400km/h

- 2011**
 - Electrified and double-tracked Jeolla Line (Iksan-Yeosu) opened
 - Electrified and double-tracked Jungang Line (Jecheon-Dodam) opened
- 2012**
 - Speed enhanced Gyeongchun Line (Yongsan-Chuncheon) opened
 - Speed enhanced Jeolla Line (Iksan-Yeosu) opened
 - Electrified and double-tracked Jungang Line (Yongmun-Seowonju) opened
- 2013**
 - Relocated railway from inundation of Yeongju Dam opened
 - Electrified and double-tracked Taebaek Line (Jecheon-Ipseokri) opened
 - Electrified and double-tracked Bundang Line (Mangpo-Suwon) opened
- 2014**
 - Received commendation for excellent construction supervision services in China
 - Construction supervision of Beijing-Shenyang HSR performed
- 2015**
 - Singyeongju-Pohang section of Donghae Nambu Line opened
 - Honam High Speed Rail - Phase 1 opened
 - Gyeongbu HSR linking city centers of Daejeon and Daegu opened
- 2016**
 - Suseo High Speed Rail opened
 - Shinbundang Line (Jenongja-Gwanggyo) opened
 - Suin Line (Incheon-Songdo) opened
 - Gyeongjeon Line (Jinju-Gwangyang) opened
 - Donghae Nambu Line (Bujeon-Ilgwang) opened
- 2017**
 - Gyeonggang Line (Wonju-Gangneung) opened
- 2018**
 - Rail link to Incheon Airport's Terminal 2 opened
 - Donghae Line (Pohang-Yeongdeok) opened
 - Electrified and double-tracked Seohae Line (Sosa-Wonsi) opened





KR SUSTAINABLE OVERVIEW

- 01 Overview of KR
- 02 KR Vision 2025
- 03 Corporate Governance
- 04 Ethical Management
- 05 Risk Management
- 06 Stakeholder Engagement
- 07 Materiality Analysis



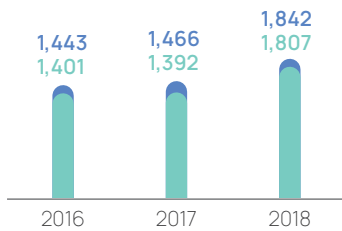
Overview of KR

Profile of KR

KR, as a public institution responsible for efficient construction and management of railway facilities, was established in January 2004 with the aim of constructing rapid, safe, and comfortable railways, contributing to convenient public transport and national economic development. We focus not only on connecting isolated sections and enhancing the access to high-speed railway to improve transport convenience in neglected regions and metropolitan areas, but also on revamping outdated railway facilities and expanding infrastructure. KR is committed to reflecting public opinions in management activities through open communication.

No. of employees

● Maximum ● Current
*As of June 2019



Profile

(As of June 2019)

Corporate name Korea Rail Network Authority	Basis for foundation Railroad Development Act, Korea Rail Network Authority Act	Government contribution KRW 4,112.1 billion
Date of foundation 1 January 2004	CEO Kim Sang-gyun	Credit ratings Domestic: AAA Overseas: Aa2(Moody's), AA(S&P)
Type of organization Quasi-government agency	Total budget KRW 8,291.9 billion	Head office 242, Jungang-ro, Dong-gu, Daejeon

Organization

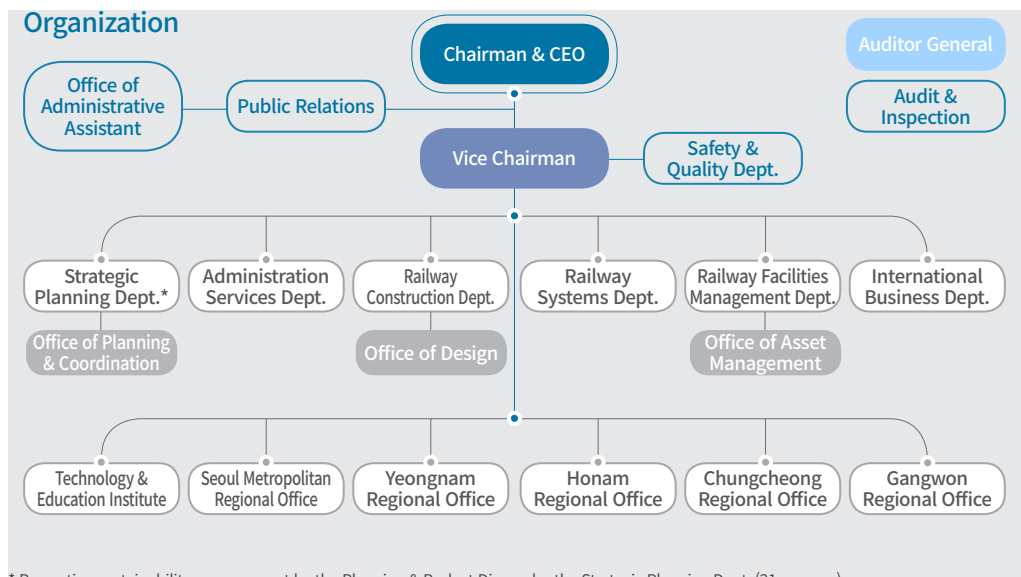
KR is comprised of seven divisions, two offices, one group, one research institute, and five regional offices. We operate regional offices in Seoul, Busan, Suncheon, Daejeon, and Wonju to efficiently manage railway construction and facility maintenance. To be ready for the rapidly changing business environment, KR is focusing on optimizing the organizational operation and solidifying the foundation to secure future growth engines such as asset development, construction of railway network across Korean Peninsula, and railway technology development for sustainable growth. KR strives to become a competitive specialized organization in the railway business to provide the best quality railway service and enhance the public interest.

Offices



- Head Office & Chungcheong Regional Office**
242, Jungang-ro, Dong-gu, Daejeon
- Metropolitan Regional Office**
378, Cheongpa-ro, Yongsan-gu, Seoul
- Yeongnam Regional Office**
46, 9beon-gil, Chungjangdae-ro, Jung-gu, Busan
- Honam Regional Office**
16, Yeokjeon-gil, Suncheon-si, Jeollanam-do
- Gangwon Regional Office**
2650, Bukwon-ro, Wonju-si, Gangwon-do

Organization

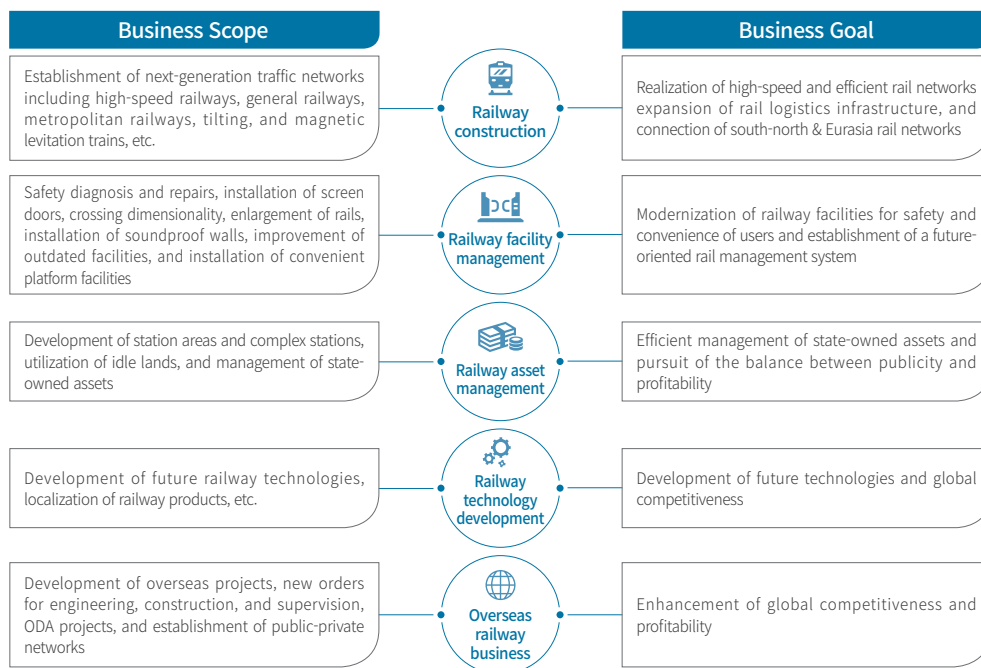


* Promoting sustainability management by the Planning & Budget Div. under the Strategic Planning Dept. (21 persons)

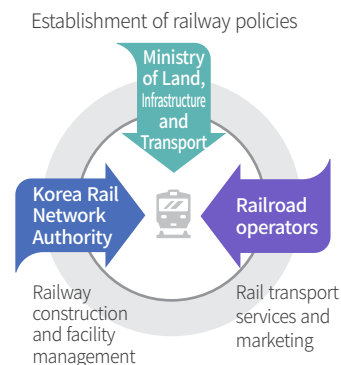
* Office of Administrative Assistant, Public Relations, and Audit & Inspection are division level (Article 11 of the KR Organization Rule)

Main Business and Role

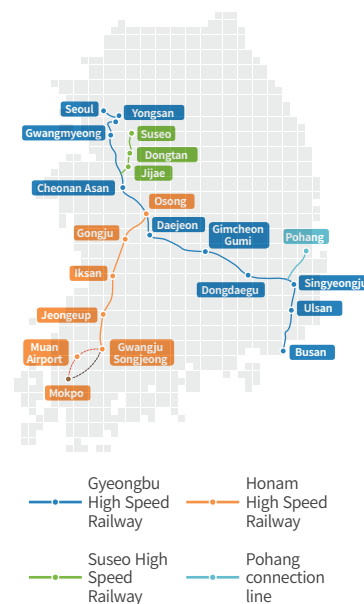
Based on the 3rd National Rail Network Plan, KR is focusing on building high-speed and efficient railways connecting major footholds. We are also modernizing railway facilities and upgrading the railway safety management for passengers. Business portfolio extends to managing railway facilities including station, utilizing rail assets such as idle land, expanding overseas railway projects, and developing railway technologies linked with the Fourth Industrial Revolution with the aim of securing future competitiveness. On top of that, we are listening to public opinions on ways to mutually grow with local communities and to contribute to improving the quality of lives of people.



Structure of the railway industry



Map of HSR network



High speed rail projects

Project	Location	Cost (billion KRW)	Length (km)	Period
Gyeongbu HSR - Phase 2	Daegu-Busan, Daejeon/Daegu urban area	7,872.3	169.5	~2021
Honam High Speed Rail	Osong-Mokpo	10,130.3	249.1	~2025
Suseo HSR	Suseo-Pyeongtaek	3,058.3	61.1	~2018
HSR link to Incheon	Eocheon-Gyeongbu High Speed Rail	393.6	6.2	~2021
HSR link to Suwon	Seojeongri-Jijae	270.2	9.5	~2021

Conventional rail projects

Line	Section	Description	Length (km)	Cost (billion KRW)
Gyeongjeon	Boseong-Limseongri	Single track	82.5	1,351.5
Jungang	Wonju-Jecheon	Double track	44.1	1,161.2
Seohae	Sosa-Wonsi	Double track (BTL)	23.3	1,355.1
Gyeonggang	Wonju-Gangneung	Double track	120.7	3,766.9
Gyeongjeon	Bujeon-Masan	Double track (BTL)	32.7	1,533.0
Gunsan	Yaksan-Daeya	Double track	14.3	478.4
Daegu	Dongdaegu-Yeongcheon	Double track	38.6	766.3
Poseung Pyeongtaek	Poseung Pyeongtaek	Single track	30.3	686.2
Donghae Nambu	Ulsan-Pohang	Double track	76.5	2,662.5
Gunjang Sandan	Daeya-Gunjang Industrial Complex	Single track	28.6	613.8
Ulsan Sinhang	Mangyang-Ulsan New Port	Single track	9.3	211.9

Line	Section	Description	Length (km)	Cost (billion KRW)
Pohang Sinhang	Pohang-Yeongilman New Port	Single track	9.3	167.6
Donghae Nambu	Busan-Ulsan	Double track	65.8	2,725.2
Seohae	Songsan-Hongseong	Double track	90.0	3,782.3
Jungbu Naeryuk	Icheon-Mungyeong	Single track	93.2	2,242.1
Janghang	Sinseong-Jupo, Nampo-Ganchi	Single track upgrade	32.4	856.0
Gyeongwon	Dongducheon-Yeoncheon	Single track	20.8	424.5
Rail Test	Seochang-Osong Rail Yard	Railway test track	13.0	239.9
Jungang	Dodam-Yeongcheon	Double track	145.1	3,805.0
Jungang	Yeongcheon-Singyeongju	Double track	20.4	526.5
Seohae	Daegok-Sosa	Electrified double-track (BTL)	18.4	1,576.7
Gyeongui	Munsan-Limjingak	Single track	6.0	38.8



KR Vision 2025

Advancement of KR's Sustainability Management Strategy

KR reestablished its mission and vision statements and updated the 2025 Management Strategy to preemptively respond to changing business environment and ensure public interest and efficiency. The new mission "Faster, Safer and More Comfortable Railways Going with the People" emphasizes our commitment to people-oriented business while the new vision "Rail Network That Goes beyond the Korean Peninsula, towards the World" represents KR's intention to lead the global railway market. We also set up four key management goals – constructing inter-Korean rail network, reinforcing railway safety system for people, securing future growth engines, and creating social value. KR will lead the future railway industry and create social values from which the public can benefit.

KR's Sustainable Management Strategy System

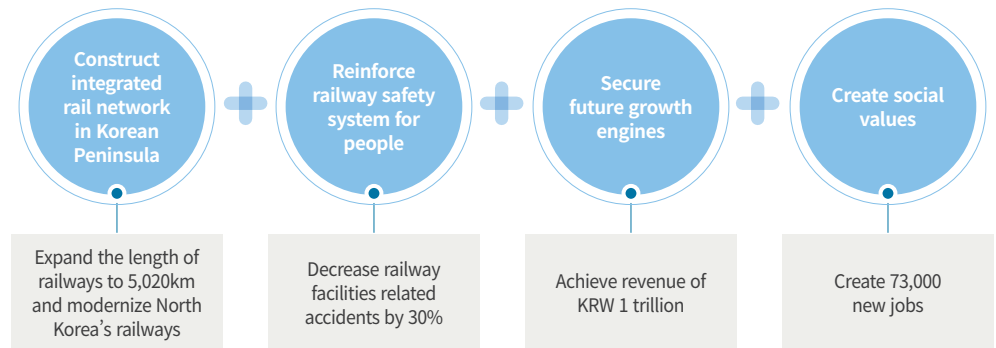
Mission

Faster, safer and more comfortable railways going with the people

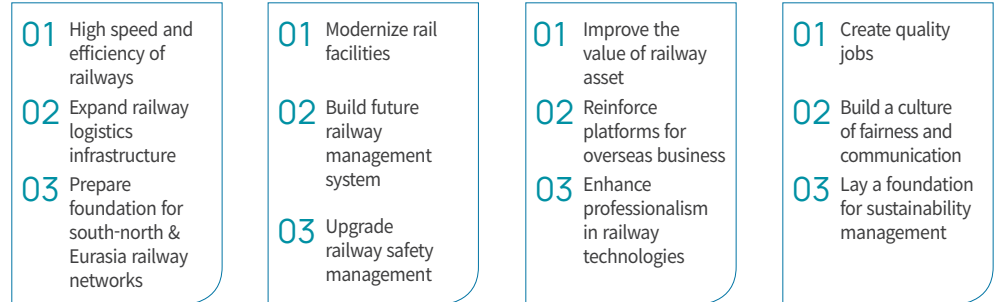
Vision

Rail Network going beyond the Korean Peninsula, towards the world

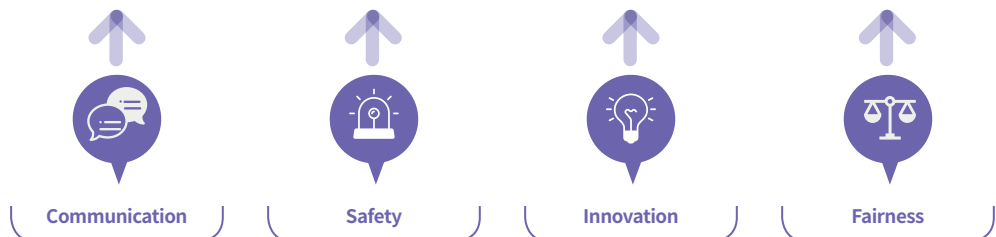
2025 Goals



Strategic tasks
(12 items)



Core value

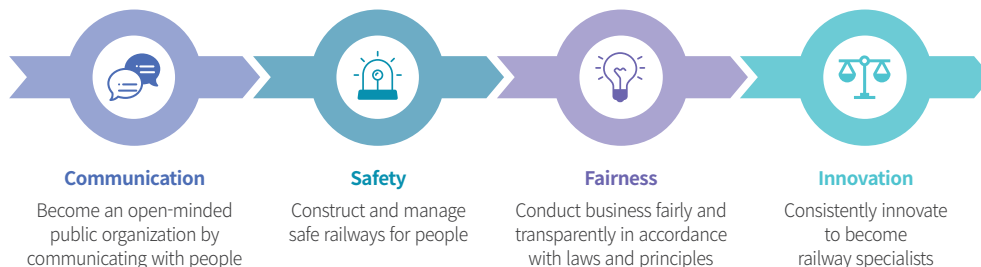


Core Values of KR

KR is practicing its mission and vision through the advancement of core values to ensure sustainable development. We established four core values of Communication, Safety, Innovation, and Fairness that reflected our focus on people, business, and employees and designed the enterprise operation to help employees internalize the core values. KR also conducts various participatory immersion education* to help employees better understand the core values.

* Participatory immersion education (internalization of core values): An education program aimed at pursuing organizational change rather than individual development

Four Core Values



Business Innovation for Implementing Core Values

KR is carrying out various programs to practice sharing and implementation of core values. With the action strategies of “Field communication,” “Preventive safety,” “Open innovation,” and “More fairness,” it is implementing the enterprise-wide campaign for work innovation of its employees. Its activities include the “3-ZERO” campaign to eliminate accident, corruption, and carryover of budget and the “What can we do for you?” campaign to practice proactive working and customer satisfaction through sincere communication with customers.

[Activities for Realizing Core Values]

	Communication	Safety	Innovation	Fairness
CEO Message	Pursue open communication Build a communication venue	Enhance safety fundamentally Focus on safety check and control	Promote organizational innovation Improve conventional attitudes	Conduct transparent and fair business Improve fair contract system
Aims	Communication at sites	Preventive safety	Open innovation	Fairness enhancement
Action plans	<ul style="list-style-type: none"> Expand the communication venue Enhance labor-management trust 	<ul style="list-style-type: none"> Reinforce safety organization Focus on safety check and control 	<ul style="list-style-type: none"> Innovate the way of working Expand the participation of people 	<ul style="list-style-type: none"> Improve unfair systems Enhance anti-corruption management
Company-wide activities	<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>“May I Help You?” campaign</p> <p>.....</p> <p>Build a corporate culture for cooperation and co-prosperity among departments</p> <p>.....</p> <p>Secure trust through stakeholder communication</p> <p>.....</p> </div> <div style="flex: 1; border-left: 1px solid #ccc; padding-left: 10px;"> </div> </div>			



Corporate Governance

Board of Directors

The Board of Directors (BOD) is the supreme decision-making body at KR and consists of six executive directors and seven non-executive directors as of June 2019. The BOD checks the management and is operated independently and transparently. We operate the Financial Risk Management Committee, Budget Review Committee, and Conflict & Co-prosperity Cooperation Committee as specialized committees to help the BOD create efficient and innovative performances. Subcommittees (Planning Management, Construction, and Facility) also contribute to realizing transparent and reasonable management activities.

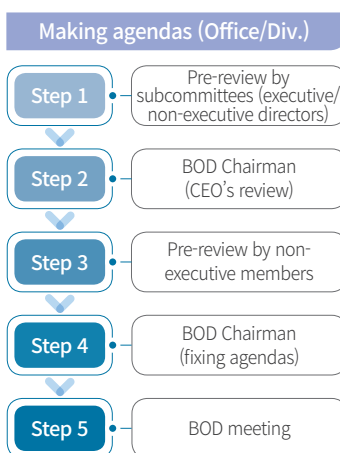
BOD Members (As of April 2019)

Executive director		Non-executive director	
Name	Current position	Name	Career
Kim, Sang-gyun	Chairman	Song, Gwang-seok (Male)	CEO, Good Morning Chungcheong
Chun, Man-kyung	Vice Chairman	Son, Nan-joo (female)	Lawyer, Dasan Law Firm
Lee, Jong-do	Head of Management Dept.	Jang, Jong-sik (male)	Former Director General for Aviation Polity, Ministry of Land, Infrastructure and Transport
Chun, Hee-kwang	Head of Railway Construction Dept.	Seo, Young-jin (male)	Member of the Urban Planning Committee, Mapo-gu
Park, Min-joo	Head of Railway System Engineering Dept.	Lim, Eun-sook (female)	Partner of the Audit Division, Jeongdong Accounting Firm
Kim, Young-ha	Head of Railway Facility Management Dept.	Kim, Young-dong (male)	Former Auditor, Samsung Futures
		Shin, Ye-kyung (female)	Professor in Architecture Engineering, Namsroul University

Appointing Authorities

Position	Appointment authority
BOD Chairman	President of Korea
Auditor General	President of Korea
Executive Directors	BOD Chairman
Non-executive Directors	Minister of Land, Infrastructure and Transport

BOD Activities (Five steps)



Director Appointment Process

To ensure professionalism of directors and objectivity in appointment process, KR operates the Director Recommendation Committee. Director candidates are selected through public invitation and a short list is confirmed after the Committee's document screening and in-depth interviews. And then, the authority appoints optimal candidates as directors. Particularly, to ensure fairness in appointing directors, KR expanded the number of non-executive directors who are members of the Committee to seven from existing three. The acceptability evaluation* by all employees is conducted when recommending a civil member. In 2018, a union member became the Committee member and a female took the director position for the first time in our history, which contributed to securing the diversity of BOD composition and trust and transparency in BOD operation.

* Acceptability evaluation by all employees: Four candidates (two from the pool consisting of 27 civil candidates recommended through the representative meeting by each position and two by the union's recommendation) are recommended. And then, two candidates are nominated by all employees' vote and the BOD finally appoints a member.

Activation of the BOD Operation

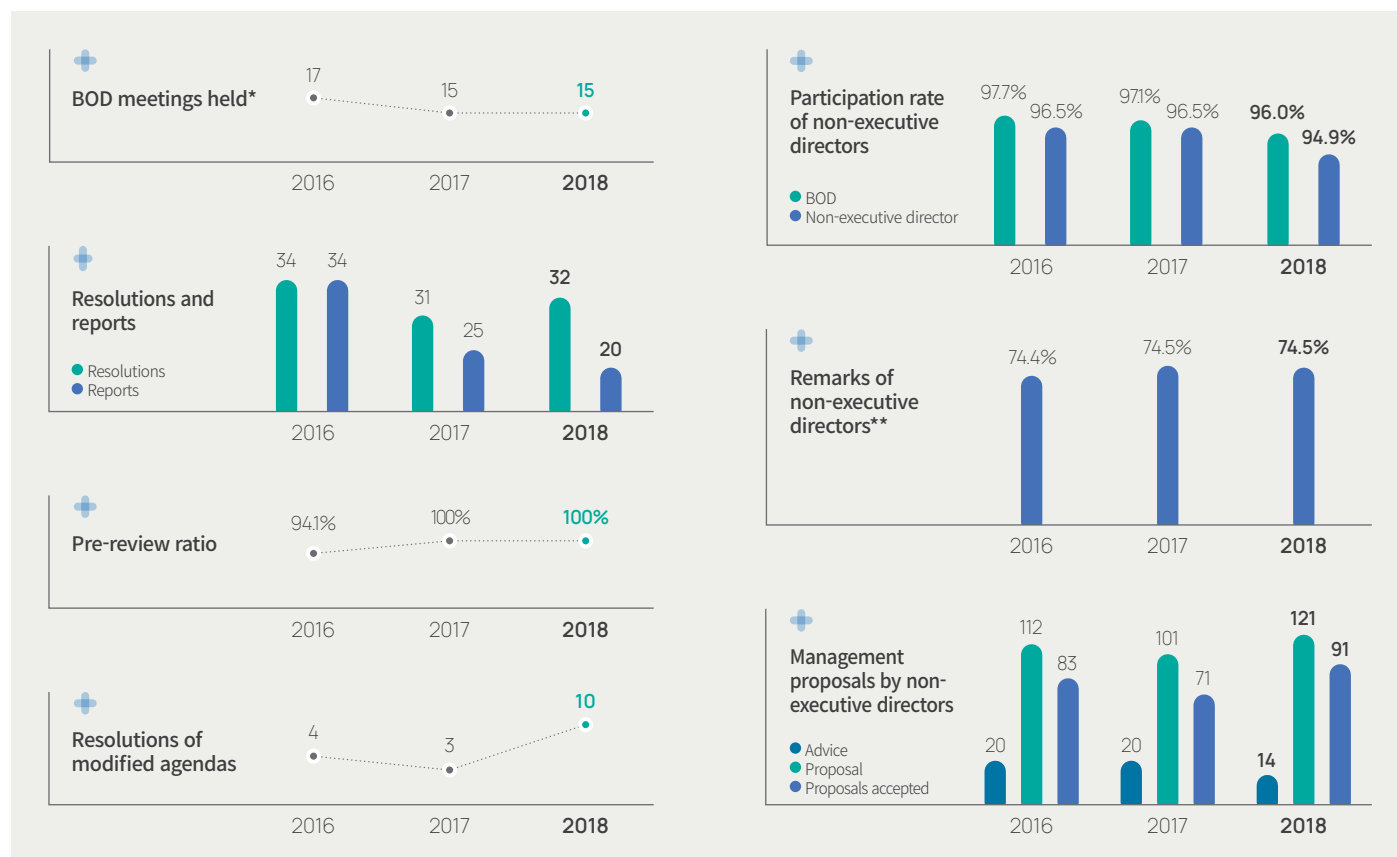
The BOD holds monthly meeting in Seoul and Daejeon in sequence to discuss pending management issues and resolutions. The emergency BOD meeting is held when urgent items are occurred. The non-executive director meeting is mandatory seven days before the BOD meeting to discuss agendas and collect opinions in advance. The scope of preceding explanation at the briefing to the CEO before the BOD meeting extends to all agendas to secure better understanding of those and enhance preliminary review. These activities contribute to internalizing the operation of the BOD.

Active Participation of Non-executive Directors in Management

Our non-executive directors are professionals in various areas and KR is proactive in utilizing their expertise for management activities. For example, they actively make proposals for improving our policies and business activities and those are reflected in management innovation and work efficiency. They also have a majority of each subcommittee and rights on service term, audit request, and information request, which ensure their independence and transparent participation in management activities. The non-executive board meeting results are shared and discussed at the BOD meeting to help make better decisions.

Committee Operation in 2018

Committee	Major activities	Led by
Director Recommendation Committee	Compose and operate the Director Recommendation Committee transparently	Human Resource Div.
Financial Risk Management Committee	Evaluate financial risks to ensure financial soundness	Financial Strategy Div.
Audit & Consulting Committee	Enhance competence and fairness of internal audit and review mid- to long-term audit strategy and follow-up measures of audit results	Audit and Inspection
Budget Review Committee	Consult budget related works including formulation, settlement, and early execution	Planning and Budget Div.
Budget Performance Examination Committee	Conduct examinations for transparent payment of bonus based on budget execution	Planning and Budget Div.
Facility Subcommittee	Review the adequacy of railway asset development, overseas projects, local subsidiary establishment, etc.	Facility Planning Div.
Planning & Management Subcommittee	Review mid- to long-term strategic goals, business plans, and budget changes	Planning and Budget Div.
Construction Subcommittee	Check railway construction status, field quality, safety, and pending issues	Construction Planning Div.
Auditor Appointment Committee	Select independent auditors to check KR's management in a transparent manner	Audit and Inspection



* Including regular, ad-hoc, and non-executive BOD meetings

** Remarks of non-executive directors out of all directors



Ethical Management

With the “Three-in-One (the CEO, employees, and suppliers)” as its key direction of ethical management, KR is proactive in rooting out corruption and disseminating the cultures of integrity recognized by all people. To encourage all employees to internalize ethical management, KR is promoting voluntary ethical management systems and activities.

▪ Ethical Management Results

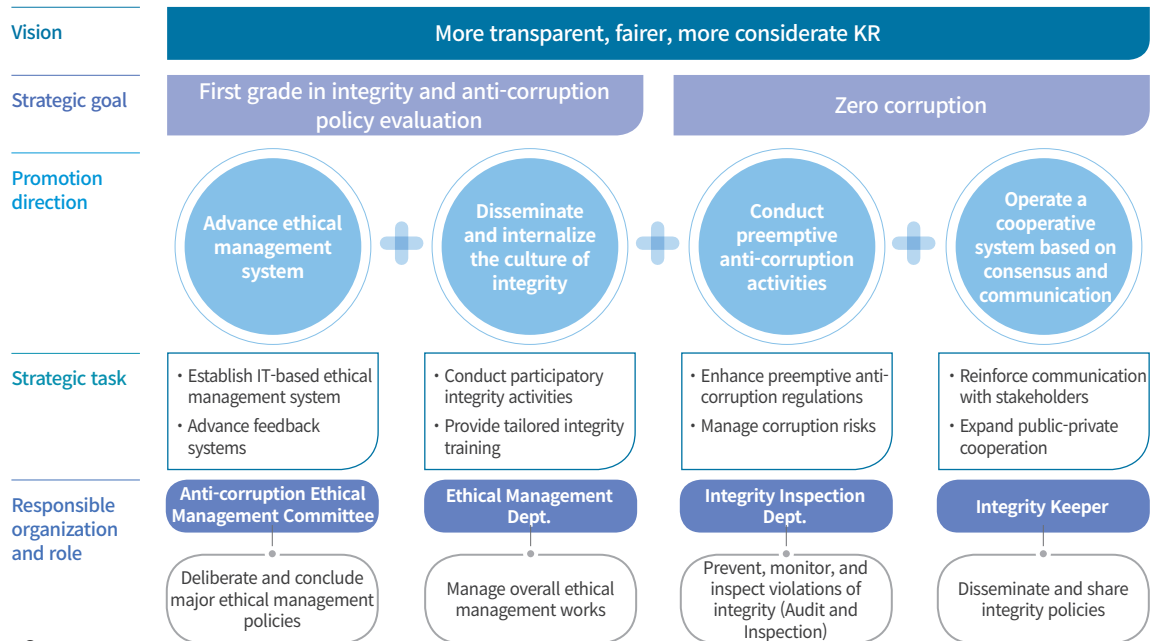
Item	Unit	2016	2017	2018
Integrity	Grade	5	4	3
External integrity	Point	7.58	8.09	8.70
Internal integrity	Point	8.04	8.46	8.25
Evaluation on anti-corruption activities	Grade	2	2	2
KoBEX SM	Grade	AAA	AAA	AAA

Participatory Ethical Management

Clean & Fair Ethical Management Promotion System

To meet the government’s policy emphasizing anti-corruption and integrity and increasing needs for integrity of public officers, KR has established a mid- to long-term ethical management promotion strategy and action plans. We have operated the Ethical Management Committee led by the CEO, Integrity Keeper program by each division, and the Ombudsman to listen to stakeholders’ opinions, through which we have identified four promotion directions and 77 action plans. KR will become a transparent public institution by improving ethics systems, enhancing compliance activities, and preventing corruptions in advance.

[Ethical Management Strategy System]



▪ Smart Ethical Management System

My Integrity	Ethics training and integrity activities
Reemployed worker management	Manage reemployed worker contact histories
Evaluation on activities by dept.	Anti-corruption plans and execution rate by dept.
Report of external lessons	Online report system of external lessons
Anti-graft case counselling and report center	Regular operation

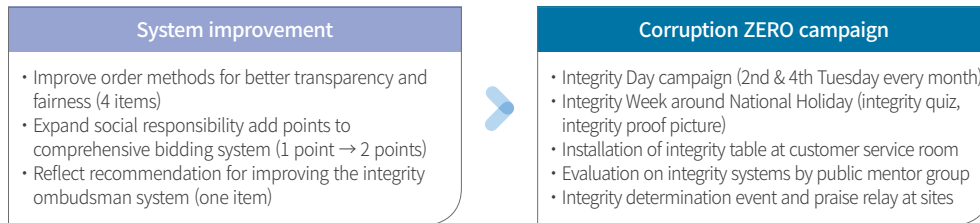
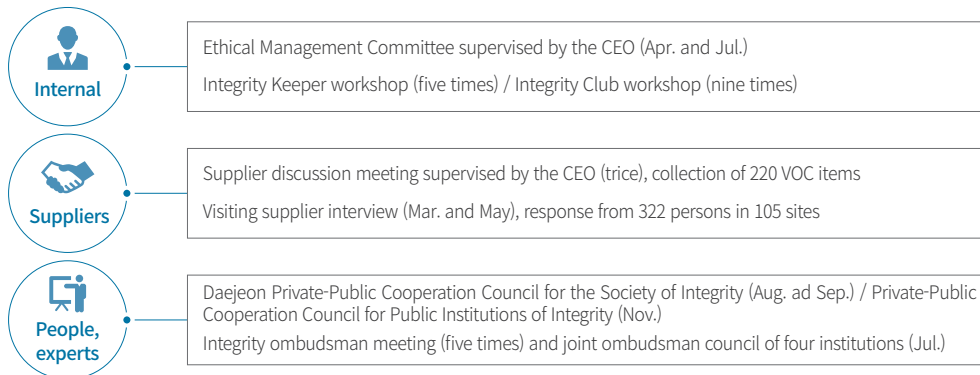
Smart Ethical Management System

KR established the smart ethical management system to help employees approach ethical management information at any time. This system is linked with performance evaluation and provides integrity promotion plans and results to individuals and their departments. Moreover, registration and control of contact points for reemployment, consulting of corruptions, and regular operation of report center are available through the system, which prevents employees from being exposed to corruption risks.

Corruption ZERO Campaign together with Stakeholders

KR has revamped ethical management systems by reflecting opinions of suppliers, experts, and the public as well as employees to help stakeholders better understand its commitment to anti-corruption and integrity practices. We have improved eight systems by gathering opinions for transparent management from the integrity club, integrity keeper, supplier interview, Daejeon Private-Public Cooperation Council for the Society of Integrity, public mentor group, and integrity ombudsman. Now we are promoting the Corruption ZERO campaign as an action plan.

[Stakeholders' Participation in KR's Ethical Management]



Sympathetic and Participatory Ethics Training

KR provides employees and suppliers with impressive ethics training. New recruits, those who are promoted, and managers receive trainings tailored to their life cycle and suppliers and regional offices are provided with visiting integrity trainings. Those are offered in connection with healing programs such as music concert and performance to enhance awareness of anti-corruption. We are also expanding opportunities for overseas anti-corruption training and cultivating internal instructors in integrity by encouraging employees to participate in the training course hosted by the Anti-Corruption & Civil Rights Commission (ACRC).

[Integrity Training Programs in 2018]



Integrity training for second year employees



Integrity concert with the ACRC



International anti-corruption academy (IACA)

Ethical Management



 **114** corruption risk cases identified and corrected

▪ ISO 37001 certification (BSI)

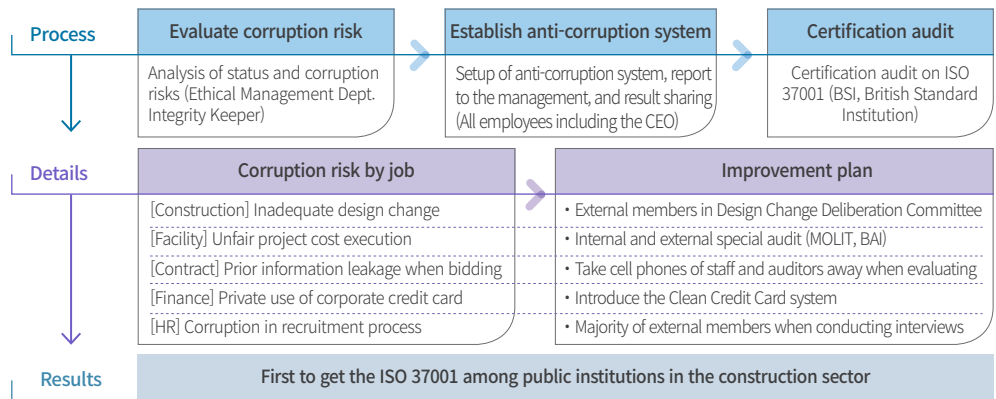


Improvement of Anti-corruption Infrastructure

Anti-corruption Management System (ISO 37001)

KR has reinforced internal control and work transparency by obtaining the SIO 37001 certification for the first time among public institutions engaging in construction under the MOLIT. We set up anti-corruption guidelines in accordance with the ISO 37001 criteria and have reflected the results of corruption risk diagnosis in each business process, thereby establishing a global-level anti-corruption system.

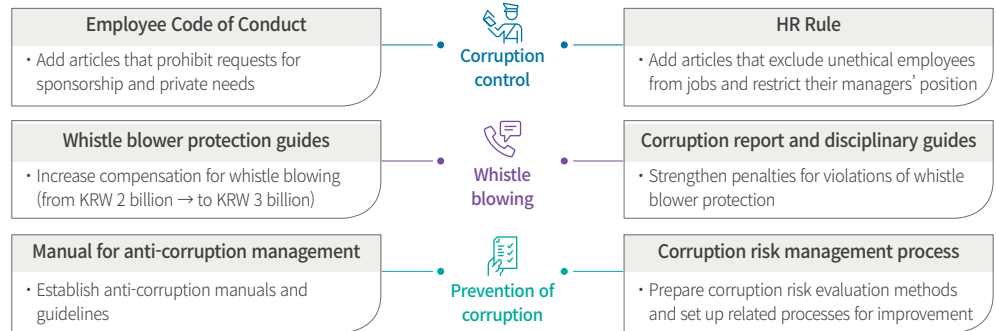
[ISO 37001 Certification Obtainment Process]



Modification of Internal Rules for Activating Ethical Management

To meet increasing needs for ethics, KR has enhanced corruption report systems and disciplinary measures against violations of integrity by modifying internal ethics rules. The Code of Conduct was revamped, and it requires managers to be stricter to integrity by restricting their positions when junior staff commit an irregularity. KR also revised whistle blower protection guides to activate the system and integrated duplicated ethics rules to help employees become well-acquainted with and comply with integrity.

[Modification of Internal Rules]



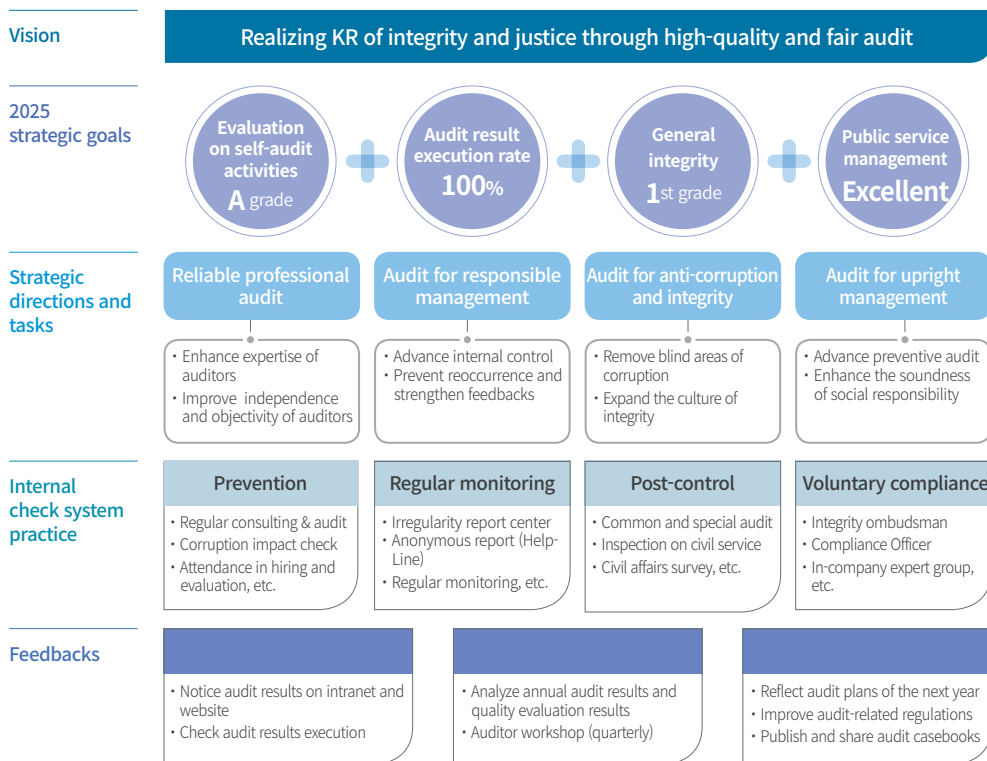
Zero Tolerance based on the National Task “Intensive Punishment on Corruption Crime”

KR enhanced zero tolerance against corruption by adding related articles. Those who commit corruption are promptly transferred to other positions and their positions are restricted. Suppliers who violate integrity cannot participate in biddings for a certain period and KR makes subcontract inspection on integrity mandatory. Moreover, the one strike-out system is applied to construction workers at sites against willful unethical and fraudulent construction and their records are managed. On top of that, KR monitors and responds to rigged bids through the rigged bid signature analysis system in case of the comprehensive evaluation bidding.

Internal Check System for Better Ethical Management

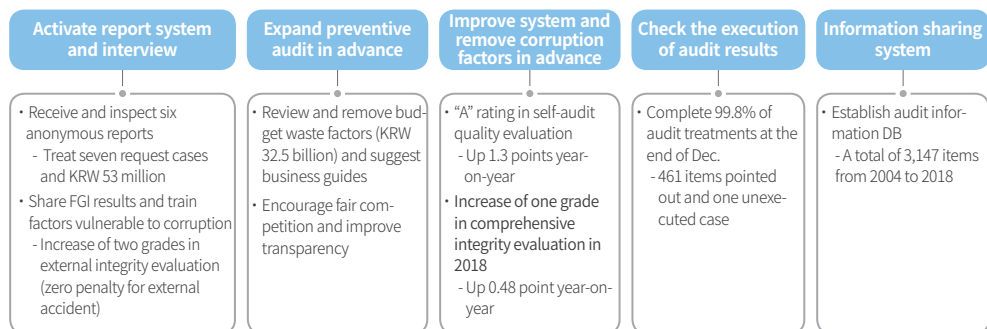
2025 Mid- to Long-term Audit Strategy and Internal Check System

Based on the 2025 mid- to long-term audit strategy aimed at “realizing KR of integrity and justice through high-quality and fair audit,” KR has prepared eight strategic tasks and 12 internal check system promotion tasks. We also laid a foundation for efficient internal check promotion in connection with ethical management strategy and audit strategy.

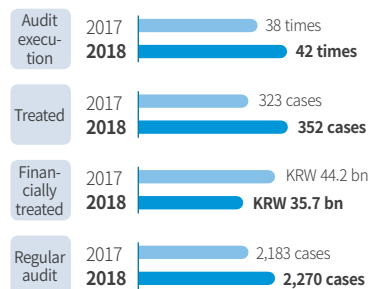


Internal Check System Operation Performance

KR has maximized internal check system operation performances by tightening prevention and follow-up actions in audit. Seven anonymous reports and KRW 53 million were treated through prevention activities and KRW 32.5 billion worth of budget was saved through preventive audit activities. Internal anti-corruption rules were also revamped, including the Code of Conduct. As a result, KR achieved A rating and 1.3-point increase year-on-year in evaluation on self-audit activities.



Ethical Management Performance



* Decrease in financial treatment: Comprehensive audit (thrice → twice) and decline of project expenditure (KRW 7.4585 trillion in 2017 → KRW 4.6577 trillion in 2018)

Risk Management



The society is today undergoing a paradigm shift in each field and business environment is also rapidly changing. In response, KR is multilaterally analyzing and forecasting financial and security risks by utilizing advanced inspection systems, preventing risk factors in advance.

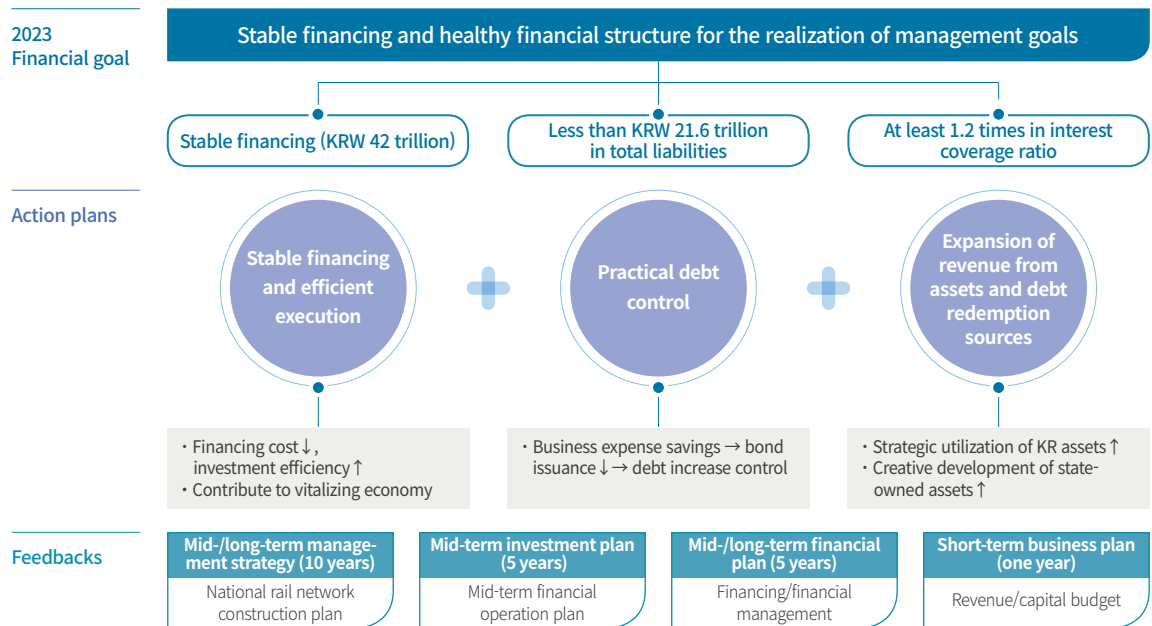
Financial Risk Management

Creation of Net Profit for Two Years in a Row

KR achieved KRW 165.2 billion in net profit in 2018 (1.18% interest coverage ratio*) through intensive efforts for substantial growth, realizing surplus for two consecutive years. We secured fund resources for railway construction on the strength of increase in railway use fee and earnings from leasing and were proactive in utilizing idle assets. Overseas business was also active in Egypt and Indonesia and costs were efficiently saved by enhancing audits on maintenance cost control. Going forward, KR will make best efforts to realize the target of at least 1.2 multiple interest coverage ratio by 2023 in accordance with the min- to long-term financial management plan (2019~2023).

* Interest coverage ratio=operating profit/interest costs

[Mid- to Long-term Financial Management Plan]



[Summarized Financial Results in 2018]

Classification	Liabilities	Interest cost	Net profit	Interest coverage ratio
Target	KRW 20.77 trillion	KRW 675.1 billion	KRW 47.6 billion	1.03 times
Result	KRW 19.96 trillion	KRW 628.2 billion	KRW 165.2 billion	1.18 times
Achievement rate	104.1%	107.5%	347.1%	114.6%

* KR, as a non-capital special corporation, does not calculate debt-to-equity ratio.

Operation of Financial Risk Response System

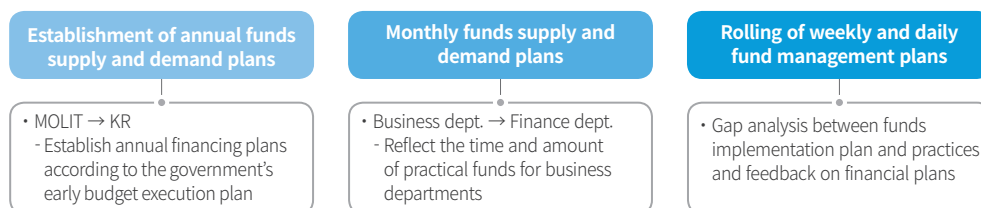
KR's financial risk management focuses on mitigating investment, revenue, and interest rate risks, enhancing profitability, and reducing costs. Based on excellent credit ratings of AAA (domestic), Aa2 (Moody's), and AA (S&P), KR has laid a groundwork for borrowings at low interest rate through diversified issuance of bonds and regular monitoring of financing conditions and financial market status. Moreover, railway use fee and revenue from leasing state-owned assets increased, while maintenance costs were efficiently saved.

Regular Financial Risk Management and Strategic Financing

KR conducts year-round online and offline monitoring of financial risks through its FRM (financial risk management) system. Online monitoring covers EaR* limit exhaustion rate, interest rate, liquidity rate, and current maturity of bonds, while offline monitoring includes credit rating investigation of financial firms, correction of accounting system errors, and advice from experts including the Financial Risk Management Committee. KR also pursues strategic financing and fund management by establishing annual, monthly, weekly, and daily plans. The time and size of bond issuance are determined by reporting weekly financing conditions and financial market status to the management.

* EaR (Earnings at Risk): Statistical market risk measurement. Expected maximum loss which can occur during a certain period of possession at a given confidence level on the premise that market price fluctuation follows a normal distribution.

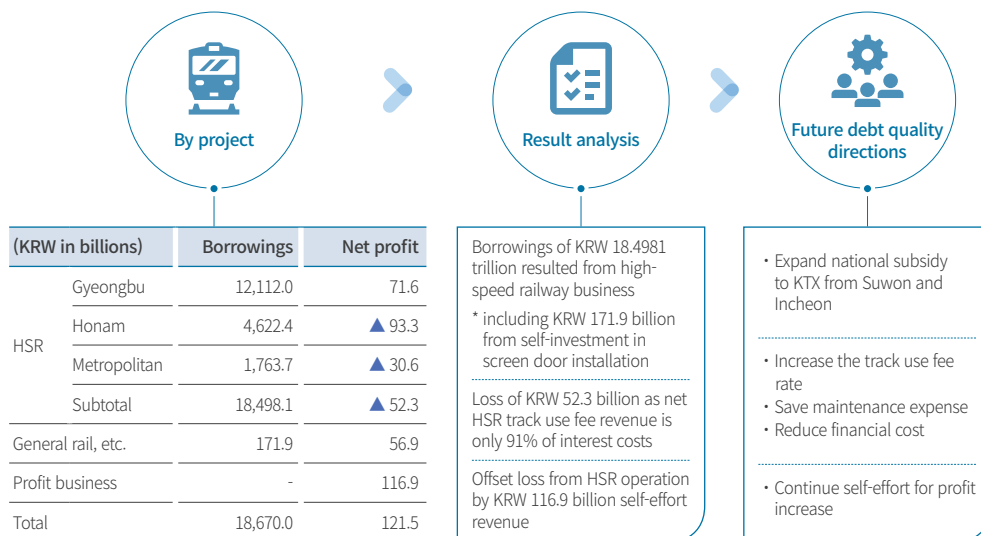
[Stabilize Fund Management by Establishing and Adjusting Financial Plans]



Enhancement of Debt Control based on Segment Accounting System

KR decides the direction of debt management through the segment accounting system which was introduced in 2015. This system contributes to identifying accounting information including detailed profits and losses by each business and preparing countermeasures. KR strives to offset losses from high speed railway business which is a national project for people's benefit by gains from diversified revenue-making businesses and promotes adequate and systematic debt management.

[Debt Control by Using the Segment Accounting System (as of 2017)]



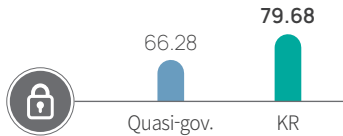
Risk Management



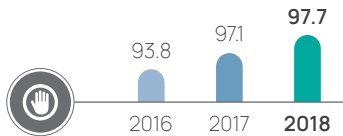
Performance in Information Security

(Unit: points)

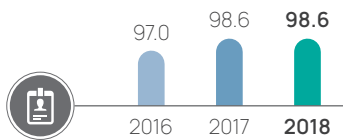
Evaluation on information security (NIS)
13.4 points higher than average score



Inspection on security fragility (MOLIT)
The lowest level in security accident



Inspection on personal information protection (MOLIT)
"Excellent" for 5 years in a row



Enhance Information Security and Personal Information Protection

Reinforcing Information Security Management System

To protect information assets and secure safe cyber space, KR has tightened security control competence in each sector. For example, we prepared punishment criteria on violations of information security, added items to be complied with when conducting service works, and made review of security in all information-oriented projects mandatory. Besides, to cultivate in-house security experts, KR put an additional point description in HR regulations and conducted trainings about cyber-attack. We are also operating a program for automatically checking factors vulnerable to security which was developed independently.

[Improvement of Information Security Management System]

Information security policy	<ul style="list-style-type: none"> Establish punishment criteria on information security violators Add terms of compliance with information security for outsourcing companies (11 items → 15 items)
Information asset protection	<ul style="list-style-type: none"> Make review of security in all information-oriented projects mandatory - review of security (43 cases), security suitability (24 cases)
Specialization of management system	<ul style="list-style-type: none"> Reflect addition point description by experts in HR regulations Support entering the Graduate School of Information Security and obtaining licenses Complete special training about cyber breach (attack & response) - Ranked 11th at the Security Contest despite the first participation
Personal security	<ul style="list-style-type: none"> Lectures by external information security experts Security check for suppliers (six times)
Pre-inspection of weak points	<ul style="list-style-type: none"> Independently develop and operate an automatic security fragility check program - Selected as an excellent case by the National Intelligence Service

Setup of Cyber Breach Prevention and Response Systems

In response to increasingly intelligent and sophisticated cyber-attacks, KR is promoting the advancement of independent cyber-attack drills. We are also thorough in inspecting and correcting security fragilities at national security facilities in advance to prevent any cyber breaches. On top of that, KR has conducted active security control and real-time monitoring of crisis situations by experts, thereby reducing malicious code infection. Security solutions installed in overall areas help block intelligent cyber-attacks in advance.

[Enhancement of Cyber Breach Prevention and Response Activities]

	Existing	Improved
Enhancement of control system	<ul style="list-style-type: none"> Passive control when external institutions request drills (no experts) 	<ul style="list-style-type: none"> Active security control by experts Crisis situation (24 hours) and regularly (weekly) ★ Decrease of malicious code infection rate (↓ 49%) (1,576 cases in 2016 → 1,210 cases in 2017 → 804 cases in 2018)
Reinforcement of drills	<ul style="list-style-type: none"> In-house crisis response drill (once a year) - Focus on map-based drill, mail hacking response drill * Insufficient actual drill 	<ul style="list-style-type: none"> Independent development and operation of cyber-attack response drill system - [Add] Response to DDoS attack and penetration into computer networks ★ Received a perfect score at the cyber-attack response drill by the NIS
Visiting guidance	<ul style="list-style-type: none"> Visiting guidance for all departments (twice a year) - Visiting inspection in the first and second half of year, respectively 	<ul style="list-style-type: none"> Reinforce prevention of national security facilities - Inspection of security fragilities in preparation for the Pyeongchang Winter Olympics (four places including Pyeongchang and Gangneung Station) ★ Won the Minister Prize of MOLIT
Improvement of security system	<ul style="list-style-type: none"> Operation of security solutions centered on business networks Dependence on external services and simple blocking Manual diagnosis 	<ul style="list-style-type: none"> Establish security solutions for all areas (work, internet, and public service) - IPS, APT protectin - Network forensic system (analysis of alternative attacks) - Advancement of harmful website blocking system, etc.

Stakeholder Engagement

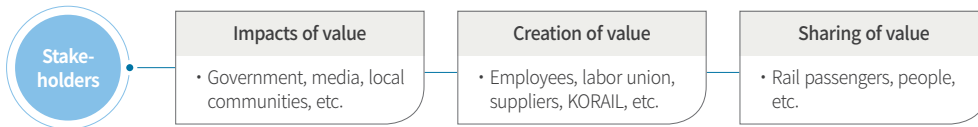


KR strives to activate regular, horizontal, and interactive communication with stakeholders to expand their engagement and stakeholder network, thereby creating social value beyond just satisfying customers.

Definition of Stakeholders

Classification of Stakeholders

KR strives to create innovative social value of railway services through active communication with stakeholders. To this end, we classify stakeholders into three groups.



“Railway Day” hosted by the Korea Railway Association (impacts of value)



KR Junior Board (creation of value)

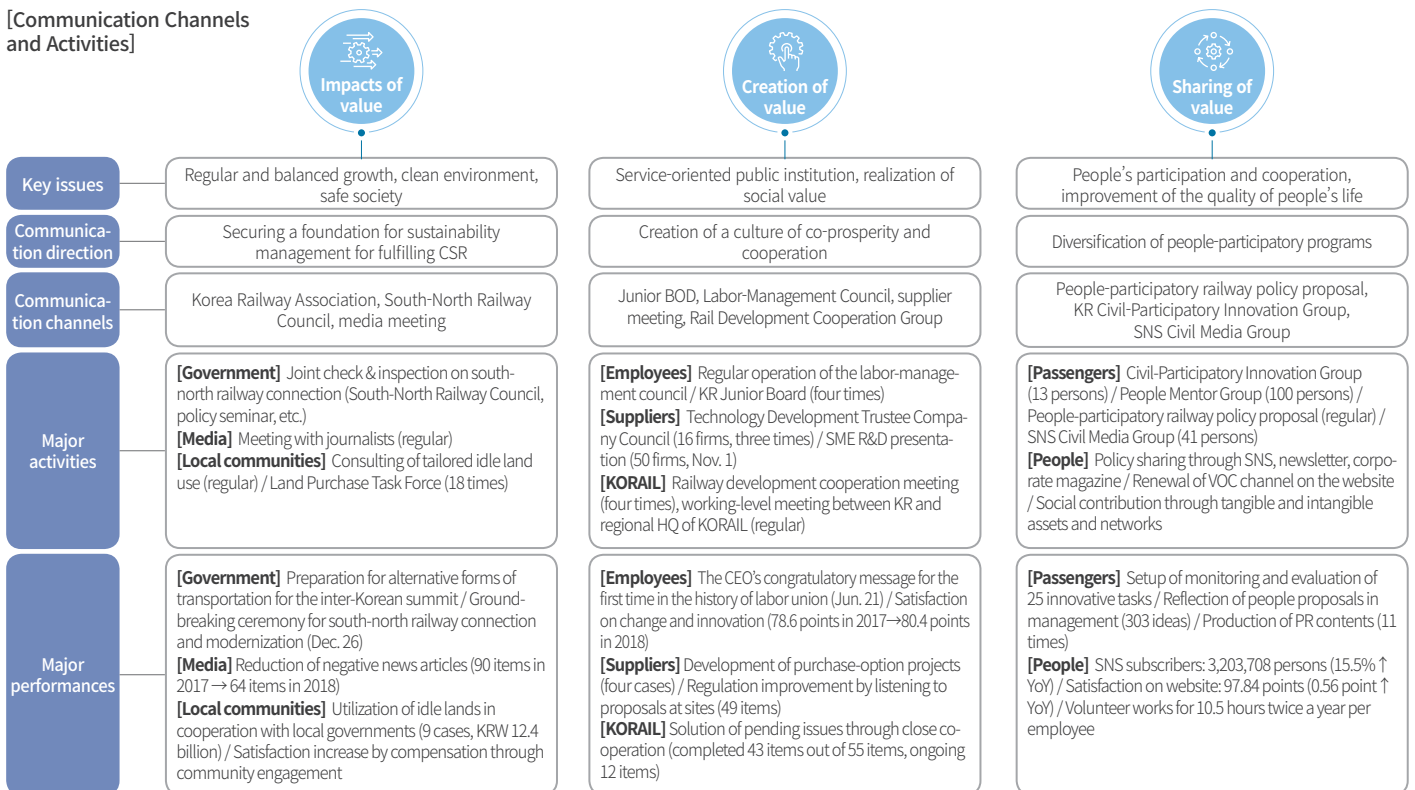


People-participatory railway policy proposal (sharing of value)

Expansion of Stakeholder Communication Channel

KR has established diversified interactive communication channels tailored to each stakeholder group. Through the channels, we are improving people’s transportation convenience by identifying needs of local communities through operating cooperative railway policy governance and preemptively solving conflicts in railway construction and maintenance process. Moreover, anyone can participate in KR’s business and management activities by utilizing the people-participatory railway policy proposal system and open innovation platform (Civil-Participatory Innovation Group, People Mentor Group, etc.)

[Communication Channels and Activities]



Stakeholder Engagement



Launching of the Civil-Participatory Innovation Group



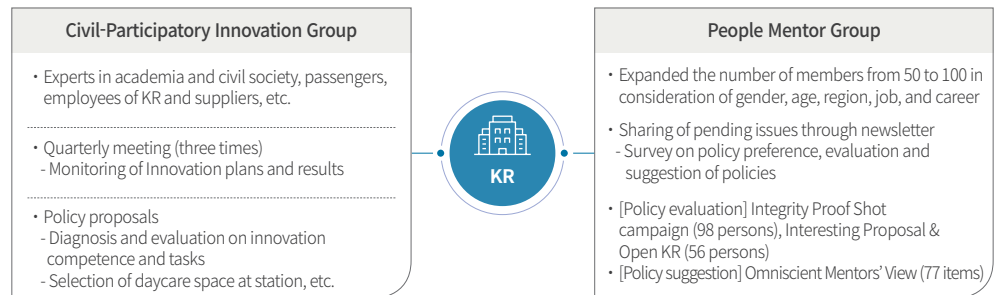
Railway policy idea contest for the public

Engagement of People

People-participatory Innovation Promotion Network

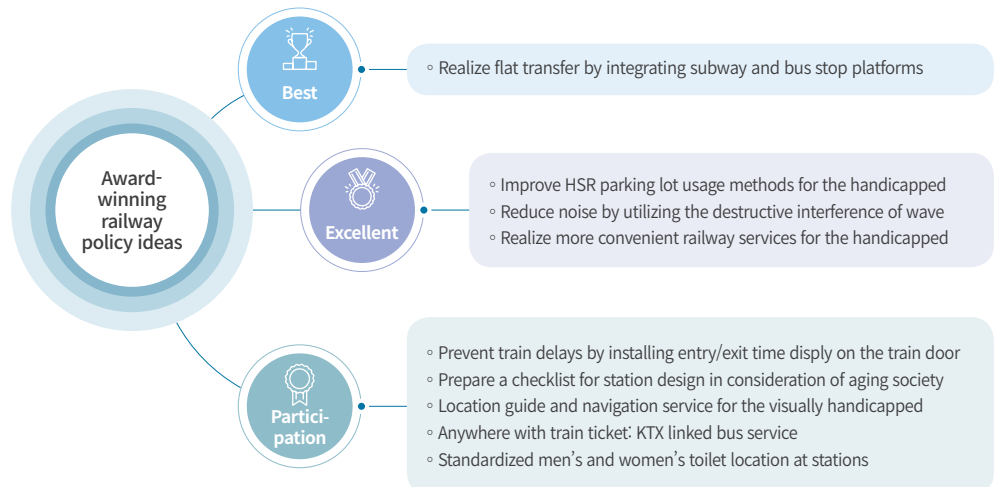
KR operates the “KR Civil-Participatory Innovation Group” and “People Mentor Group” in pursuit of active communication with people and people-oriented open innovation. The former, an advisory body aimed at creating innovative performances people can empathize, engages in monitoring innovation plans and results and making policy proposals on a regular basis. In 2018, the Group joined diagnosis and evaluation of major projects including the selection of a daycare center space at station. The latter is an executive body that evaluates KR’s innovative tasks and implement proposals. It also conducts surveys, discussions, votes, idea proposals, and regular monitoring.

[Innovation Promotion Network and Activities]



Railway Policy Idea Contest for the Public

With the aim of improving railway policies and expanding investment in railway based on people-driven bottom-up open innovation, KR held the “Railway Policy Idea Contest for the Public.” Ideas on four themes including the direction of national rail network construction, development of the 4th Industrial Revolution technologies, and railway-oriented transportation system for passengers were submitted through the website. We evaluated the ideas in the aspects of freshness, possibility, and effectiveness and winners received the CEO Prize and money. Excellent and valuable ideas were delivered to relevant departments for application to business. KR will continue to make efforts to create social value by maximizing engagement and supports of people.



Interview with Stakeholders



Chang Gyeong-hee, professor in Electronic Engineering, Inha University

KR contributes to balanced national development by constructing a nationwide rail network. KR recently completed the integrated railway wireless communication network (KR LTE-R) for safe and efficient railway operation to secure the global top-level technology capability and is trying to export the technology to the world. KR needs to communicate with stakeholders to minimize conflicts and disputes when executing railway construction projects. Moreover, I hope KR grow into a leading global railway company through systematic support for employees to develop their specialized expertise.



Kim Hong-hyeon, Manager of Science and Technology, Gyeonggi Provincial Government

The role of rail network extends to enhancing growth potential of region across the nation by improving accessibility to major cities, reducing GHG emissions in preparation for the Paris Agreement, and shortening travel time and costs. KR is required to overcome the limitation due to the slowing down railway construction market in Korea and create new growth engines in the global market. To this end, it is important to secure global competitiveness by commercializing and localizing railway technologies.



Lee Su-jun, General Manager, SR Co., Ltd.

KR plays a crucial role of constructing and operating railways. We successfully opened the SRT Line in partnership with KR in December 2016 after signing the business agreement with KR in 2014. During the period, we have continuously communicated with KR to maximize passenger convenience and were able to construct the railway facility favorably accepted by customers as a result. Partnering with KR in the fields of VOC handling, solution of major issues of local communities around stations, and social contribution, both companies will create social value more efficiently.



Han Jung-hwan, Director, Daelim E&C

KR has greatly contributed to activating logistics and passenger transport through the railway construction and operation business. To ensure sustainable growth, KR should focus on developing new technologies, cultivating rail-specific talents, and reducing costs based on accumulated knowhow about constructing and managing rail network for decades. Those efforts will help KR secure global competitiveness in the rail business. To improve corporate value in the long term, it is necessary to consistently develop and win new overseas projects without complacent to current monopolistic status in Korea.



Park Nam-gi, Director of Daejeon & Chungcheong Div., Beautiful Store

KR pursues sustainable growth by creating a safe railway environment, fulfilling social values and public interest, and penetrating overseas markets. I believe that KR is continuously communicating with various stakeholders in the economic, social, and environmental sectors to promote sustainability management. Particularly, "Chick-Chick Cook-Cook," the youth food startup support center, and "Daycare Center at Pyeongnae Hopyeong Station" which were promoted to transform idle rail assets into public facilities for job creation and local economic activation present KR's differentiated social contribution program.



Noh Yang-wook, Executive Secretary of KR Labor Union

As a quasi-government agency, KR is delegated by the government to construct and manage national railway network. The government is implementing SOC projects with a focus on strengthening public interest to realize social value. KR will solidify its position as the public institution trusted by the public if we secure proper project budgets and make efforts for safe rail construction and management to ensure balanced national development and passenger convenience. Moreover, it is necessary for the labor and management to discuss and implement labor conditions and sustainable growth based on trust.

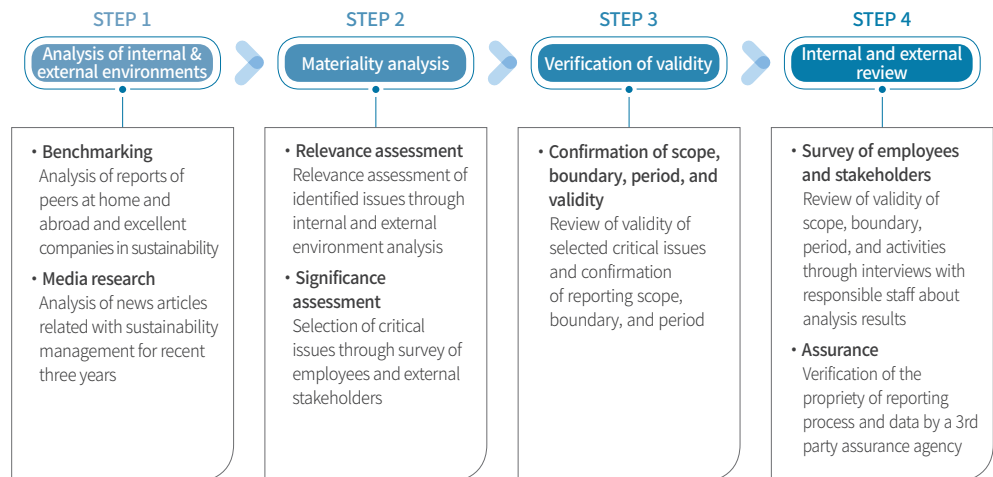


Materiality Analysis

KR pursues sustainable growth by widely reflecting economic, social, and environmental issues in management activities. As part of that, we identified important issues in accordance with materiality analysis recommended by the ISO 26000 and GRI Standards.

Materiality Analysis Process

To identify material sustainability management issues, KR conducted analysis of internal and external environments and materiality analysis in accordance with context, materiality, and completeness principles as well as stakeholder engagement presented by the GRI (Global Reporting Initiative).



Relevance Assessment Results

We identified a total of 35 relevant issues in the aspects of general sustainability management (5), economy (6), society, (16), and environment (8) and then, conducted materiality analysis.



General sustainability management (5 issues)

- Increasing requirements on transparency (governance)
- Build ethical management system and compliance with regulations
- Economic, social, environmental risk management
- Sustainability management strategy system
- Stakeholder engagement (communication channel expansion, response to matters of concern)



Environment (68 issues)

- Energy consumption management
- Environmental impacts including transportation
- Environmental related expenditure and investment
- Environmental damage (air, water, soil)
- Air pollutants (GHG, fine dust, etc.)
- Wastewater and waste control
- Climate change (global warming)
- Reinforce environmental regulations



Economy (6 issues)

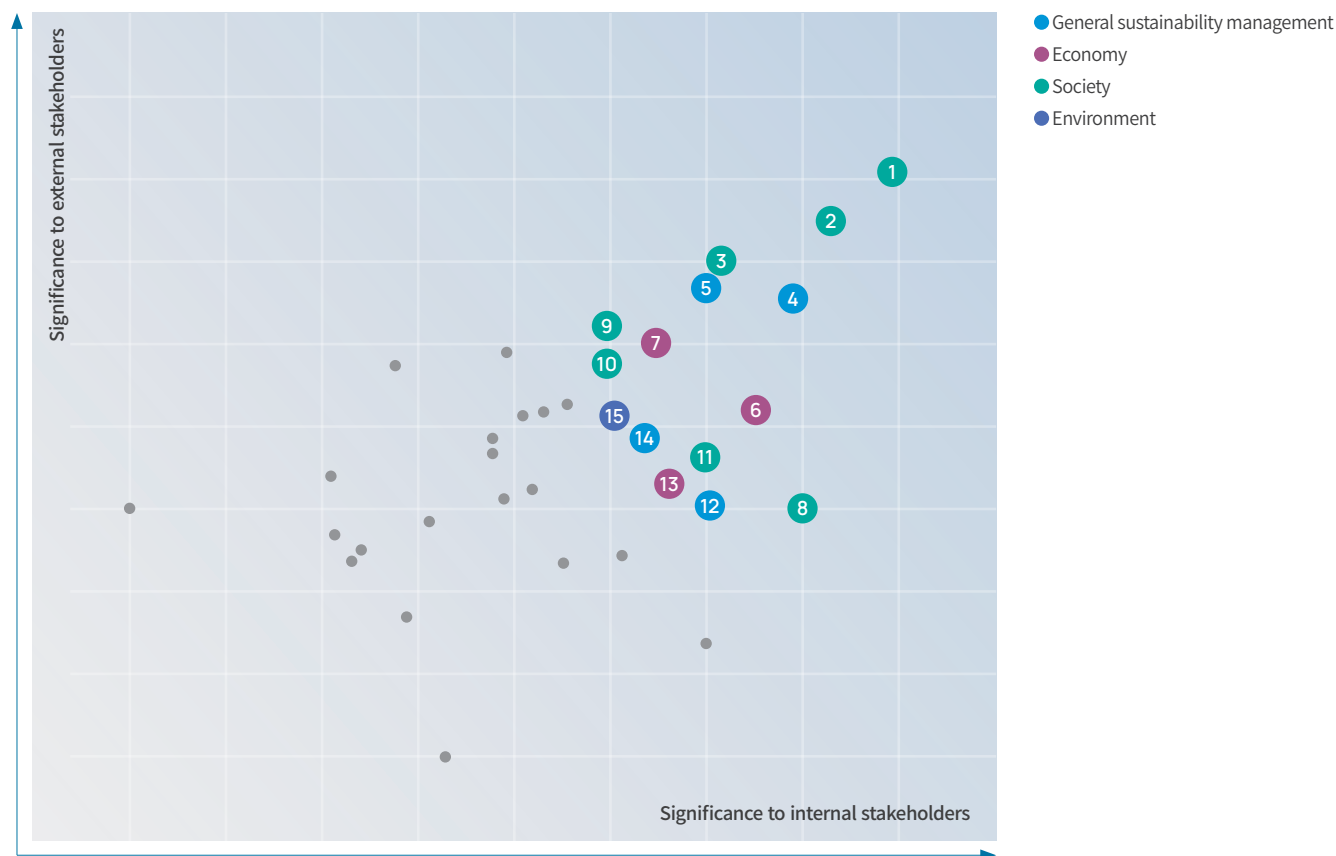
- Economic performance
- Respond to changes in passenger and cargo demands
- Improve infrastructure around stations and build support facilities
- Prevent anti-competition behaviors (price-fixing)
- Enhance railway-related technology R&D
- Increase customer satisfaction



Society (16 issues)

- Diversify and enhance customer requirements
- Participate in and develop local communities (social contribution, investment in local communities, etc.)
- Supports for and shared growth with suppliers/SMEs
- Disseminate CSR management to suppliers
- Comply with social regulations
- Increasing needs for safety of products and services
- Enhance safety of railway workers and facilities
- Increasing requirements on fair competition and trade
- Reinforce information security system
- Participate in establishing public policies
- Importance of securing talents
- Employee education and training
- Employee diversity and equal opportunity (hiring socially marginalized, increase of female managers, etc.)
- Work-life balance
- Labor-management relationship
- Anti-corruption

Materiality Analysis Results



[Material Issues]

No.	Material Issue	GRI Topic	Boundary	
			Internal	External
1	Enhance the safety of railway workers and facilities	GRI 403: Occupational Health and Safety	●	
2	Anti-corruption	GRI 205: Anti-corruption	●	
3	Compliance with social regulations	GRI 419: Non-compliance with laws and regulations in the social and economic area		●
4	Establish ethical management system and comply with regulations	GRI 205: Anti-corruption	●	
5	Increasing requirements on KR's transparency (governance)	-		●
6	Enhance railway-related technology R&D	-	●	
7	Prevent anti-competition behaviors	GRI 206: Legal actions for anti-competitive behavior, anti-trust, and monopoly practices		●
8	Work-life balance	-	●	
9	Increasing requirements on the safety of products and services	GRI 416: Customer Health and Safety		●
10	Increasing requirements on fair competition and trade	-		●
11	Importance of securing talents	-	●	
12	Sustainability management strategy system	-	●	
13	Improve infrastructure around stations and build support facilities	GRI 203: Indirect Economic Impacts		●
14	Economic, social, environmental risk management	-	●	
15	Air pollutants (GHG, fine dust, etc.)	GRI 305: Emissions		●





OUR PROMISE FOR SUSTAINABILITY

- 01 Sustainable Growth
- 02 Creation of Social Value
- 03 Efforts for Safety and Environment
- 04 Enhancement of Organizational Culture



SPECIAL TOPIC

1

Inter-Korean Rail Network

As part of the new economic roadmap of the Korean Peninsula, KR is leading the inter-Korean rail network project. We will establish ways to modernize railways in North Korea based on the joint survey results and construct inter-Korean rail network through mutual cooperation. By doing so, we are committed to laying the foundation for prosperity and peace on the Korean Peninsula and constructing the rail-driven Silk Road that runs across the Eurasian continent.

Promote the Construction of Inter-Korean Rail Network

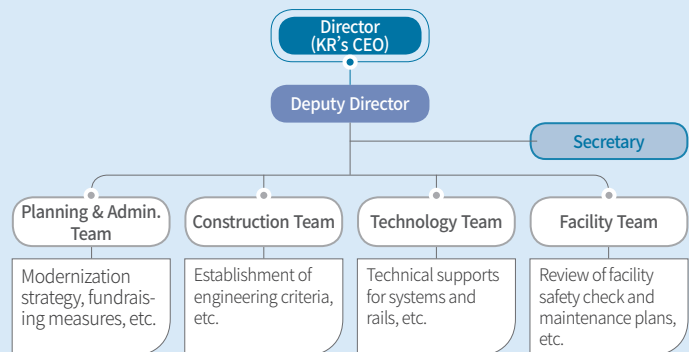
KR is promoting the construction of the inter-Korean rail network based on a master plan. We formed the Inter-Korean Rail Network Promotion Unit led by the CEO to inspect railway conditions in North Korea and prepared the “Phased Railway Modernization Strategy in North Korea.” Based on the strategy, KR is focusing on reviewing technical standards, developing training programs, and supporting the establishment of the East Asia Railway Community (EARC).

[North Korean Railway Modernization Process and Strategy]

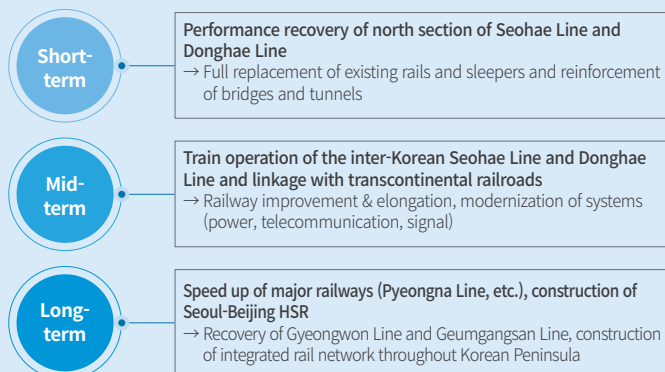


[Launch of the Inter-Korean Rail Network Promotion Unit]

- Increased staff members (8 persons to 30 persons)



[Execution Strategy by Stage]



Build a Social Consensus and Collaboration System

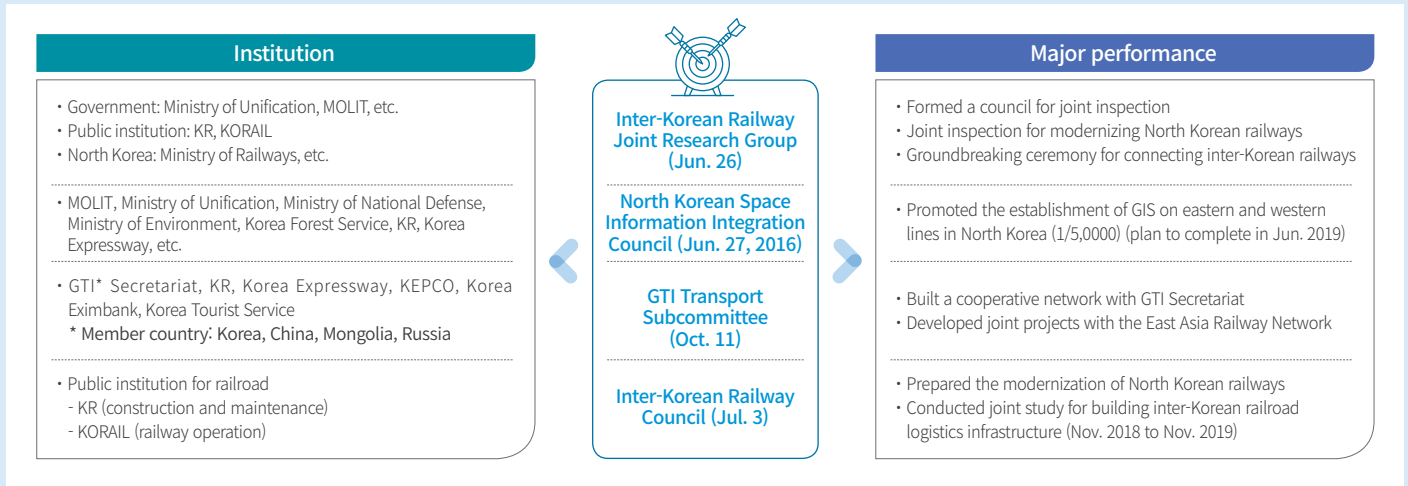
KR has been spreading the social consensus on the inter-Korean rail network project to overcome constraints due to political environment and ensure continuity of cooperation. International seminars were held to discuss diplomatic security and economic cooperation for this project among the government, academia, and international organizations, which created favorable public opinion on this project. Moreover, we laid a foundation for this project by organizing a joint research group, launching a consultative council for spatial information in North Korea, and operating the Inter-Korean Railway Council. Particularly, KR participated in the international conference held by the Transportation Subcommittee of GTI* to build a network for cooperation with GTI Secretariat and lay the foundation for the promotion of the EARC project.

* GTI: Global Trade and Investment Expo created through the cooperation of Northeast Asian countries



International seminar (Aug. 21, 2018)

[Collaboration with Internal and External Institutions]



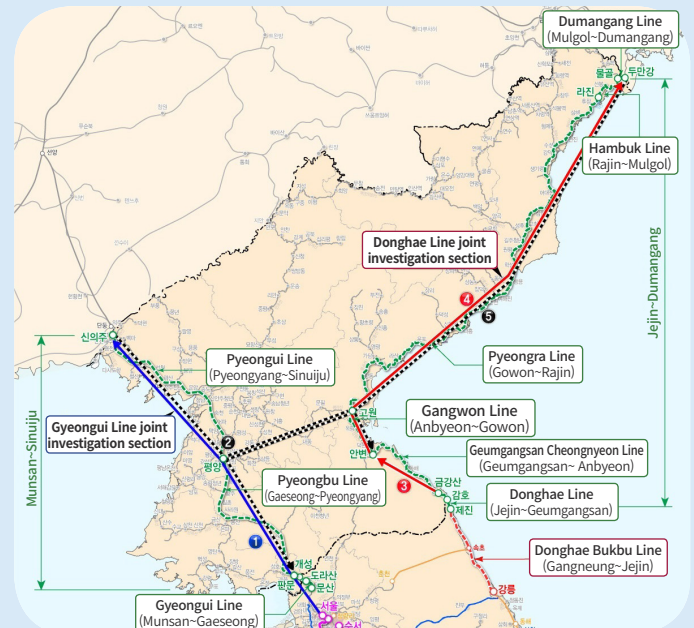
First Step toward the Inter-Korean Rail Network

KR had held joint working conferences by forming an inter-Korean investigation group and focused on safe operation of the joint investigation trains. As a result, South Korean trains successfully went to Sinuiju and Tumen River in North Korea for the first time since the liberation. Based on basic and detailed investigation results, KR established the “Basic Plan for Modernization of North Korean Railway” and materialized promotion plans by preparing rail connection technology standards and fundraising methods. KR will continue to promote the connection with transcontinental railroad by utilizing the North Korean railway modernization project as the foundation.

[Joint Study for North Korean Railways]

- Preparation** Check (Jul.) and repair (Aug.) of connection section to operate a joint study train
- Joint study**
 - **Section:** Gaeoseong-Sinuiju (413.9km), Mt. Geumgang-Tumen River (777.4km)
 - **Period:** 18 days (6 for Gyeongui Line, 2 for train move, 10 for Donghae Line)
 - **Participants:** 28 persons from the Ministry of Unification, MOLIT, KR, experts
 - **Method**
 - Moved to check spots by train and conducted inspection by eye and equipment
 - Gathered railway data by installing action camera on the train

[Routes of the Joint Study Train]





Safe Railway

KR is upgrading the safety management system from prevention to restoration to realize “ZERO Accident” in railway construction and facility management. We will continue to ensure safety by expanding high-quality railway safety facilities and voluntary disaster control systems.

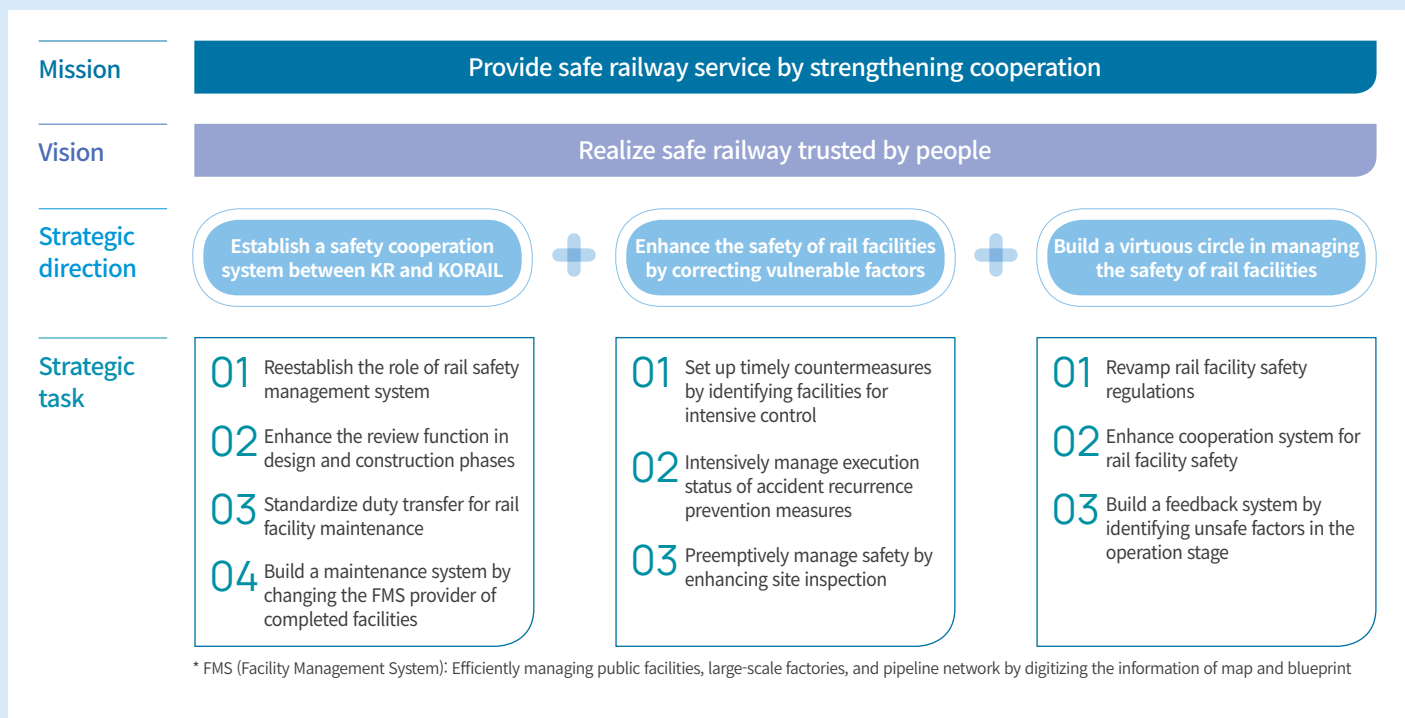
Strengthen Railway Safety Management System

Joint Innovation Group for Railway Facility Safety

The Joint Innovation Group for Railway Facility Safety was organized by KR and KORAIL to resolve the blind spot of railway facility safety and coordinate and solve issues of railway safety efficiently. The Group was located in KR head office building for quick decision-

making and close cooperation and began safety innovation tasks, such as discussing pending safety issues, minimizing operational risks in each phase, and specially managing critical facilities. Going forward, both organizations will strengthen cooperation in innovation and information on safe railway facility operation.

[Strategic System of the Joint Innovation Group for Railway Facility Safety]



Enhance Organization and Workforce for Railway Safety

KR hired 122 employees – 96 new employees and 26 experienced employees in 10 safety areas, including safety management and public safety – in June 2019 to enhance the expertise in railway safety. The figure presents about 8% of total employees of KR. Moreover, the organization dedicated to safety and quality was promoted from

office level to division level to play the role as the safety control tower and enhance preventive safety activities. KR also plans to reinforce safety control and competitive railway construction project by transferring about 10% of head office personnel to the field. KR will serve the reorganization as a momentum for establishing higher safety management system and more comfortable railway environment.

Sophisticate Disaster and Accident Management System

Establish Preemptive Disaster Management System

To ensure safe railway environment against natural disasters such as earthquake, heat wave, and rainstorm, KR is operating a preemptive disaster management system and expanding investments in IT-based disaster prevention system for rapid detection and sharing of abnormal information. We have installed the remote monitoring system utilizing IoT* to detect abnormalities and the intelligent automatic detection system to monitor points vulnerable to natural disasters. KR will also expand remote video detection devices (292 places at 101 sites)

[Disaster Management System]

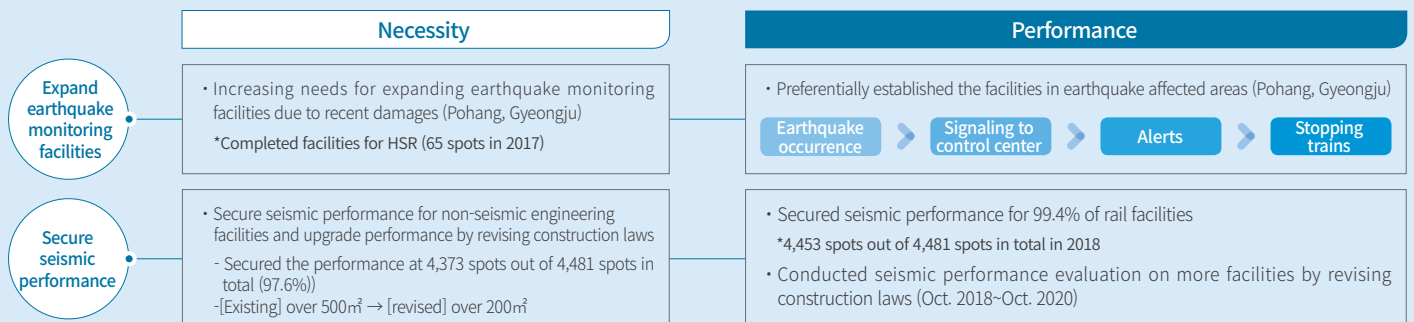


Infrastructure for Fast Response to and Recovery of Disaster

KR is enhancing disaster response systems and dedicated organization to secure golden time and minimize damages from disasters and accidents. We are establishing the LTE-R*-based video call system to ensure real-time information exchange without a communication interruption in emergency in train. Moreover, the video conference system was introduced, and workforce was added to the disaster control office in preparation for heat and cold wave situations. KR also enhances cooperation on disaster follow-up measures with 9 institutions including MOLIT, MOPAS, firehouses, local governments, and KORAIL and conducts people-participatory emergency drills, thereby enhancing disaster response capability.

* LTE-R (LTE based Railway wireless communication system): Localized technology tailored to the domestic railway environment which can significantly improve the safety and convenience of train operation by exchanging the information between the train, control center, maintenance staff, operating agency, and government agency

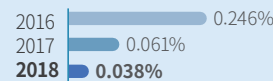
[Establishment of Earthquake-proof Rail Facilities]



to tightening real-time monitoring and install disaster broadcasting receiving system in all high-speed railway sections (including tunnels and underground sections) by 2022 (Seoul-Busan KTX in 2018) to continue “ZERO Accidents from Natural Disaster.”

* IoT (Internet of Things): Technology or environment of having objects exchanging data through the Internet with sensors attached to the objects

[Converted Accident Rate]



- Achieved the lowest accident rate (0.44%) of public institutions under the MOLIT in 2018
- * Average accident rate in 2018: 1.09%
- Achieved the lowest converted accident rate (0.038%) since the foundation of KR (2004)
- * Converted accident rate = Average of (Converted number of victims×100/Number of fulltime employees) × 0.5

Improve Safety Performance of Railway Facilities in Preparation for Disaster and Accident

In response to increasing earthquakes in Korea, KR is expanding the earthquake monitoring system, which was installed only in KTX lines, to the general railway lines in the earthquake regions including Pohang and Gyeongju. Moreover, we strengthened the seismic design standard by reflecting the unique characteristics of domestic ground and revised the railway design standard in December 2018 based on it. It preemptively inspected and diagnosed fire response systems at 14 multi-purpose private capital stations such as Seoul Station in the public-private cooperation. The safety diagnosis participated by citizens improved 733 cases and shared the results on the website to help to form the public confidence in the safety of railway facilities.

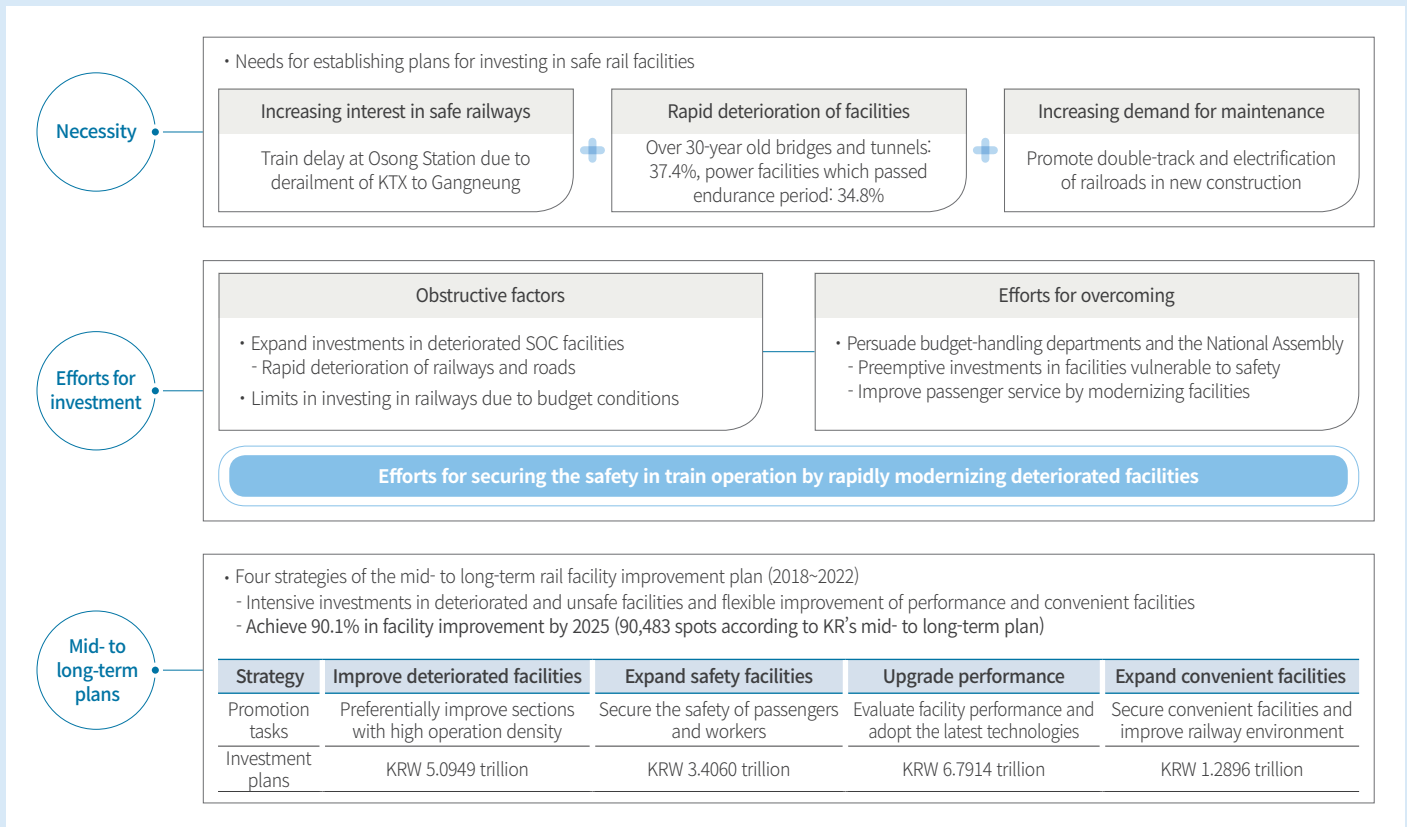
Modernize Railway Facilities

Expand Investment in Revamping Old Railway Facilities

KR established the “Mid- to Long-term Plan (2018-2022) for Investment in Railway Facilities” and has been conducting strategic investment in rapidly modernizing outdated railway facilities to meet increasing requirements on safety. Approximately 83% of the total budget was

invested in revamping old railways and expanding safety facilities, resulting in decreasing railway-related safety accidents by 32% from 19 in 2017 to 13 in 2018. KR plans to focus on modernizing over 30-year old seven lines in the capital region with the schedule to complete by 2022, thereby pursuing ZERO old electric equipment and securing the stability of the train operation.

[Mid- to Long-term Rail Facility Improvement Plan (2018~2022)]



Modernize Old Bridges

KR has been carrying out large facility upgrade projects equivalent to new construction to modernize old railway bridges. We completed the upgrade project (replacing steel material with steel-concrete composite) of leoncheon Bridge (located between Shindong Station and Jicheon Station of the Seoul-Bussan Line) constructed in 1934. This project resulted in reducing noise and vibration drastically and minimizing the damage to near farmlands from flood by decreasing the number of piers from 6 to 3. KR is currently modernizing Milyanggan Bridge (total extension of 2,620 m), constructed 115 years ago, with the goal of completing in 2022. KR will continue to modernize outdated railway facilities and bridges.



leoncheon Bridge (completed in 1934, modernized in 2018)



Milyang Steel Bridge (completed in 1903, plan to modernize by 2022)

Expand Railway Safety Facilities

Secure Public Safety by Expanding LTE-R

Commercializing KR LTE-R* in the high-speed railway between Weonju and Gangneung, KR is expanding its application to nationwide railway network including three projects such as the Sosa-Weonsi section and Ulsan New Port in 2018. The LTE-R will enable the high-speed transfer of image and large-capacity data among train, control center, maintenance staff, and operating company. This change will improve the safety in train operation and sophisticate maintenance and logistics services through real-time monitoring. Moreover, it will enable the safety management service utilizing the IoT function and interface to the (PS-LTE), an integrated wireless communication network of agencies related to national disaster, will significantly contribute to coping with disaster situation and recovery promptly. KR plans to extend LTE-R to 4,726 km of railway routes nationwide by 2027 to ensure safety.

* LTE-R (LTE based Railway wireless communication system): Localized technology tailored to the domestic railway environment which can significantly improve the safety and convenience of train operation by exchanging the information between the train, control center, maintenance staff, operating agency, and government agency

[LTE-R Construction Plan]

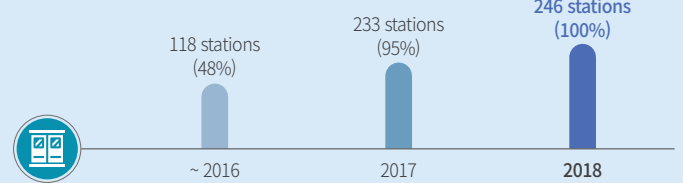
- **Period:** 2018~2027
- **Scope:** 4,726 km including high speed, conventional and regional rails
- **Cost:** Approx. KRW 1.1 trillion (incl. trackside equipment and mobile terminals)



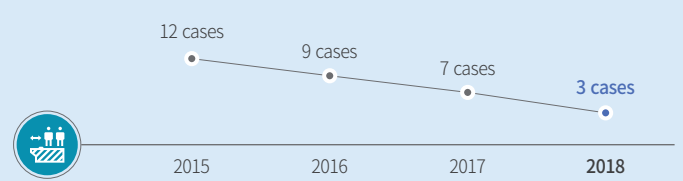
Early Installation of 100% Platform Safety Door

As the accidents on the railway platform have rapidly increased (a total of 122 cases) in the past 6 years, KR is carrying out the “ZERO Accident” campaign and completes the installation of platform safe doors in June 2018, five years ahead of schedule. It was able to shorten the installation period by pre-investment through the issuance of industrial bonds after considering the investment trend and limited utilization of available resources when relying solely on government finance. As a result, KR was able to install the platform safety door in 246 stations of the metropolitan railway in the capital region, resulting 75% reduction of accidents on the platform in the past three years as well as the reduction of indirect social cost and the improvement of air quality in the station.

[100% installation of platform screen doors]



[Fatal platform accidents] • Down by 75% in past 3 years



Railway stations customized for mobility disabled

KR is expanding facilities and services for mobility disabled persons so that everyone can use railways safely and conveniently. Public contest was held to hear ideas to make design changes to railway stations including designating at least 10% of chairs in waiting room for persons with mobility disability and preparing standards on path guiding systems inside stations to install beacons (mobile phone position transmissions) for visually impaired persons. In addition, 4 elevators and 16 escalators have been installed at 4 stations on Bundang Line and comfort zones for protection from the heat and cold have been opened at 9 stations on Gyeongbu Line to minimize inconveniences.



PROMISE 1

Sustainable Growth

Management Approach

KR focuses on increasing train speed and expanding the national rail network to improve transportation convenience of citizens and balanced national development. We also strive to initiate railway projects earlier for the prompt expenditure of the budget. Moreover, diversified railway asset development and creative utilization of idle railways and lands are promoted to enhance public interest and revenue diversification. KR has also built a rail business ecosystem for SMEs to win more overseas projects and localize railway technologies.

Major Performance



1,651.6

KRW in billion



Sales in 2018



4,230

km



Total length of railways



7.0

KRW in billion



New overseas projects



924.8

KRW in billion



Revenue from utilizing rail assets

In This Section

01_ Strengthen Rail Network

02_ Expand Global Business

03_ Develop Railway Technologies

04_ Improve Railway Asset Values



Strengthen Rail Network



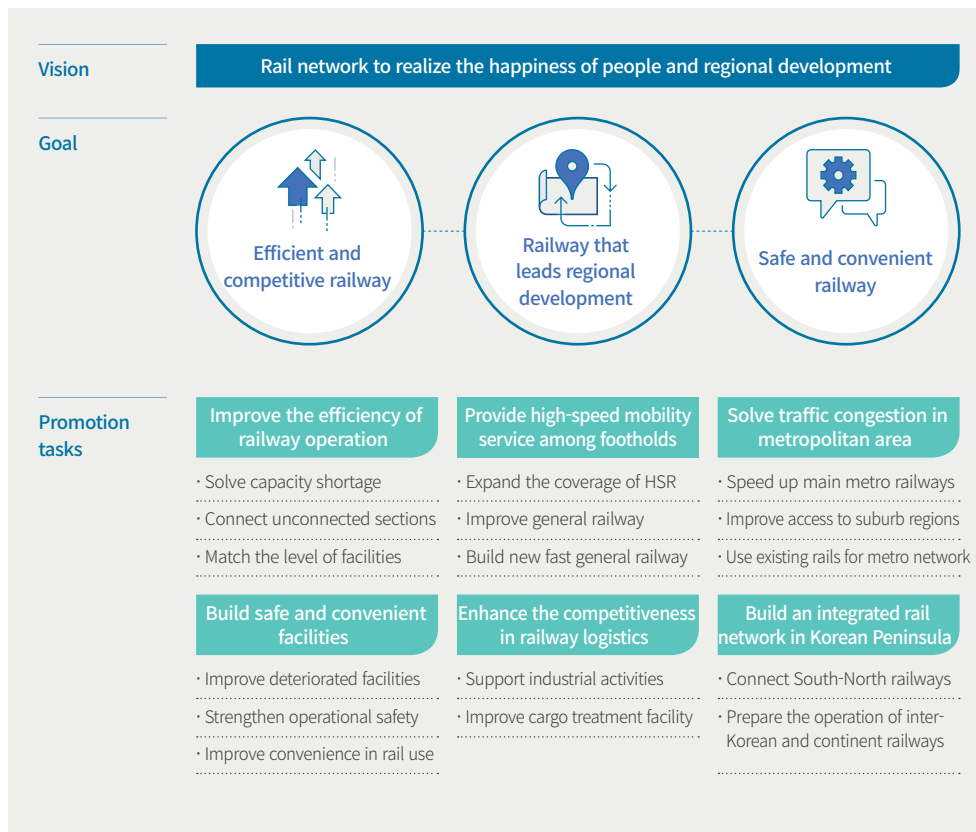
KR is actively implementing the nationwide railway linkage project based on the 3rd National Rail Network Plan to provide the fast and convenient railway transportation service to all citizens. We are doing utmost to expand the metro railway network to help the residents in the metropolitan region to manage “leisurely evening with family.” KR also strives to connect the isolated railway lines to create “rural villages where people return” and the efficiency of railway use.

Opening of Railways

3rd National Rail Network Plan

KR is carrying out a project to extend the railway to 5,364 km by 2026. With the goal of connecting major cities within two hours and metropolitan area within 30 minutes, we are expanding metro railways to resolve traffic congestion and high-speed railway to enhance the transportation service for neglected regions. Other plans include efficient maintenance and advancement of management system for ensuring optimized railway performance, modernization of North Korea’s railways, and connection with the transcontinental railroad.

[3rd National Rail Network Plan]



Effect of the 3rd National Rail Network Plan

Electrification*

82% (4,421km)

Modal share*: 20.8% in 2013 →

26.6% in 2026

Population serviced by HSR: 46% →

60%

Population serviced by speed enhanced railways: 5% →

25%

Ripple effect on local economy

KRW 140.2 trillion

- Production: KRW 122.1 trillion
- Job creation: KRW 18.1 trillion

* Electrification = length of electrified railways / total length of railways

* Modal share: percentage of passengers and freight using rail transport

Strengthen Rail Network




Pohang-Yeongdeok Line opening ceremony

▪ Expected Effects



Expanding national rail network and promoting local development by building the East Sea Rim (14 times operation a day)

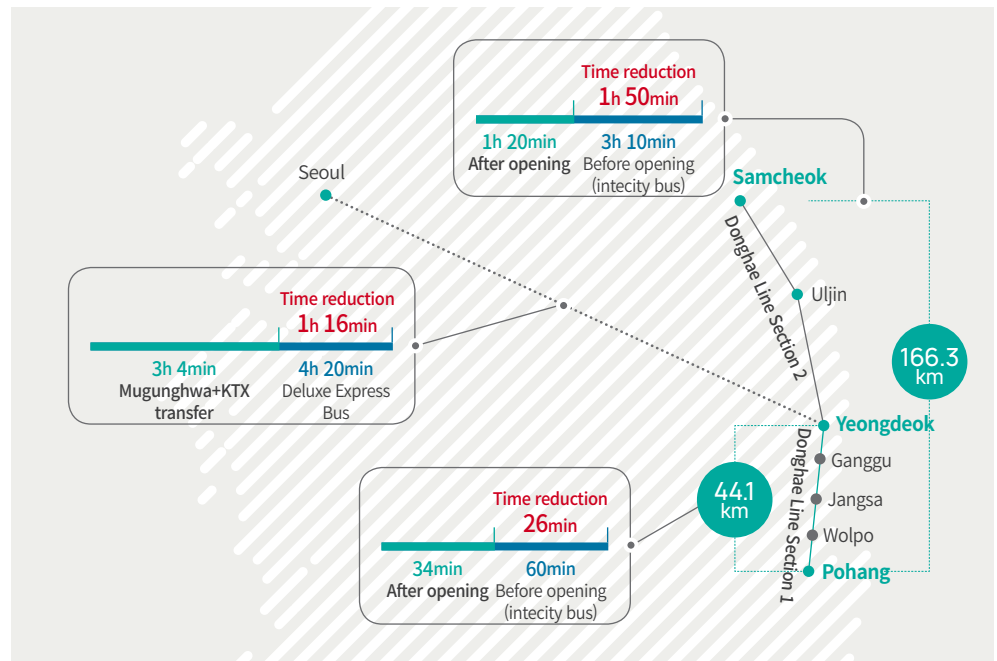


Expanding the coverage of KTX benefits and maximizing investment effect by connecting with KTX Pohang Station

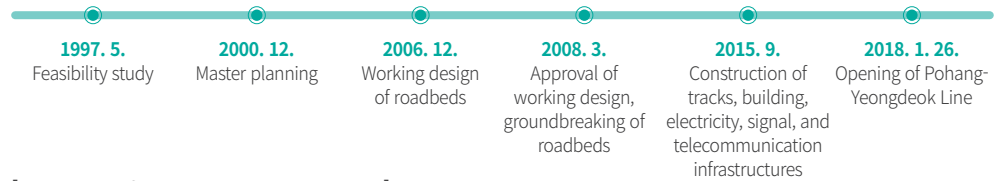
Opening of Pohang-Yeongdeok Section of Donghae Line

KR opened the railway section between Pohang and Yeongdeok (44.1 km) of the Pohang-Samcheok (Donghae Line) Phase 1 (total length of 166.3 km) in January 2018. The transport time between two regions shortened from one hour by car to 34 minutes and transfer connection with KTX at Pohang Station is available, which will contribute to easing inconvenience of local people. This line also helps better accessibility to local tourist attractions such as Wolpo and Jangsa beach and Ganggu Port in Yeongdeok, contributing to the creation of new demand for tourism and local economic development. In reality, the number of tourists to these regions in 1Q 2018 increased 529 thousand from the previous year. Despite damages from a 5.4 magnitude earthquake in Pohang in November 2017, KR rapidly recovered damaged structures through emergency safety diagnosis, survey on impact scope, and efforts for securing safety.

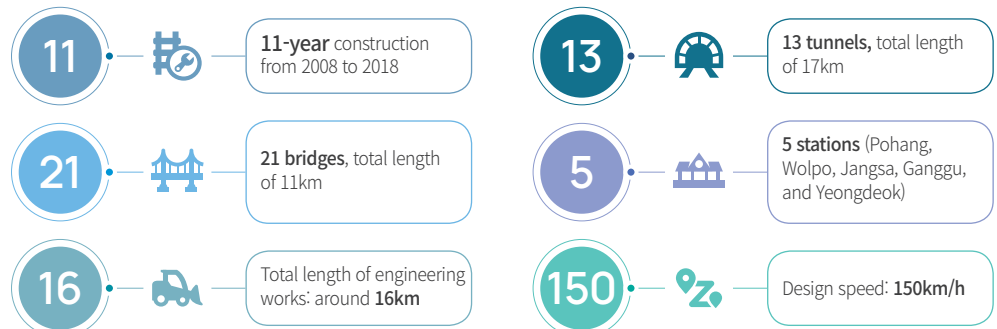
[Pohang~Yeongdeok Line]



[Project History]



[Key Figures for Pohang~Yeongdeok Line]



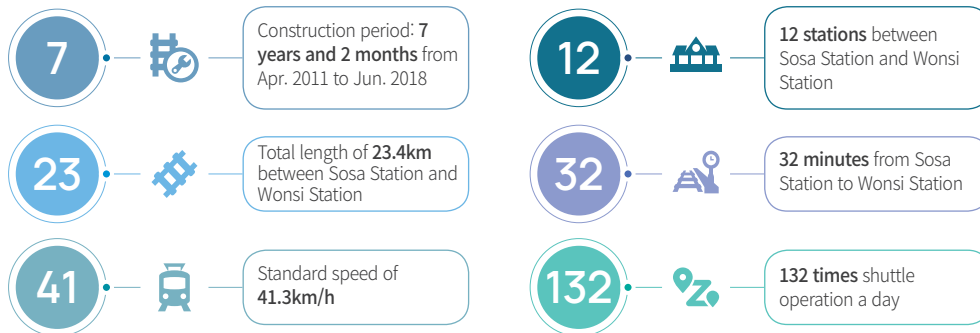
Opening of Double-Track Electric Train in Sosa-Wonsi Section

The Sosa-Wonsi double-track electric railway (Seohae Line) with the length of 23.3km connecting Bucheon, Siheung, and Ansan, started the construction in April 2011, was completed in June 2018. This project shortened transport time between two regions to only 33 minutes, a decrease of one hour. Upon the completion of Shinansan Line, Weolgot-Pangyo Line, and Gyeonggang Line (Yeoju-Wonju), it is possible to travel from the western metropolitan area to Gangneung by train. The Seohae Line will be the key longitudinal railway network in the west coastal area in the Korean Peninsula in the future.

[Project Process]



[Key Figures for Sosa-Wonsi double-tracked rail of Seohae Line]



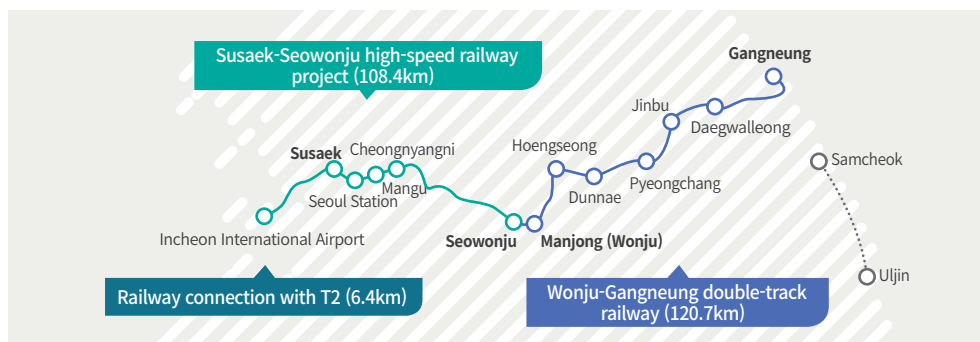
Opening of Railway Connecting the T2 of Incheon International Airport

KR opened the 6.4km-long railway section that connected the Second Passenger Terminal in Incheon International Airport in January 2018. KR completed the transport support project for 2018 Pyeongchang Winter Olympics to construct a 284.3km-long railway from Incheon International Airport to Gangneung by investing more than 50,000 people per year and total project cost of KRW 424.8 billion for 54 months between 2013 and 2018. To ensure the safety and maximize the safety and transport efficiency of passengers, the project applied the TRcM* and the shield TBM*, which minimize ground subsidence, to construct a railway in the underground of Incheon International Airport which had soft ground as a result of landfilling of the sea.

* TRcM (TubularRoof Construction Method): A method of excavating a tunnel after installing a wall structure first to prevent ground subsidence and underground water loss so as not to affect nearby facilities

* Shield TBM (Shield Tunnel Boring Machine Method): A method of excavating a tunnel by cutting the ground with a cylindrical excavating machine while inserting ground stabilizer to prevent a collapse of the surrounding ground

[Railway Lines for Pyeongchang Winter Olympics and Connection with T2 of Incheon International Airport]



Sosa-Wonsi Line opening ceremony

▪ Business Effects

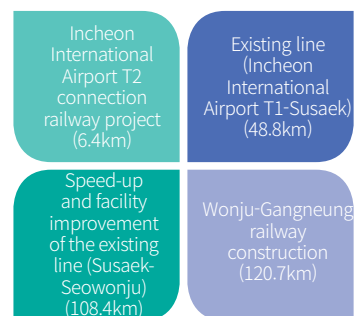


Provide transport services connecting southwest and south-north metropolitan areas



Construct wide rail network connecting Ansan Line, Gyeongin Line, Gyeongui Line, Sinansan Line, and Seohae Line

▪ Railway Project for the 2018 Pyeongchang Winter Olympics



Strengthen Rail Network

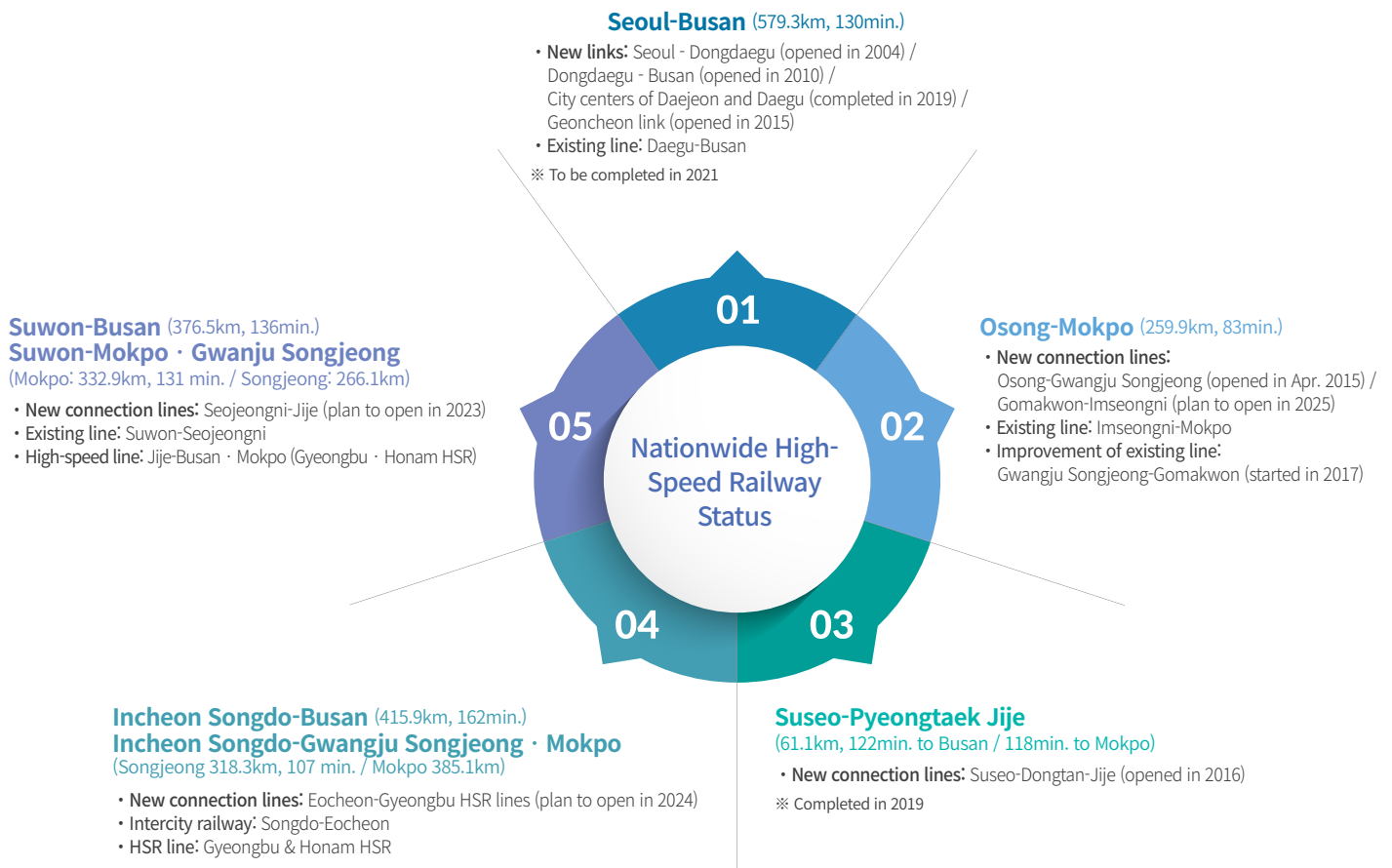


Connect Speeded up Railways and Expand Regional Rail Network

Connect Missing Links and Construct Links with HSRs

KR is exerting utmost efforts at improving high speed rail links among major hubs around the country by filling in missing links in the national rail network. In particular, projects to link Weolgot-Pangyo (39.4 km) and Yeosu-Wonju (21.8 km) sections have been begun for non-stop rail network between Incheon and Gangneung and projects to link Seojeongri-Jije (4.4 km) and Eocheon-Gyeongju HSR (6.24 km) sections have been launched for enhanced high speed rail services in the capital region's Suwon, Incheon, Ansan and Hwaseong. In addition, Honam HSR - Phase 2 project connecting Gomagweon and Imseongri is being implemented at full speed for improved transport services in regions south of Gwangju and to benefit airport users with high-speed rail transport services.

[Speeded up railway connection between major hubs]



[High-Speed Railway Performance]

Classification		2016	2017	2018
High-Speed Railway	Σ (Length by line × maximum speed) (A)	433,979km ² /h	461,487km ² /h	490,605km ² /h
	Total length of railways (B)	3,184.9km	3,256.0km	3,334.1km
	High-speed railway performance (A/B)	136.261km/h	141.734km/h	147.148km/h

Expand Metropolitan Railway Network to Improve Transportation Convenience in Metropolitan Regions

KR is actively carrying out the expansion of metropolitan railway network to improve transportation environment in metropolitan regions and increase the satisfaction of railway use. The opening of Magoknaru Station of Airport Railway in September 2018 shortened transportation time between New Town and Seoul Station by 15 minutes and transfer time into 3 minutes. Moreover, KR began the construction of the railway between Indeogweon and Dongtan (35.6km) to improve the metropolitan transportation system in the southwestern metropolitan area and undertook the construction of private-invested GTX-A (Woonjeong-Samseong, 42.7km) project to mitigate the long-distance commuting burden of residents in Goyang and Paju.

[Expansion of Metropolitan Rail Networks]



Reduce Environmental Pollution by Expanding Electric Railways

To provide low carbon, eco-friendly transportation service, KR is actively constructing electric railways. Electric railway projects for the Gyeongjeon Line (Jinju-Gwangyang) and Janghang Line (Shinchang-Daeya) began working design after the preliminary feasibility study. The Jinju-Gwangyang (51.5km) section, the only non-electric track of the Gyeongjeon Line connecting Yeongnam and Honam regions, will become electric railway by 2021, which will reduce logistics costs and shorten transportation time between two regions. Upon the completion of the Shinchang-Daeya (118.6km) electric train project in 2022, the Seohae Line will become fully electric railways. KR intends to reduce air pollutants and increase train operation speed and transport capacity by completing Weonju-Jecheon electric double-track, Icheon-Chungju electric single-track, and Dodam-Yeongcheon electric double-track construction projects.

▪ Electrification - Expansion of Regional Rail Network

Classification	2016	2017	2018
Electrification rate*	0.726	0.734	183.1
Expansion of regional rail network	168.9 km	176.0 km	km*

* Electrification rate=Electrified railway distance [km]/total railway distance [km]

* Our electrification rate has outperformed advanced countries. Data in 2018 was excluded as it didn't include in the management evaluation indices.



Expand Global Business

KR is strategically trying to enter the overseas markets based on the experience and capability accumulated while executing the railway construction and facility management projects in Korea. Since the consulting project for the high-speed railway in China in 2005, KR had received 61 railway projects in 18 countries as of 2018.

Enhance Overseas Expansion

Establish Overseas Business Strategic Plan to Secure Future Growth Engines

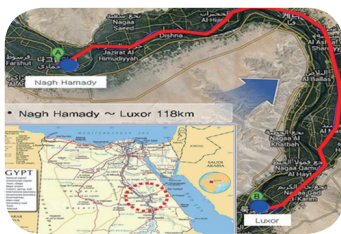
With the shift of overseas business strategy from directly winning new orders to making joint inroads with SMEs, KR is focusing on developing new projects and joint participation in bidding for medium and large-scale projects. To this end, KR has strived to build networks for strengthen order competitiveness and promote strategic order-receiving activities by forming a consortium with domestic and local partners. As a result, sales from overseas business driven by collaboration with SMEs reached KRW 67.52 billion in 2018.

Strategy for Overseas Business

Strategic goal	Create jobs by exporting railway infrastructure and pursue sustainable growth through collaboration		
Obstacles	Sluggish domestic railway market and difficulties in global business due to intensive competition		
Roadmap	By 2019 Expand new markets and collaboration	2020 ~ 2022 Build systems and upgrade competence	By 2025 Evolve into a global railway company
Major tasks	<ul style="list-style-type: none"> Promote large-scale overseas projects Expand joint entrance with private companies 	<ul style="list-style-type: none"> Enhance overseas business capability Recruit professional manpower at home and abroad 	<ul style="list-style-type: none"> Enter advanced railway markets Create a brand for overseas business

▪ Railway Project in Egypt

Period	Jul. 2018~Mar. 2022 (45 months)
Expenditure	Around KRW 4 billion (KRW 0.32 billion for KR)
Consortium	KR, ARTech, ACE(current)



Nagh Hammady -Luxor railroad map in Egypt

Lay a Foundation to Enter the Middle East and Africa Regions

KR received the order for consulting service for Nagh Hammady-Luxor railway signal modernization project sized KRW 4.0 billion in June 2018 and began basic design and bidding support in July. This project aims to extend the railway to 118km and modernize the signal system in 16 stations to increase the railway transport capacity in Egypt. KR worked with a domestic SME and expects the project will expand the sales channel in the overseas railway market and create quality jobs. The order is the first railway project in Egypt and will be the bridgehead for Korean SMEs in the railway industry to enter the Middle East and North African markets.

[Process for Winning Railway Project in Egypt]



Successfully Complete the First Project in Bangladesh

KR completed the first railway project in Bangladesh, Chinki Astana - Chittagong railway signal system modernization project sized KRW 2.2 billion, in July 2018. This project aims to modernize the signal system at 11 stations from existing electric interlocking devices to electronic ones for the purpose of increasing transportation volume through major railways (about 70km) in the eastern area of Bangladesh. KR executed this project jointly with SMEs and Seoul Metro. Beginning with the design and construction audit in 2014, it took 54 months to complete the project. Based on the experience, KR plans to expand the entry to the railway business in the South Asian region, which is undergoing rapid development, and contribute to the growth of Korean SMEs and creation of quality jobs.

Implement the Government's New Southern Policy by Focusing on Indonesian Market with Growth Potential

KR first participated in bidding the PPP (Public-Private Partnership) railway projects such as Jakarta LRT project and Makassar~Pare Pare railway construction project in Indonesia. We promoted excellent Korean railway technologies, shared our railway know-how accumulated over 120 years, and proposed joint entry to the railway business in third countries at the IIW* (Indonesia Infrastructure Week). Moreover, KR signed an MOU with Lotte and a local company for the development of Manggarai Station Commercial District and generated LRT 3-Step TOD (Transportation Oriented Development) Strategy. Indonesia which demonstrates the world's fourth population and high growth potential in railway market will be the best partner for the Korean Government's New Southern Policy.

* IIW (Indonesia Infrastructure Week): Indonesia's largest construction industrial exhibit held in Jakarta Expo each year since 2013 to introduce and promote Indonesia's infrastructure development



PR booth at the IIW
(Indonesia Infrastructure Week)



Participation in the GICC

Strategic Order-Receiving Activities to Develop New Markets

KR intends to expand its presence in the global railway markets by building network with local ordering organizations and partnering with leading local companies. Our current activities include developing new markets in South Asia including Sri Lanka, expanding Southeast Asian markets based on the bidding for consulting service for light railway in Manila, Philippines, entering the CIS countries through the bidding for audit service of railway upgrading in Azerbaijan, and exploring European markets through the participation in high-speed train in Turkey. KR is committed to developing new overseas railway markets jointly with domestic SMEs.

[Strategic Order-Receiving Activities by Country]

	<p>Expand South Asian market (Sri Lanka)</p>	<ul style="list-style-type: none"> Enhance relationship with ordering companies by operating railway schools (Aug. 2018) Establish cooperative relationship with the Ministry of Traffic & Aviation of Sri Lanka through GICC* (Sep. 2018) → Win an order for engineering service for Candy suburban railway in Sri Lanka (KRW 6 billion) <p>* GICC (Global Infrastructure Cooperation Conference): International conference for governments, ordering organizations, and financial firms</p>
	<p>Expand Southeast Asian market (Philippines)</p>	<ul style="list-style-type: none"> 정부 고위급 수주지원단과 합동 수주지원 활동(2018.7) → 필리핀 마닐라 경전철 건설링 용역 입찰(80억원) <p>* 국토부, 공단, 인천공항공사, 한국철도연구원, 한국지능형교통체계 협회</p>
	<p>Explore CIS market</p>	<ul style="list-style-type: none"> Strategic collaboration with European companies in the CIS region (Oct. 2018) → Win an order for railway improvement supervision in the Azerbaijani Public (KRW 8 billion) <p>* Build collaborative relationship with Temelsu (Turkey) to explore the CIS market</p>
	<p>Explore European market (Turkey)</p>	<ul style="list-style-type: none"> Promote entrance into Turkey market to build a bridgehead for European market → Consultation for participating HSR project in Turkey (Oct. 2018) <p>* Collaboration with the Ministry of Transport and TCDD of Turkey</p>

Expand Global Business



Youth internship program for overseas infrastructure



Training in Korea for Indonesian railway officials



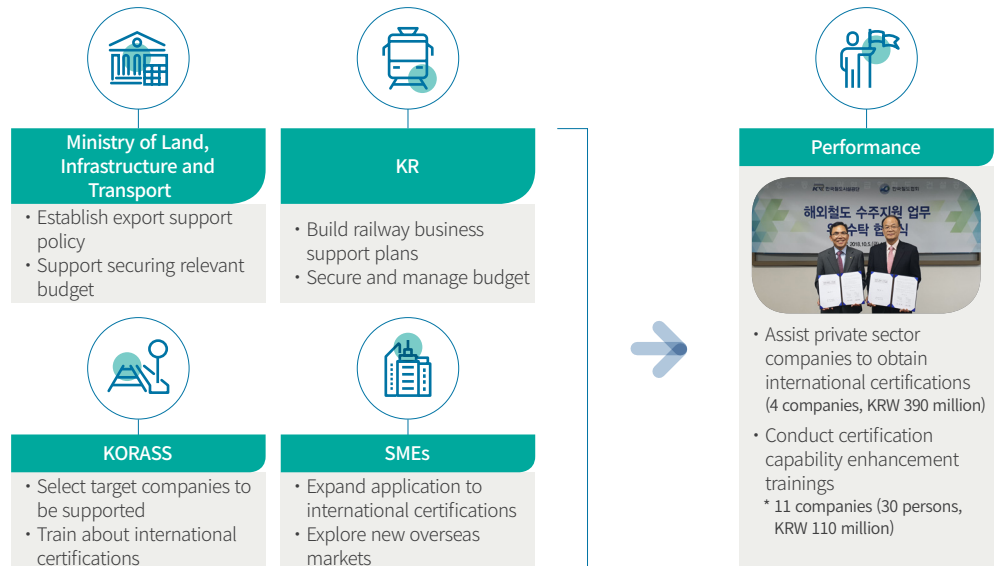
Cooperation forum for overseas construction projects

Technology Interchange and Cooperation

Build Sustainable Export Ecosystem through Collaboration with Relevant Agencies

To enhance order capability in the global railway market and pursue shared growth with SMEs, KR is building a sustainable ecosystem for export with relevant organization. In 2018, we introduced the railway export support system and signed a business agreement with the Korea Railway Association to proactively support SMEs' overseas expansion including the obtaining of international certifications. Based on those, KR provides SMEs with systematic supports for training on certification, consulting, market survey, and total solutions for export. Moreover, KR signed an MOU with Korea Land and Housing Corporation, K-water, and Korea Expressway Corporation and introduced the youth internship for overseas infrastructure. A total of 26 interns to be dispatched to 13 countries were hired through this program.

[Introduction of Railway Export Support System through Collaboration among the Government, KR, and KORASS]



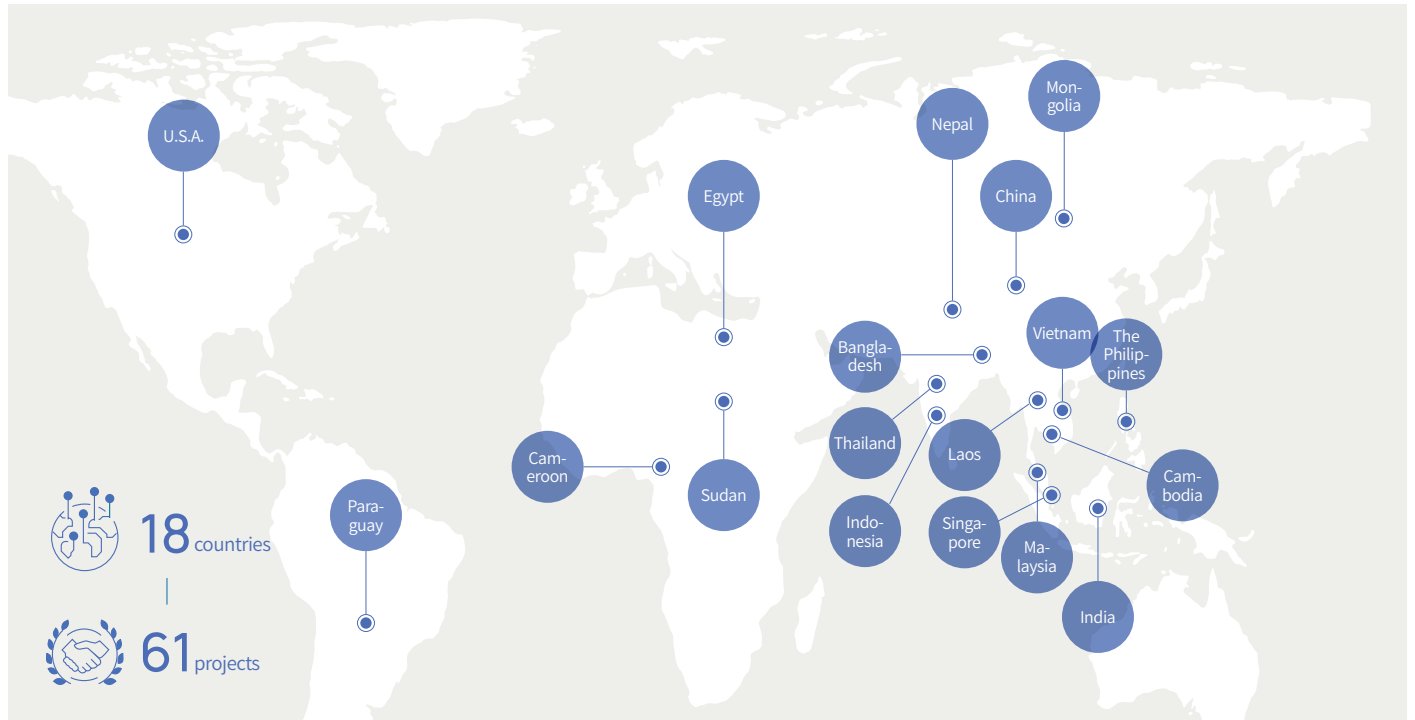
Secure Strategic Order Basis by Specializing Core Competency

To respond to increasingly intensive global railway market, KR is proactive in conducting language education, utilizing professionals, and introducing core technology education programs to explore new markets in Southeast Asia and enhance order-receiving capabilities. We also held the "Railway School" in Sri Lanka, Egypt, and Indonesia to jointly conduct the technology training program with KOTRA to expand the technology interchange in the public sector and the overseas marketing. Moreover, a training program was implemented by inviting high-level public officials from Indonesia and six countries in Latin America to transfer Korea's advanced railway technologies. More diverse programs will be developed to enhance the expertise needed to win orders.

Strengthen Technology Interchange to Build the EARC

With the aim of building the EARC (East Asian Railway Network), KR has been discussing with high-level public officials in various countries and holding forums. We held the "Forum to Enter Overseas Construction Markets Using Smart Technologies" participated by 47 organizations including the MOLIT, public organizations and private companies. Moreover, KR formed the task force to build the EARC and signed an MOU with Mongolia and Russia, which were the two countries in the Eurasian continent, for interchange and cooperation of railway technologies. KR intends to hold more meetings for cooperation in interchanging railway technologies to build the railway community in east Asia.

Performances in Overseas Business



18 countries
 61 projects

China

- 2005 Construction supervision on Su-Ching line
- 2006 Construction process supervision on Wu-Guang line
- 2008 Engineering consulting on Ha-Da line
- 2010 Engineering consulting on Xi-Bao line
- Engineering consulting on Tian-Qin line
- Engineering consulting on Pan-Xin line
- Engineering consulting on Ha-Qi line
- Technical consulting on Lan-Xing line (Xingang section)
- Technical consulting on Lan-Xing line (Gamcheong section)
- Construction supervision on Chang-Kun line (Guizhou section)
- Construction supervision on Chang-Kun line (Yunnan section)
- 2012 Construction supervision on Zheng-Xu line
- 2014 Construction supervision on Bei-Shen line (Liaoning section)
- 2015 Construction supervision on Bei-Shen line (Beijing section 5)
- Construction supervision on Shan-Hef-Hang line (Anhui-Zhejiang section)
- Construction supervision on Zheng-Nam line (Chongqing section)

Thailand

- 2017 Pre-F/S for east-west railway in the northern area

Bangladesh

- 2013 Consulting on signal modernization in eastern area
- 2015 Construction supervision on Akhaura-Laksam line
- 2016 Supervision on Akhaura-Laksam line
- 2018 Additional consulting on signal modernization in eastern area (contract revision)

Vietnam - Laos

- 2012 Supervision on railway improvement
- 2015 Laos-Vietnam connection F/S PM service

Malaysia - Singapore

- 2012 Establishment of MRT communication system PMC
- 2015 Advancement of MRT communication system PMC

Cambodia

- 2011 PMC for railway master plan
- 2012 Invitation of railway officers for training

Sudan

- 2014 Invitation of railway officers for training

Paraguay

- 2011 PMC for railway construction feasibility study
- 2014 F/S for intercity railway construction
- 2015 Consultation on bidding the main contract of light rail project

Indonesia

- 2011 PMC for Jabotabek master plan
- 2012 Invitation of railway officers for training
- 2014 Invitation of railway officers for training
- 2015 F/S for HSR phase 2
- 2016 Pre-F/S for Jakarta LRT phase 2
- Construction of Jakarta LRT1 system
- 2017 Pre-F/S for Jakarta-Surabaya line
- 2018 Invitation of senior railway officers for training
- Establishment of the TOD strategy for Jakarta LRT phase 3

Mongolia

- 2013 Invitation of railway officers for training
- 2015 Invitation of railway officers for training

The Philippines

- 2014 Civil engineering supervision on Manila LRT-2 line

U.S.A.

- 2013 Consultation on HSR in California

India

- 2012 Consulting on working design for HSR
- 2015 F/S for improving Delhi-Mumbai line
- PM contract for Lucknow Metro
- 2016 F/S for New Delhi Station modernization

Nepal

- 2011 F/S for Kathmandu city railway
- Working design for electric railway phase 1
- 2012 Working design for electric railway section 2-1
- Working design for electric railway section 2-2
- 2014 Invitation of railway officers for training
- 2015 Invitation of railway officers for training
- 2016 Working design for electric railway section 4-1
- Working design for electric railway section 4-2

Egypt

- 2018 Technical service for Nagahamada-Luxor line signal modernization

Cameroon

- 2009 Consulting on building the railway master plan
- 2011 F/S for railway construction

Develop Railway Technologies



* Global Technology Level

The level of Korea's railway technology compared with the highest global level (Technology Level Report of the Korea Agency for Infrastructure Technology Advancement)

(Unit : points)

Comparison of the railway technology in 2018		
Global	KR	Comparison
100.0	82.6	Vs. Germany



Opening of Comprehensive Railway Test Track (15 March 2019)

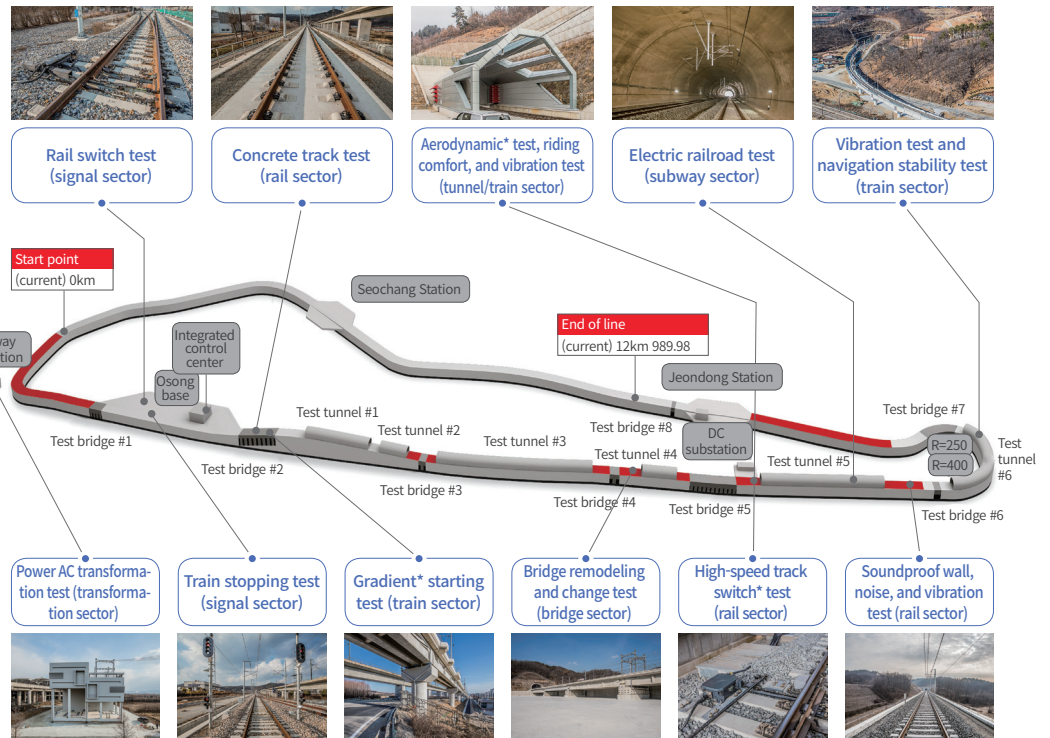
KR is implementing the core railway technology development plan based on the Fourth Industrial Revolution. With the goal of “developing safe and comfortable railway technologies to fulfill social values,” we set up four strategies of “strengthening railway competitiveness,” “improving social value of railway,” “leading the Fourth Industrial Revolution technologies,” and “pursuing shared growth” and 12 strategic tasks. KR is currently focusing on implementing Hi-Five+, safety and environmental technology development, Fourth Industrial technologies such as IoT* and ICT*, and technical support for shared growth and has the goal of achieving 95% of global technology level* in 2025.

Secure Railway Technology Competitiveness

Opening of Comprehensive Railway Test Line for Self-Sufficiency of Railway Technology

On March 2019, KR completed the construction of Korea's first comprehensive railway test line to test trains, railway devices, systems, and new technologies. The 12.990 km-long core infrastructure railway testing between Jeondong-myeon in Sejong City and Osong-eup in Cheongju City along Seoul-Busan KTX can test 447 types in 198 subjects including train, track, bridge, system, noise, and aerodynamics. It enables the efficient field demonstration of new railway technologies and systematic verification of new technologies to minimize railway accidents or failures and greatly improve the railway technical competitiveness in Korea.

[Test Items of Comprehensive Railway Test Line]



Summary of the Comprehensive Railway Test Line

- Total length: **12.990km**
- Maximum speed: **250km/h**
- Major facilities:
 - 9bridges(1.5km)
 - 6tunnels(4.2km)
 - Earthwork(7.3km)
 - Track(16.075km)
- Test items:
 - 198items
 - 447kinds

* Aerodynamic: Interactive power in accordance with relative motion between an object and air
 * Gradient: Slope of rail
 * Rail switch: Facility on the rail that moves train to another rail

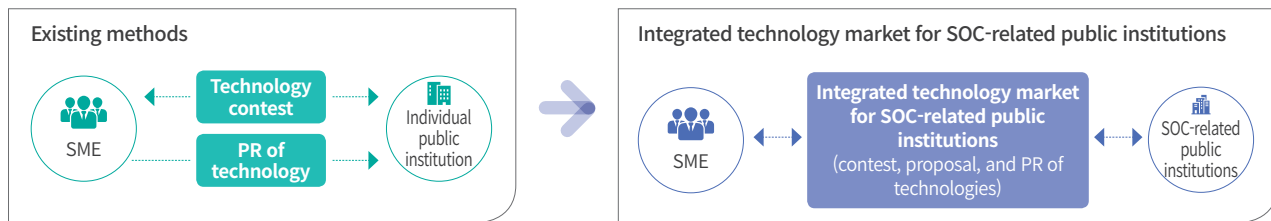
Develop Core Technologies through Collaboration with SMEs

KR created the Integrated Technology Market for SOC Public Institutions to support commercialization and sales channel for innovative technologies of SMEs in SOC. Unlike other platforms, KR's platform provides one-stop support from the technology development stage to purchase. The SMEs can receive the information on the support system and the new technology contest plan, propose the technology R&D to public institutions, and promote their capabilities. KR intends to use the integrated technology market to support the growth of SMEs by resolving the entry barrier of technology development and localizing various railway parts such as smart power quality improvement system.



Agreement ceremony for the SOC integrated technology market

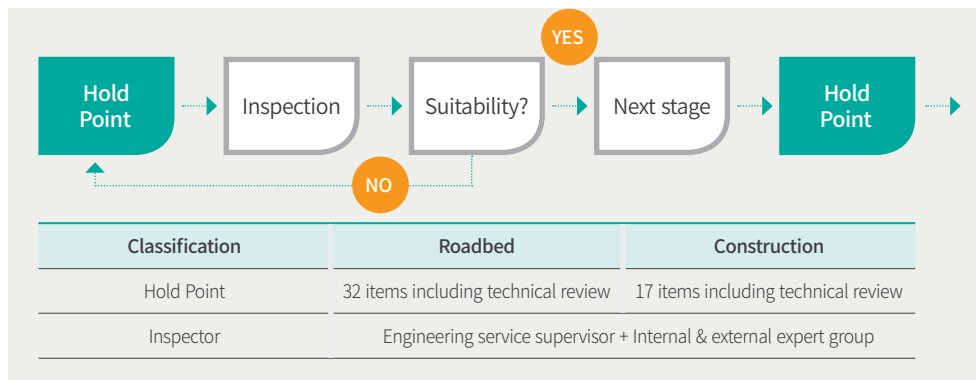
[Operation of the Integrated Technology Market]



Internalize Railway Facility Design

KR strives to improve the processes from the railway facility design to construction to secure the best quality railway network. We instituted the Hold Point scheme to set the inspection point for technical review in each area so that internal and external expert group can inspect and approve using a checklist before proceeding to the next stage. Moreover, the group review by experts at each Hold Point improves the design quality and accumulates the know-how of design service supervisor. KR intends to expand this scheme to improve the administrative procedure of the design and enhance the design know-how and expertise.

[Hold Point Process]



First Real-Time Disclosure of the Entire Compensation Process among Public Institutions

KR developed KR-Land Compensation System based on GIS* to disclose the entire process of compensating for land to owners through the Internet and mobile. In the past, the people had to visit KR to read the land compensation information in documents. Anyone now can check whether their land is included, the progress of compensation, checking compensation amount and file an objection, and file complaints. People can also check the history of the transfer of land registration. As a result, KR expects to save about 54,979 hours and KRW 1.8 billion in cost for the railway construction process from the approval of the project to the acquisition of properties. KR intends to continue to improve the efficiency and quality of public services by applying innovative technologies.

*GIS (Geographic Information System) : A system that inputs, informationizes, and treats geographic information and then, provides information tailored to demand of users

Develop Railway Technologies



Lead the Fourth Industrial Revolution

Implement the Hi-Five+, Five Advanced Innovative Technologies

KR is carrying out the Hi-Five+ program, an upgraded version of Hi-Five*, to improve the competitiveness of the railway industry. The Hi-Five+ is the advancement program to sophisticate five innovative technologies by commercializing and standardizing three core technologies developed by the Hi-Five program and developing two new technologies. The KR ECS*, one of Hi-Five technologies, was tested for the speed up to 200-400km/h and applied to Honam and capital region KTX, and Weonju-Gangneung KTX. The KR LAS* was applied to Suseo KTX and Pyeongchang Olympics Support project (Incheon International Airport - Gangneung) and received a patent in August 2018. KR intends to continue to lead the future railway industry by commercializing and advancing innovative technologies.

* Hi-Five : High Five Innovative Valuable Engineering

* KR ECS(KR Express Catenary System) : A system that supplies stable electricity to trains

* KR LAS(KR Line Allocation System) : A system that allocates the tracks by adjusting the train operation count, sequence, and time

[Hi-Five+, Five Advanced Innovative Technologies]



* IoT (Internet of Things) : The technology or environment of having objects exchanging data through the Internet with sensors attached to the objects

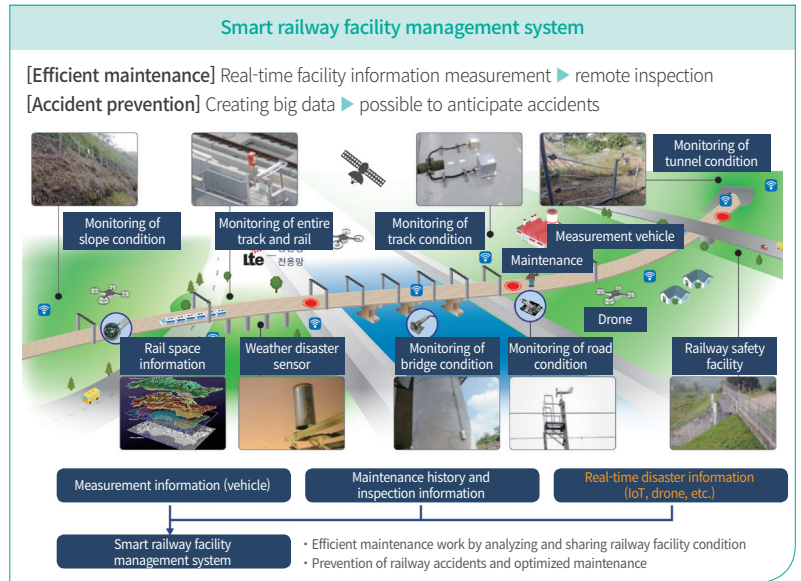
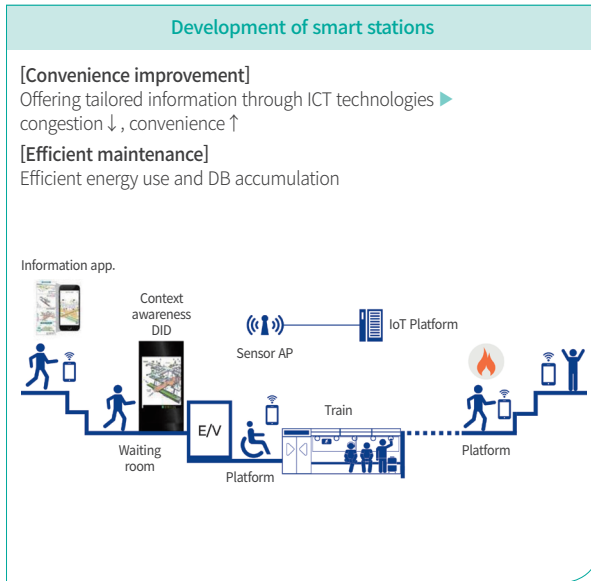
* ICT (Information and Communication Technologies) : An overall term for the information technology and the communication technology

* AI (Artificial Intelligence): An advanced computer program that mimics human intelligence using the logical method that thinks, learns, and decides like humans

Create Demand for Innovative Growth by Leading the Fourth Industrial Revolution Technologies

KR is improving social values by increasing the convenience of railway users and preventing accidents through the R&D and commercialization of the Fourth Industrial Revolution technologies. We plan to develop IoT*-based smart railway facility management system to collect, analyze, and accumulate the data to enable the remote monitoring of railway facilities and use them to forecast and prevent accident and maintain facilities efficiently. Moreover, KR intends to provide customized information, improve the atmospheric environment, and reduce energy by developing the smart station based on ICT* and AI*.

[Smart Station & Smart Railway Facility Management System]



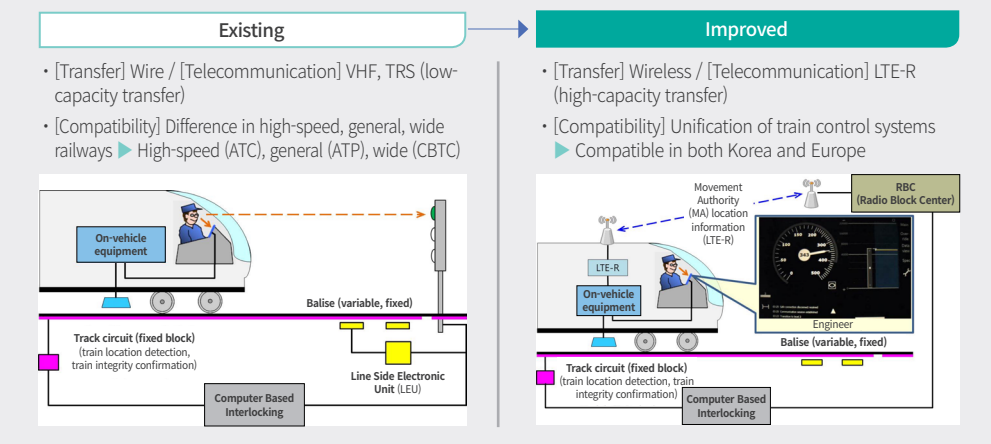
World's First Development of the Korean Train Control System (KTCS-2)

KR collaborated with 15 organizations in the industry, academia, and research and developed KTCS-2* to overcome the constrained integration of operation due to the different train control system in each route and time. The system was tested in the 180km section between Iksan and Yeosu of Jeolla Line in 2018. KR plans to carry out a pilot test in a commercial line until 2021 to stabilize the system, verify the performance, and attain operation know-how. It will be applied to entire national rail network by 2032. It is compatible with ETCS* and can substitute imports, increase the transport capacity by 16%, and improve operational stability. It will also contribute to creating new jobs in the domestic railway business.

* KTCS-2 (Korean Radio-based Train Control System) : A train control system that is compatible with the international standard and applies the 4G LTE-R optimized for the railway environment to control high-speed trains operating at the speed of up to 400km/h.

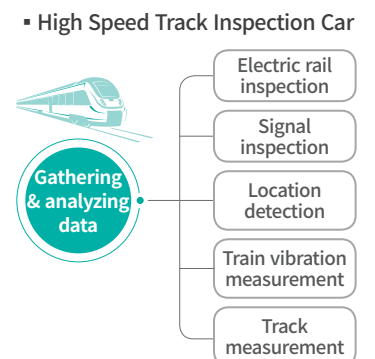
* ETCS (European Train Control System) : The European train control system developed in 1991 by the International Union of Railways to be standard system applied to countries in Europe

Effects from the KTCS-2



Efficient Maintenance with Cutting-Edge Equipment and System

KR manages life cycle of advanced facilities and identifies problems in facility operation in advance based on big data analysis by building a comprehensive railway facility information pilot system. Drone is utilized for the management of protective districts to conduct safer field survey. We are also introducing the cutting-edge repair equipment such as track inspection car, high-speed inspection car, remote monitoring system, and small stemming system for inspection automation and repair mechanization. Such cutting-edge equipment and system are helpful in improving the durability of railway facilities and timely maintenance.



Improve Railway Asset Values



KR has been establishing a clear standard and system to operate railway assets efficiently. Moreover, we strive to promote local economy, contribute to creating quality jobs, and balancing the profitability and public interest by utilizing idle lands for resident-friendly projects.

Efficient Operation of Railway Assets

Expand the Authority as the Railway Facility Manager

KR is improving its financial soundness by recovering investment timely through railway facility usage fees and reinvesting its railway facility to complete the virtuous cycle of investing. In December 2018, we acquired assets of 28 completed projects and added the general railway facility management rights (KRW 2.4694 trillion) to secure KRW 609.7 billion for debt redemption. Moreover, KR developed the track and station facility fee calculation system following the restructuring of the unit usage fee to manage the national property history more efficiently. KR intends to carry out its role as the railway facility manager faithfully by utilizing railway facilities and assets with consideration to profitability and efficiency.



Excellent institution in state-owned asset management

Efficient Management of National Properties

KR established the system to manage and utilize the national properties consistently. The Asset Operation Group was launched to strengthen the cycle of “asset utilization, development, and private-invested station.” Under the vision of “Increasing Profitability and Social Value through Optimized Rail Asset Utilization,” the “2022 Mid to Long-term Asset Operation Strategy” was established. Especially, to increase revenue from asset operation, KR established a mid to long-term asset management plan (544 plots for KRW 35.5 billion) to prepare the order of priority and private contract criteria and conducted fact-finding surveys on uncoupled sections of Donghae Line by utilizing drones. We also collaborated with local governments to identify ways to utilize idle lands including the guidelines for utilization of the unused track in Donghae Nambu Line (Gijang Ilgwang Station-Gyeongju Bujoo Station, 78.8km). These efforts resulted in creating KRW 158.2 billion from leasing assets in 2018 and being selected as the outstanding agency for national property management by the Ministry of Strategy and Finance for the first time among the public institutions.

Lease Revenue in 2018

KRW
158.2 billion
(up 24% YoY)

(Unit : KRW in billions)

2017	2018	Change
128.0	158.2	30.2

Strategy of the 2022 Mid- to Long-term Asset Operation Group

Vision	Improve profitability and social value by optimizing railway asset utilization				
Goal (2022)	Revenue from assets KRW 330 billion a year	Asset development SPC 50 units	Creation of social jobs 28,000 persons		
Strategic direction and tasks	Expand revenue from asset operation	Diversify development projects	Realize social value	Reorganize asset operation base	Enhance organization capability and professionalism
	<ul style="list-style-type: none"> Increase gains on usage fee Increase gains on occupation fee Expand usage of space under bridges Expand usage of non-constructed Donghae Line Efforts for collecting receivables 	<ul style="list-style-type: none"> Expand station area development Develop transit centers at complex stations Expand development of existing railway facilities Enhance management of private stations to be reverted to the government Connect development with railway construction 	<ul style="list-style-type: none"> Utilize idle lands of local governments Create social jobs Support social economic enterprises Organize a council for asset operation Strengthen cooperation with KORAIL 	<ul style="list-style-type: none"> Enhance asset management authority Strengthen acquisition and disposal of state-owned assets Preemptively manage idle lands Prepare performance-based compensation system Improve process systems 	<ul style="list-style-type: none"> Expand development by SPCs Establish subsidiaries Expand asset operation organization Prepare working manuals Cultivate talents

[Active Asset Utilization Based on Regional Characteristic and Creative Ideas]

Reuse of waste facilities	<ul style="list-style-type: none"> • Maegok waste station of Jungang Line → Camping and experience ground (KRW 11 million) • Osan waste tunnel → Wine Byeolbit tunnel (KRW 18 million) • Milyang waste tunnel → Twin tunnel and tourism attraction (KRW 36 million) • Pyeongchan Olympics support facilities → Tourism platform and parking lot (KRW 60 million)
Space under bridge and on railway	<ul style="list-style-type: none"> • Space under bridge at Chuncheon station → Container-type art creation space • On-deck parking lot at Busan station → Attraction of solar power generation pilot project • Underground section in Gangneung → Flea market on Monday and Tuesday (KRW 70 million)
Short-term leasing	<ul style="list-style-type: none"> • Daejeon station → Attraction of short-term ads (KRW 220 million) • Gyeonggang Line/Poseung ~ Pyeongtaek Line → Storage yard for construction (KRW 65 million) • Equipment vehicle → Revenue from leasing for supporting construction and maintenance (KRW 3.3 billion)
Lands adjacent to railway	<ul style="list-style-type: none"> • Locked lands around railway → Soundproof wall equipped with solar power facility (KRW 10 million) • Track side area of Noryangjin station → Ad board (KRW 14 million) • Rail protection district → Site office and storage yard (KRW 83 million)
Prevention of fee leakage	<ul style="list-style-type: none"> • Additional fee collection after joint site inspection with common carriers (KRW 67 million) • Ad status study with KORAIL (KRW 60 million) • New revenue after factual survey of state-owned assets (KRW 371 million)

Secure New Growth Engines by Developing Railway Assets

Develop Railway Facility Assets

KR promotes rapid asset development projects through collaboration with stakeholders. The operation of a parking lot (D district) at Hongik University Station and Gwangmyeong Station initiated in 2018 for convenience of local people. As for the Suseo Station development, we formed a council participated by the local government and people to hold workshops with residents, briefing, and compensation council meetings to discuss the ways to share the profits from the development. This effort helped us to resolve conflicts with landowners and residents. KR's asset development based on participation, collaboration, and sharing created 3,571 jobs in addition to the promotion of local economy and urban regeneration.



Transfer parking lot D district at Gwangmyeong Station

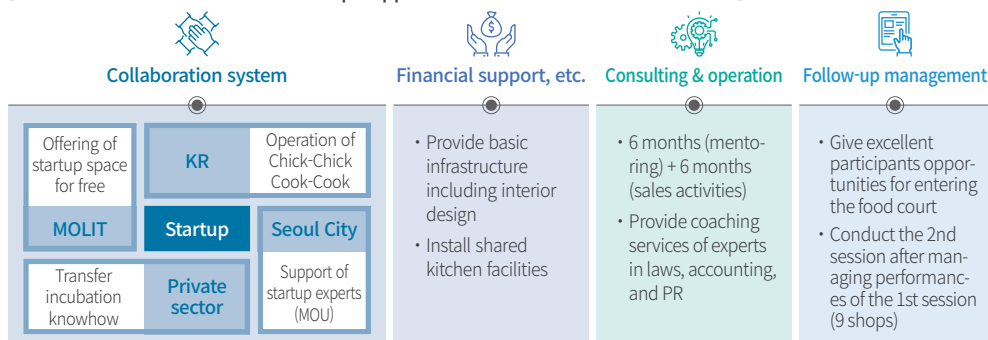
Stabilize the Operation of Returned Private-Invested Stations

KR has implemented a plan for stable operation of existing private-invested Seoul Station and Yeongdeungpo Station which were returned to the government after the expiration of occupation period (30 years). Two-year clearance period was given to leaseholders and workforce was dispatched to those stations for facility supervision. We also held an idea contest to utilize the commercial section (1,055 ㎡) in the Seoul Station. A total of 131 ideas were submitted and excellent ideas were adopted to the project. For example, KR opened the first Chick-Chick Cook-Cook, youth food business startup support center, in December 2018, through which 92 jobs were created. In 2018, operating revenue of KRW 28.4 billion, up KRW 15.5 billion year-on-year, was created from operating private-invested stations.



Opening of the Chick-Chick Cook-Cook

[Promotion of the Youth Food Startup Support Center “Chick-Chick Cook-Cook”]





PROMISE 2

Creation of Social Value

Management Approach

To improve the social values of railway, KR has organized the Quality Job Creation Promotion Unit (T/F), created jobs based on 5-year roadmap, and conducted social contribution activities for local communities. Moreover, we strive to prevent corruption risk and establish fair contracting through collaborative with suppliers and disperse the protection of human rights of employees, citizens, and suppliers to strengthen the public interest of railway.

Major Performance



In This Section

- 01_ Job Creation
- 02_ Social Contribution
- 03_ Shared Growth
- 04_ Enhancement of Human Rights Management





Job Creation



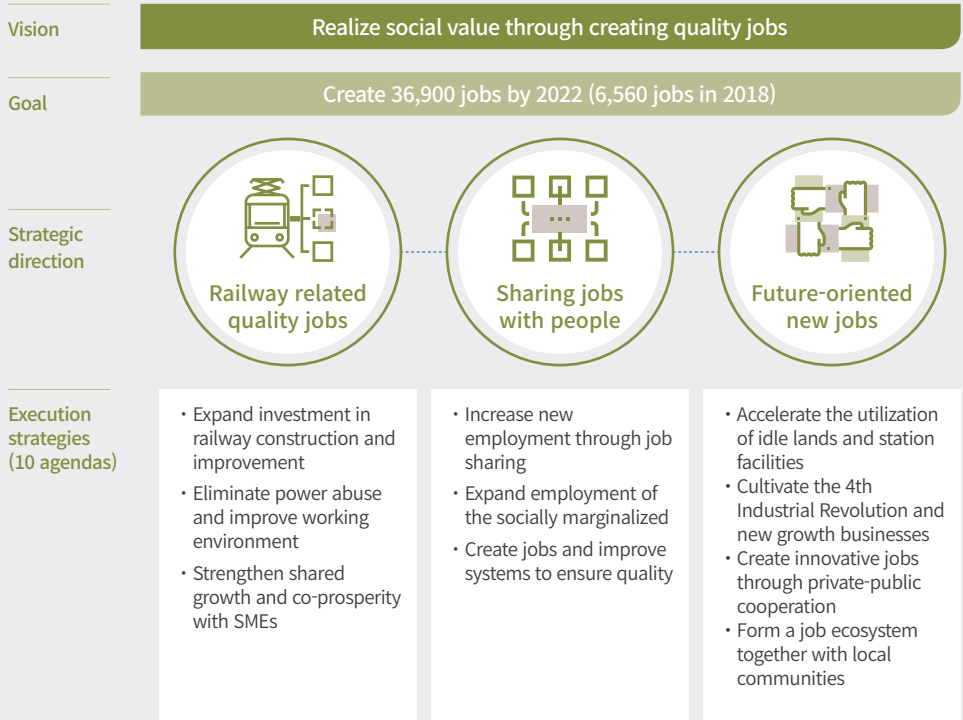
KR organized the Quality Job Creation Promotion Unit (T/F) in May 2018 and established the Five-Year (2018-2022) Roadmap for Job Creation to carry out the enterprise-wide efforts with the goal of creating 37,000 jobs in public and private sectors by 2022.

Expand the Foundation for Job Creation to Realize Sustainable Social Values

Implementation Strategy for Sustainable Job Creation

KR is carrying out the quality job creation strategy to revitalize the stagnant national economy and restore the virtuous cycle of Growth - Job - Distribution. We established three strategic directions of “quality jobs led by railway,” shared jobs with people,” and “new jobs for the future” under the vision of “fulfillment of social values by creating quality jobs” as the strategy implementation system. As for the detailed measures, KR selected 10 programs such as the expansion of new hiring through job sharing and linked them with KPI for the systematic execution and management of the strategic tasks.

Sustainable Job Creation Scheme



Job Creation



Establish and Operate Job Creation System

KR organized the Quality Job Creation Promotion Unit (T/F) to build an ecosystem for sustainable job creation as part of our commitment to realizing social value that ensure publicness, public interest, and community spirit. We have also continued communication with stakeholders including suppliers and non-regular workers to improve their labor conditions and sought diverse utilization methods of railway facilities. As a result, a total of 6,566 quality jobs, up 10% compared with our target of 5,933 were created in 2018. Going forward, KR will create quality jobs by revamping HR systems and utilizing railway facilities.

Reorganization for Better Job Creation



"Station-G" located in space under the bridge of Gojan Station. Ansan-si



Development of Hongik Univ. Station (Gyeongui Line) as a complex station

Create Quality Jobs for Public Interest

Create "Innovative" Jobs by Supporting Youth Startups

KR has strived to transform idle lands under railway bridges and part of stations into spaces for youth startup. For example, the "Station-G," a platform under a bridge of Gojan Station in Ansan, provides young potential entrepreneurs with offices for free. Moreover, KR opened the Chick-Chick Cook-Cook, a food business startup support center for youths, in the corner of former Seoul Station. The food court offers many benefits such as exemption of the facility usage fee and the public facility management fee to help tenants overcome many difficulties at the beginning. The projects created 1,318 jobs.

Expand Jobs in the Private Sector through Diversification of Asset Development

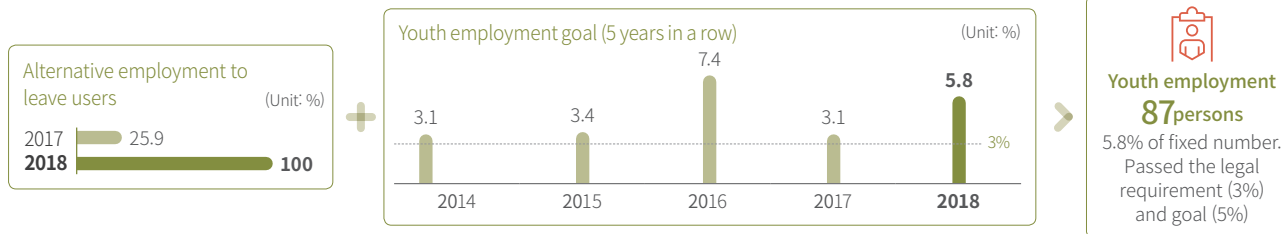
KR has initiated 27 projects such as building complex stations, constructing transfer centers, developing station areas, and installing solar power facilities by utilizing idle railway assets, contributing to creating jobs for local communities. In particular, the Hongik University Station development project included the creation of Book Park, childcare facility, and business startup support center. These facilities are available for free. In 2018, KR was selected as the outstanding agency for national property management by the Ministry of Strategy and Finance for the first time among public institutions in recognition for improving the living environment of residents and creating 3,517 jobs by utilizing idle assets. KR plans to expand the number of asset development projects to 50 by 2020 for more job creation.



Create Jobs in the Public Sector with “Warm-Hearted Companion”

KR leads employment stability and job sharing by restructuring human resources system. We restructured the management of the job quota and status such as job opening and supplementation and advanced notice of leave of absence. As a result, it was able to substitute 100% of 29 vacancy due to leave of absence and expanded new hiring (106 people) through new projects and insourcing of railway safety duties in 2018. Moreover, our goal of youth employment has been achieved for five years in a row despite setting up an aggressive goal. Most of all, we organized a decision-making body for job transition and converted 347 non-regular workers to regular ones through continuous company-wide communication. KR intends to continue to lead in creating sustainable and stable jobs so that more people can share the benefits.

[Achievement of Alternative Employment and Aggressive Employment Goals]



[Additional Employment of 133 Persons beyond Quota]



Create Quality Jobs in the Private Sector by Building an Ecosystem for Innovative Growth

KR is creating jobs in the private sector by localizing core railway technologies through the collaboration of the industry, academia, and research and disclosing the technology standard to the public to expand the opportunity to purchase the products from the private sector. The development of the world’s first LTE-based integrated railway wireless network and train control system are two of the examples. The development is expected to substitute imports worth KRW 1.3 trillion and create 70,000 jobs by 2023.

Support for Matching of Job Seekers and Employers through the Job Portal

KR has created a hotline between job seekers and employers in its KR Job Portal to provide customized jobs. A job seeker can register information such as the type of job, region, and working type in the portal which then searches the job opening pool of KR and its more than 1,000 vendors and sends a text message to notify if it finds the matching job. Moreover, it interfaces to the government-operated websites such as “Korea Job Situation Board” and “Job Center” so that job seekers can access the job information quickly.



Job creation portal on KR’s website

Social Contribution



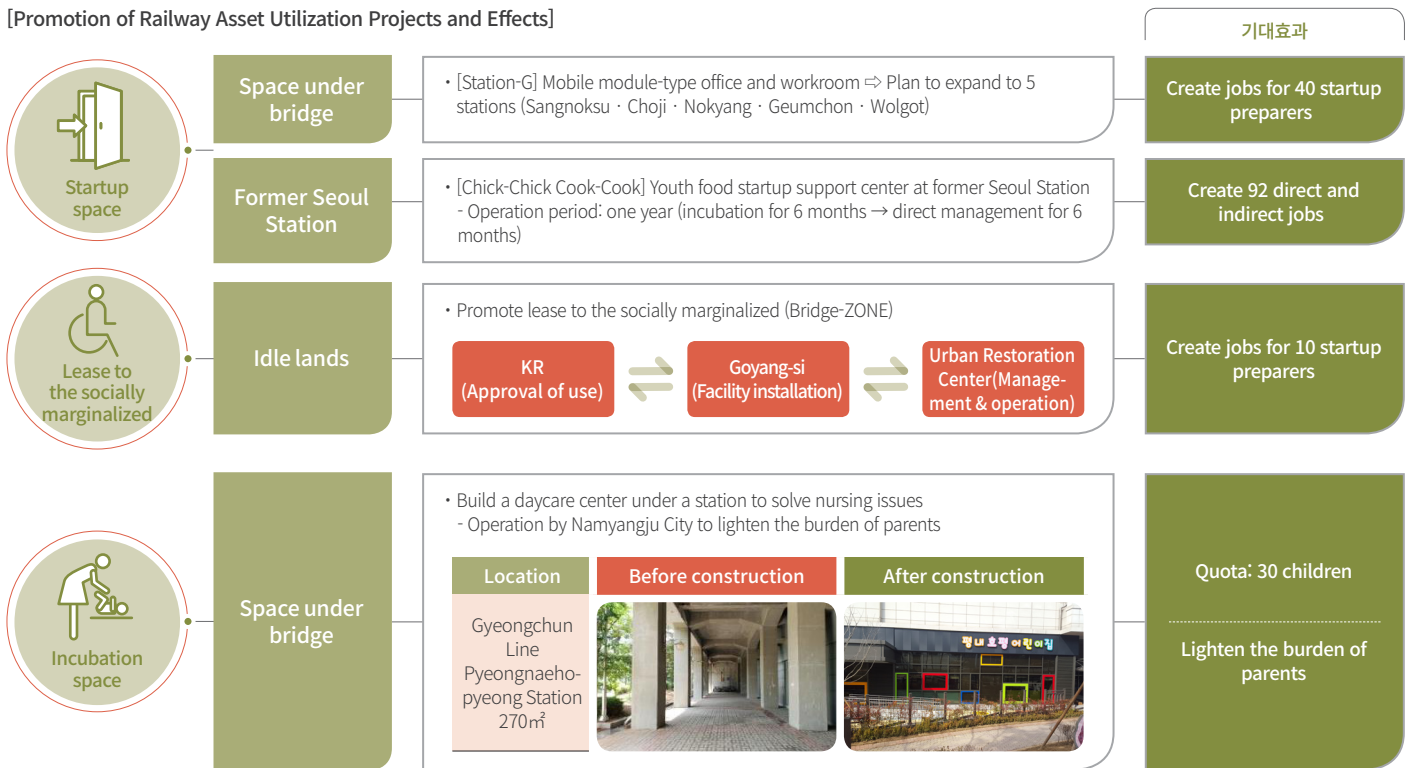
KR strives to support community residents and socially underprivileged by expanding the network with local societies. KR utilizes railway assets to create facilities for self-sufficiency and econ-friendly space to promote the local economy and expands the public values through sharing activities.

Utilize Railway Facilities

Realize Social Values by Utilizing Railway Infrastructure for Public Interest

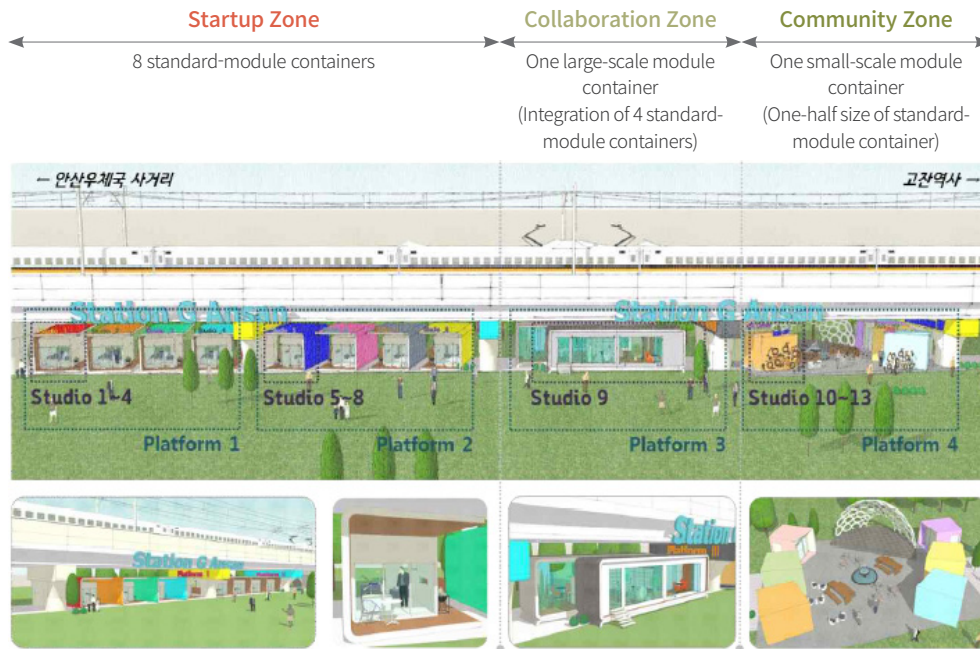
KR strives to go beyond the efficient railway operation by strengthening the public interest of railway assets. In 2018, in collaboration with Namyangju City Hall, KORAIL, private daycare foundations, and Public Workers Solidarity Foundation, we opened a daycare center in the Pyeongnae Hopyeong Station, contributing to easing childcare burden of residents and solving low birth problem. In particular, utilization of idle lands is promoted to support self-sufficiency of the underprivileged and vitalize local economies. In 2018, KR opened the “Bridge-Zone” on idle railway lands in collaboration with the local government to provide self-support spaces such as pop-up stores and flea markets to NGOs, young entrepreneurs, and small businesses. In addition, we selected 9 places, including culture and art platforms, to promote resident-friendly areas. KR will make a concerted effort to solve social problems and improve welfare through creative utilization of the railway infrastructure.

[Promotion of Railway Asset Utilization Projects and Effects]

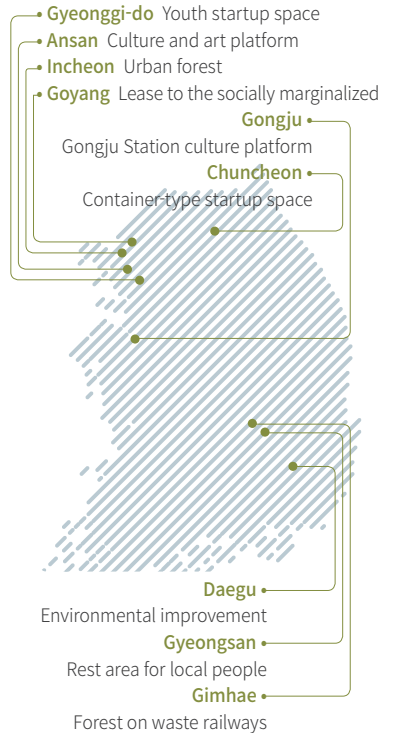




[Facility Arrangement of the Station-G]



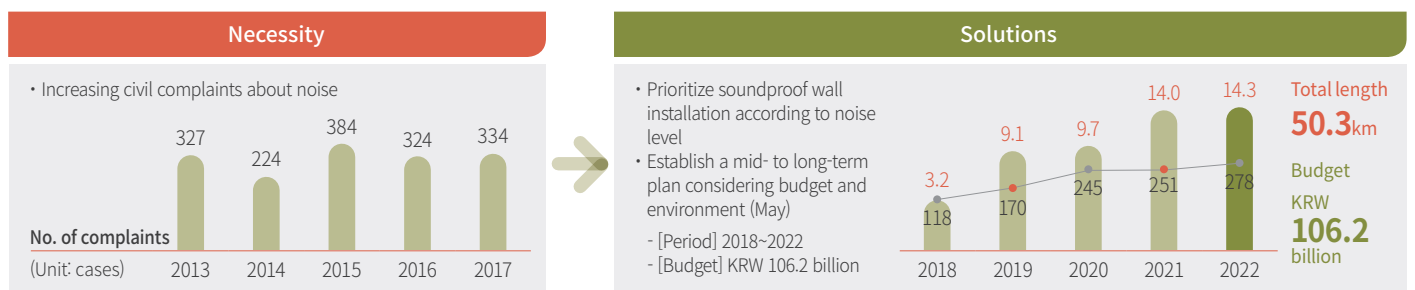
Idle Land Utilization Projects in 2018



Expand Comfortable and Convenient Railway Facilities

KR has been working to improve soundproof and traffic facilities. To solve inconvenience of residents due to noise and vibration, we established a plan to install soundproof facilities by 2022. This plan has been implemented with the priority according to the noise level. Moreover, we expanded the width and height of the underground road below the railway to two lanes and 4m from one lane and 2.5m to prevent accidents and enable large trucks to enter. In addition, KR agreed with the Ministry of Land, Infrastructure and Transport and local governments to install 13 multidimensional crosswalks to prevent crosswalk accidents that occur on an average of 10 cases per year, thereby laying a foundation for project execution through the public notification in December 2018.

[Mid- to Long-term Soundproof Facilities Installation Plan]



[Underpass Expansion]



Social Contribution



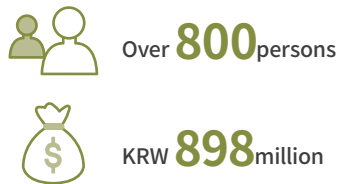
Sharing Activities for Local Communities

Improve Child Welfare through the “KR Hope Project”

Since 2010, KR has organized the “KR Youth Group” consisting of marginalized teenagers living around the head office and five regional offices and performed the “KR Hope Project.” Major programs include granting monthly scholarships, supporting school fee, uniform, and supplies, providing opportunities to experience diverse rail culture, and sharing Kimchi. These efforts resulted in winning the Minister Citation of Health and Welfare in 2018. In addition to physical support, KR strives to practice sharing to create new social values linked to KR’s characteristics and capability.

* KR Youth Group : Organized of 100 elementary, middle school, and high school students from the underprivileged families including 40 from Daejeon and Chungcheong near KR’s head office, and 15 each from the Yeongnam, Gangwon, Honam regions

Expenditure and Beneficiaries of the KR Hope Project (since 2010)



The KR Boy Scouts visiting facility equipment office



Railway school in Sri Lanka

Operate the Railway School in Sri Lanka, Egypt, and Indonesia

KR carries out the local education of public officials in developing countries such as Sri Lanka, Egypt, and Indonesia about railway technology and railway project know-how as part of its CSR* program. Particularly, we held the “Railway School” for 30 public officials in Sri Lanka as a comprehensive technology training program to introduce Korea’s railway technology, PPP*, and light train project know-how. This program was also offered to 30 public officials in Egypt about railway construction practical technology related to Luxor signal modernization project and 30 public officials in Indonesia about railway technology related to the Makassar - Pare Pare railway construction project. Such customized railway technology education has been held in eight countries, including Egypt, in cooperation with KOTRA since 2014. The program was so favorably accepted that 100% of trainees were satisfied with and hoped to participate again. KR’s high-quality education program is contributing to the creation of global social values while training the local railway personnel and strengthening the relationship with customers.

* CSR (Corporate Social Responsibility) : The management technique of fulfilling the legal and ethical responsibilities required by stakeholders in addition to seeking profits

* PPP (Public-Private Partnership) : A scheme in which the private sector is responsible for investment, construction, and maintenance of public infrastructure and realizes the return on investment through the operation. The government provides tax exemption and some financial support.



Visiting energy efficiency improvement service

Energy Efficiency Service

KR executed an energy welfare project jointly with the Daejeon Chapter of Friends of the Earth to educate the local energy underprivileged on increasing energy efficiency and better-consuming energy. Our employees visited more than 20 households in Seonhwa-dong, Jung-gu in Daejeon to clean and replace parts of home appliances such as air conditioner and fan. They also donated the cleaning kit consisting of sodium percarbonate, baking soda, and citric acid, and showed the eco-friendly cleaning methods, helping them to increase cooling efficiency by about 58% and reduce energy by about 15%.



Hold the Foreign Workers' Day Event

As more foreigners work in railway construction sites in Korea, KR held the Foreign Workers' Day event to help them adapt to Korean society. More than 250 foreign workers from Myanmar, Cambodia, Vietnam, Thailand, and Sri Lanka working in 12 railway construction sites participated in the event to experience Korea's traditional culture and athletic programs while building a friendship. The participating foreign workers were given a day off with pay, and the interpreters were assigned to help them enjoy the event better. KR intends to continue to provide support so that the foreign workers adapt to Korea and work better in the construction sites.



Foreign Workers' Day in 2018

Bazaar for Love-Sharing through Communication with Local People

Our employees held the Bazaar for Love-Sharing participated by local welfare agencies (Daejeon Nazareth House and Dong-gu multifunctional center for senior citizens), social enterprises (Han Ultari and Cheonghwa Farm), village enterprises (Barley and Wheat), and sisterhood village (Yeongdong Geumgang Mochi Village) at KR's head office building. The event sold household goods and foods, including more than 3,000 items donated by employees and aroma oil and fruit syrup produced by the welfare facilities and social enterprises. KR has been holding the Bazaar for six years since 2013 and used entire revenue for social contribution fund. Going forward, KR will continue to conduct diverse sharing activities for local communities, fulfilling its social responsibility as a public institution.



Love Sharing bazaar in 2018

Promote Railway Stations and Create Local Landmarks

KR promoted a project to transform railway station into local landmark. For example, we have installed a landmark stone for completion displaying the station name, design concept, and intention in the area where passengers congregate in the railway station to help users to understand the railway station and promote it. The first landmark stone was installed at Magoknaruru Station of Airport Railway in 2018 and this project will be expanded. Moreover, KR began producing the storytelling records that contain the construction drawings, design concept, story of the station and local community, and local cultural and tourist attractions of about 650 railway stations. KR plans to post them on its website and post the QR code in the station so that the visitors to the station can quickly access the story of the station with a mobile device. The project will be an opportunity to promote railway stations and create new added value to the local communities.



Installation of a landmark stone for completion

Win the 2018 Korea Award for Voluntary Service

KR won the "2018 Korea Award for Voluntary Service" in recognition for supports for disaster recovery and love sharing activities. Kim Sang-gyun, the CEO of KR, also received the "Beautiful Korean Award" which was given only to twelve people among the recipients of the former award at the same time. KR has provided briquettes to the underprivileged in Daejeon in every winter (approximately 400,000 pieces up to now) since 2006 and assisted senior citizens living alone by inspecting electrical facilities that may be short-circuited during the rainy season and replacing old lamps with LED lights to help save electricity bills since 2012. In 2018, our employees working on local projects visited the disaster sites to provide the materials and participate in recovery activities when there was an earthquake in Nepal and Indonesia. KR is committed to becoming a warm-hearted public institution that provides practical comfort and support where they are needed.



Completion sign board at Magoknaruru Station

* The Korea Grand Award for Voluntary Service is a renowned award given by the United Nations Volunteers Korea to individuals and organizations that have contributed greatly for national and local community development and actively participated in sharing and voluntary services.



Support for recovery of earthquake damage in Indonesia



Shared Growth

Believing that the growth of SMEs is the basis for our growth, KR has carried out various programs to support SMEs and cooperate with them to establish the culture of shared growth.

Expand the Foundation for Fair Competition and Collaboration

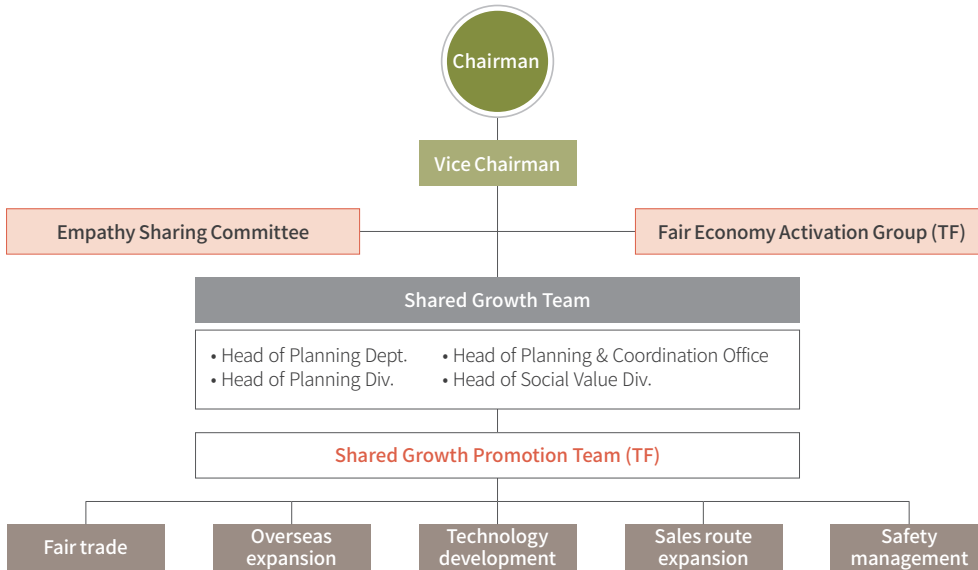
Shared Growth System

Under the vision of “Leading Institute for Shared Growth with SMEs in the Railway Industry” and the CEO’s commitment to win-win management, KR is implementing 3 strategic directions and 27 programs. Moreover, we formed the Shared Growth Promotion Team (T/F) to solidify the foundation for cooperation with SMEs by resolving unfair practice, supporting sales channels, supporting the technical development, financial support, and joint entry to overseas markets. KR intends to develop new growth engines and strengthen order competitiveness in the global railway market through shared growth with SMEs.

Shared Growth Promotion System

Vision	Institution that leads shared growth with SMEs		
Goal	Realize social value through shared growth		
3 strategic directions	Creation of quality jobs for co-prosperity	Activation of fair trade	Expansion of sales routes for jointly developed technologies
6 strategies	① Upgrade shared growth infrastructure and expand communication	③ Realize fair and corruption-free rail business	⑤ Expand the platform for joint overseas business
	② Create jobs for shared growth with SMEs	④ Enhance financial supports and safety control for subcontractors	⑥ Support new technology development and sales route expansion
27 action tasks	1-1. Organize and operate the Shared Growth Promotion Team (TF) 1-2. Organize and operate the Fair Economy Activation Group (TF) 1-3. Internalize the operation of the Empathy Sharing Committee 1-4. 6 items including the activation of Power Abuse Zero Center	3-1. Revamp systems to prevent reoccurrence of corruption and poor construction 3-2. Self-purification through site inspection and instruction 3-3. 5 items including the elimination of unfair practices between KR and suppliers	5-1. Support SMEs’ overseas expansion and continuously promote hope-sharing activities 5-2. 3 items including placing more orders to SMEs
	2-1. Improve contract systems by reflecting social value 2-2. Prepare bidding criteria meeting the government policy 2-3. 4 items including the operation of Shared Growth Fund	4-1. Expand the zero overdue wage system 4-2. Labor cost classification and payment identification system 4-3. 6 items including supports for Green Biz certification of suppliers	6-1. Conditional purchase and private-public technology development projects 6-2. 3 items including supports for technology and sales routes of SMEs

[Organization Dedicated to Shared Growth]



Remove Entry Barriers against SMEs by Rectifying Unfair Practices

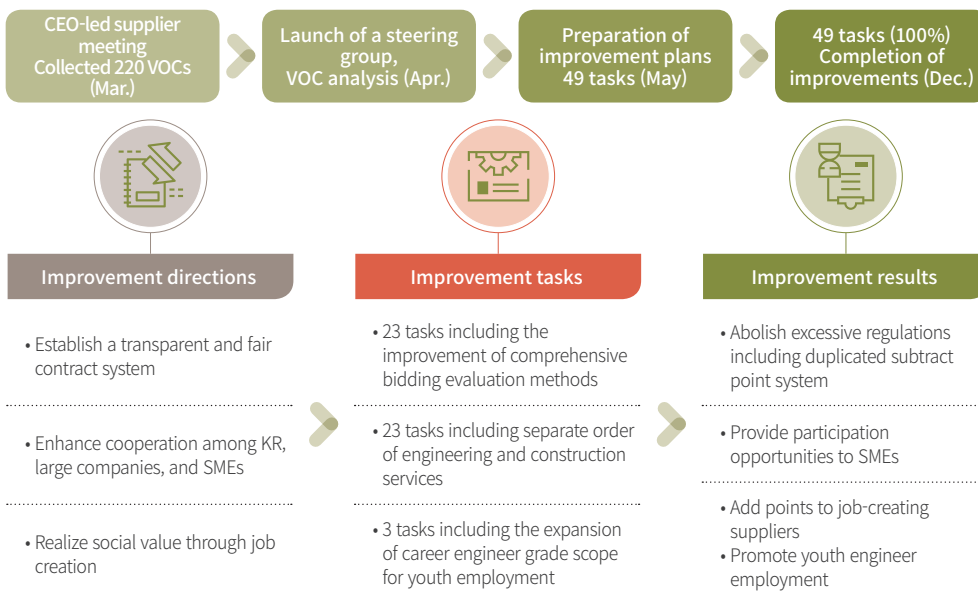
KR held a supplier workshop chaired by the CEO to listen to their voices and collected 220 cases of VOC to implement regulatory reformation such as improvement of the unreasonable contracting system. Afterward, we organized the Fair Economy Vitalization Unit (T/F)* dedicated to regulatory reform. The TF analyzed the collected VOCs, identified three improvement direction and 49 detailed tasks, and completed the improvement of 100% of VOCs. The regulatory reform includes disposition of unfairly disqualified parties in the evaluation of bidder qualification and bidding winner qualification, elimination of duplicate deduction criteria, providing participation opportunities for SMEs, and extra credit for job-creating companies. It is expected to expand the opportunity for SMEs to participate and create more jobs.

* Fair Economy Vitalization Unit : Three subgroups focusing on fair competition, co-prosperity, and social value under the Vice Chairman

▪ Launch of the Fair Economy Activation Promotion Group (Apr. 2018)



[Improvement of Contract System]



▪ Contract system improvement casebook (Jun. 2018)



Sharing of improvement cases by publishing a casebook

Shared Growth

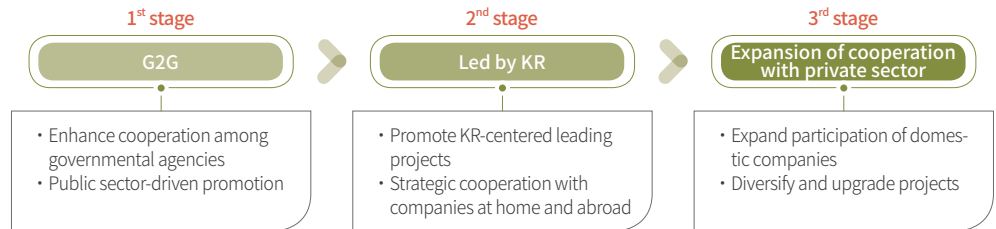


Growth Ladder for the Expansion of SMEs' Sales Channels

Joint Overseas Expansion with SMEs

KR seeks to grow together with SMEs by forming a consortium or carrying out joint marketing campaigns in the overseas railway market. In 2018, we won the order for Nagh Hammady-Luxor railway signal modernization project jointly with private partners by utilizing the overseas network to lay the foundation to enter the Middle East and North Africa markets, participating in seven biddings and receiving two orders worth KRW 4.5 billion. KR will create a new model for shared growth through various cooperation with SMEs such as sharing of overseas bidding information and support of the human network.

[Establishment of an Ecosystem Aimed at Winning Large-scale Orders through Cooperation]



[Supports for Overseas Sales Route Expansion of SMEs in 2018]

Project	Revenue (KRW 100 million)		No. of SMEs participated
	KR	SME	
Construction supervision on Akhaura-Laksam line double-track project in Bangladesh	4.3	14.5	1
Consulting on signal modernization in eastern area in Bangladesh	6.4	7.0	1
Technical service for south-north section of Lucknow Metro in India	8.6	2.1	1
Technical service for Manila LRT-2 eastern extension line in the Philippines	-	7.2	1
System package (EPC) of LRT phase 1 in Indonesia	46.5	639.9	4
TOD strategy establishment service for Jakarta LRT phase 3 in Indonesia	-	2.6	2
Consulting on Nagahamada-Luxor line signal modernization in Egypt	-	1.9	1

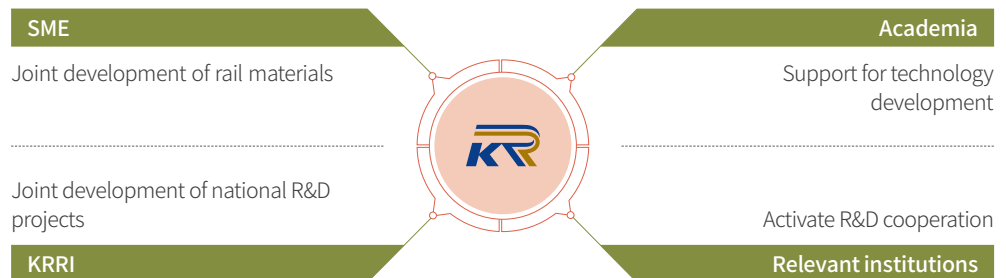
Participation in bidding 7 projects

Winning orders 2 projects / KRW 4.5 billion

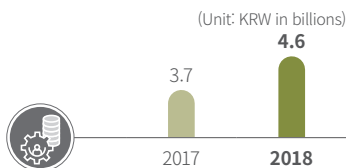
Strengthen Railway Technology Competitiveness of SMEs

KR is actively supporting SMEs for new technology development to secure the infrastructure for railway technology development related to the Fourth Industrial Revolution. As the leader in technology development in railway industry, KR supports SMEs for the technology development through the joint R&D by forming the industry/academia/research network and training of talented professionals for railway technology. KR will lead the efforts for localization and commercialization of railway technologies by strengthening the public-private cooperation for railway technology interchange and development.

[Role as a Hub for Railway Technology Development]



Support for New Technology Development



Improvement

- Identify and execute new technology development projects (43 cases)
- Up KRW 900 million (24%) YoY



Purchase SMEs' Materials Based on Conditional Purchase Option

KR promotes the “Joint New Product Development Based on Conditional Purchase Option” for SMEs. It aims to co-develop new products, help sales channel expansion, and support development costs, through which KR pursues their management stability and improvement of our technical competence. This program contributed to localizing the load breaking switch*, which is a core technology for electric train track, in January 2018 and securing original technology. In 2018, KR supported development fund of over KRW 400 billion for four new railway products and shared technical information by holding the KR Technology Development Outsourcing Company Council. The joint R&D workshop for SMEs was also held.

* Load break switch: Device installed on main lines to adjust or disconnect power supply

[Joint New Product Development Based on Conditional Purchase Option]

Support system	Product	Amount (KRW in billions)
<ul style="list-style-type: none"> Joint new product development (3 cases → 4 cases) 	<ul style="list-style-type: none"> Smart electricity quality improvement device 	5.4
<ul style="list-style-type: none"> KR Technology Development Entrusted Business Council (3 times) - Sharing technology information with 16 member companies 	<ul style="list-style-type: none"> Development of high-strength lattice girder 	1.5
<ul style="list-style-type: none"> Promote joint R&D conference for SMEs held by KR and cooperative foundations (50 companies) 	<ul style="list-style-type: none"> IP-based electronic interlocking device 	400.0
	<ul style="list-style-type: none"> Development of control relay Kit 	1.2
	Total	408.1

Expand Purchase of SMEs' Products

To expand purchase of technology development products and support sales routes of tech-driven startups, KR promoted the “Technology Development Product Pilot Purchase System” by signing a business agreement with seven agencies, including the Ministry of SMEs and Startups. We purchased KRW 6.6 billion worth of products by selecting eight items including switchboard and solar power device through the system and extended the startup scope and delivery record period from five years to seven years to lower the entry barrier against SMEs. KR will expand this system to actively support SMEs.



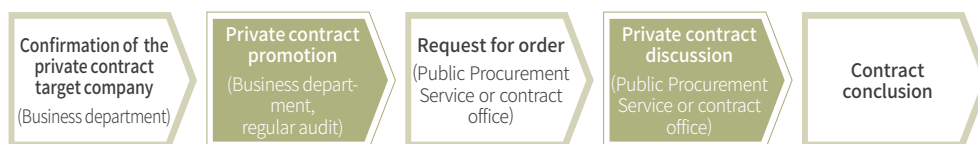
Agreement on business cooperation for pilot purchase of technology development products

[Selection of Suppliers for Pilot Purchase and Contract Process]

• Selection of Suppliers for Pilot Purchase (Ministry of SMEs and Startups (MSS))



• Contract (KR): Private contract with the top company decided at the Purchase Deliberation Committee



Establish a Channel for Sharing Outstanding Technologies of SMEs

KR operates a monthly open presentation called “Railway Technology Talk-Talk” in which SMEs can freely promote their new railway technologies and patented technologies. The data released at the presentation are stored the technical data archive “Railway Technology Agora” and those are shared among suppliers in engineering and construction for the application to our projects. The program promotes the transparent communication between KR and SMEs related to technologies to prevent any possibility of corruption and resolves the entry barrier against excellent railway technologies to help to enhance the competitiveness of Korea’s railway construction industry.

Enhancement of Human Rights Management



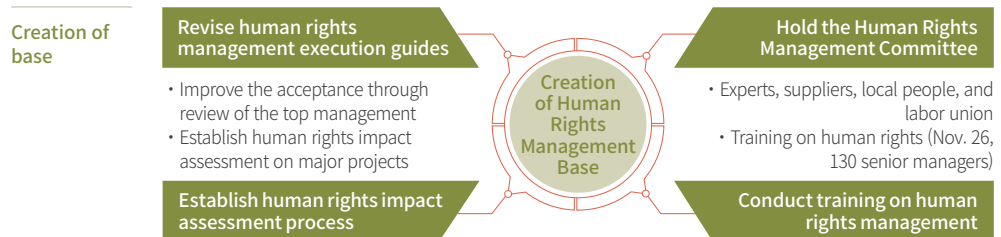
KR has established the human rights management system to disseminate the culture of human rights protection throughout the company. Furthermore, a three-year (2018-2020) roadmap was prepared to take human rights management root in all areas. KR is committed to protecting the rights for safety of site workers and environment as well as the rights for transport and safety of the people.

Lay a Foundation for Solid Human Rights Management

Establish a Base for Practicing Human Rights Management and Human Rights Relief Procedure

To lay a foundation for human rights management, KR has established an execution guideline and human rights impact assessment procedure. The Human Rights Management Committee consisting of outside experts, suppliers, citizens, and labor union was launched as the consultative and decision-making body on human rights management and educations on human rights were offered to executives. Moreover, we prepared a procedure to protect the reoccurrence of human rights infringement by investigating the case thoroughly to protect the victim and carrying out corrective measures through the appropriate sanction and education.

[Creation of Human Rights Management Base]



3-Year Human Rights Management Roadmap



Human Rights Management Implementation System

KR developed the human rights management implementation system and feedback system in accordance with the 3-year roadmap for human rights management. Based on the KR Human Rights Charter and execution guideline, KR has set up the human rights protection measures such as the Human Rights Management Committee, organization dedicated to human rights management, human rights relief system, and feedbacks to disseminate the culture of human rights protection.

[Human Rights Management Execution & Feedback System]

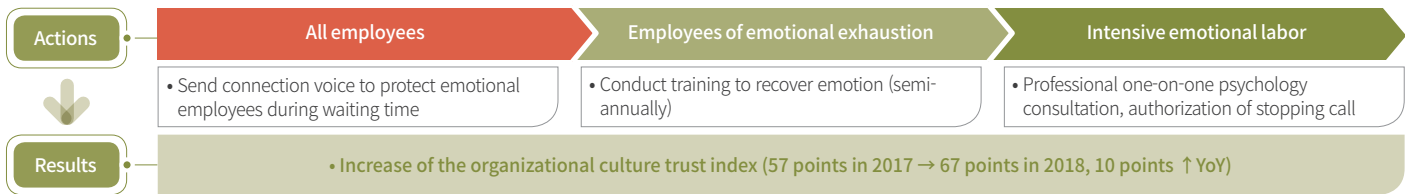
Execution system	Human rights charter, human rights execution guides	Human Rights Management Committee	Organization dedicated to human rights management	Human rights relief system
	Human rights management policy, promotion system, rights violation relief	4 external members and 3 internal members	Dedicated organization and staff (2 persons)	Unfair subcontract solution center, employee grievance counselling system
Feedback system	Human rights impact evaluation (annually)		Human Rights Management Committee (quarterly)	Human rights counselling and training (frequent)
	<ul style="list-style-type: none"> Human risk prevention actions Disclose of human rights impact evaluation results 		<ul style="list-style-type: none"> Treatment of human rights impact evaluation and violation results Deliberation and resolution of execution results 	<ul style="list-style-type: none"> Counselling and training on prevention Training for preventing recurrence of human rights violation

Improve Human Rights Management

Prepare Measures for Human Rights of Emotional Labors

KR has improved the emotional working environment of staff in charge of civil service based on internal survey results. Major activities for grievance handling were change of connection voices, training for the recovery of emotion, and one-on-one psychology consulting. The confidence index on organizational culture increased by 10 points (56 points → 67 points) from the previous year on the strength of protecting human rights of emotional labors.

[Human Rights Protection of Emotional Employees]



Promote the Three-in-One Human Rights Protection

KR's human rights protection extends to diverse stakeholders beyond employees. Internally, we held the Grievance Handling Committee composed of an equal number of members from labor and management to decide the transition of non-regular workers into regular positions and concluded the supplementary negotiations for a collective agreement that reflected the improved working conditions. We also operate the Safety-Call system, win-win settlement system, and Zero Power Abuse Center to protect human rights of suppliers. Diverse services for human rights of passengers have been improved as well.

KR's Three-in-One Human Rights Protection

<div style="border: 1px solid #ccc; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin-bottom: 10px;"> </div> <p>Employees</p> <ul style="list-style-type: none"> Hold the Grievance Treatment Committee (same numbers between the labor and management) (acceptance of 117 cases out of 139 cases) 100% achievement in transition to regular employees (347 persons working in national facility protection) Sign a collective agreement reasonably (7 articles for labor condition improvement) 	<div style="border: 1px solid #ccc; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin-bottom: 10px;"> </div> <p>Suppliers</p> <ul style="list-style-type: none"> Conduct the Safety-Call system in case of risky situation of site workers Improve the cooperative payment system to prevent overdue wages of subcontractors Operate the Power Abuse Zero Center on the website 	<div style="border: 1px solid #ccc; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin-bottom: 10px;"> </div> <p>People</p> <ul style="list-style-type: none"> 100% installation of screen doors on the platforms in metropolitan area Deliver scholarships to children and youths living around railways (KRW 898 million) Install chairs for the transportation vulnerable in stations (over 10%) 		<div style="background-color: #4f7942; color: white; padding: 5px; border-radius: 5px; text-align: center; font-weight: bold;">Performance</div> <ul style="list-style-type: none"> The lowest accident rate among ordering public institutions under the MOLIT and won the “Safety Management Award” from the Ministry of Employment and Labor The highest labor-management relationship level (80.1 points in 2017 → 85.7 points in 2018) Won the Minister Citation of Health and Welfare (contribution to the development of local children welfare)
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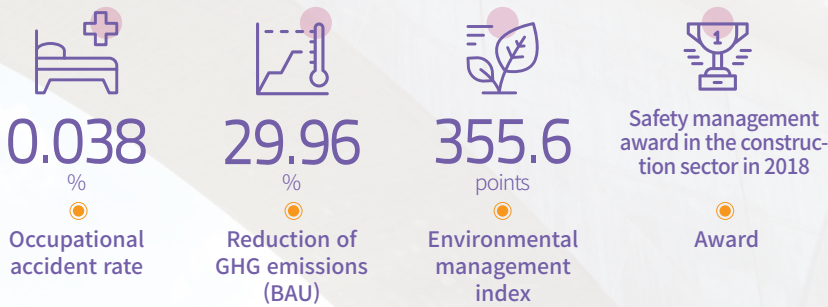
PROMISE 3

Safety and Environment

Management Approach

To ensure the safety of passengers and site workers and systematic disaster control and accident prevention, KR has expanded the responsible organization and staff and focused on autonomous and preventive safety management. We also developed the IT-based railway facility management system to upgrade outdated railway facilities efficiently and systematically. KR also operates the environmental management system to cope with climate change by expanding electric railway, developing eco-friendly railway technologies, reducing GHG and fine dust, and utilizing eco-friendly railway assets.

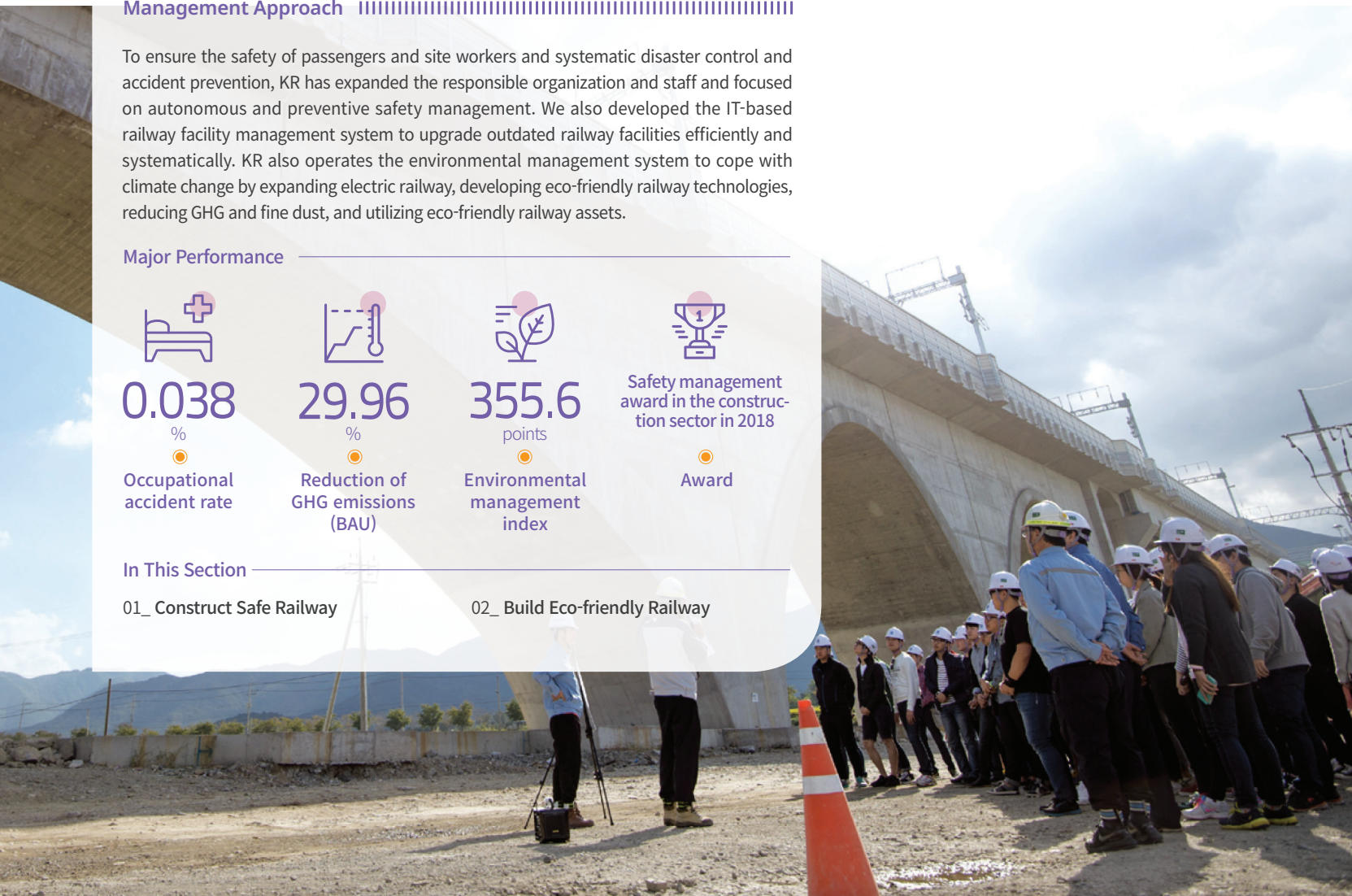
Major Performance



In This Section

01_ Construct Safe Railway

02_ Build Eco-friendly Railway



Construct Safe Railway



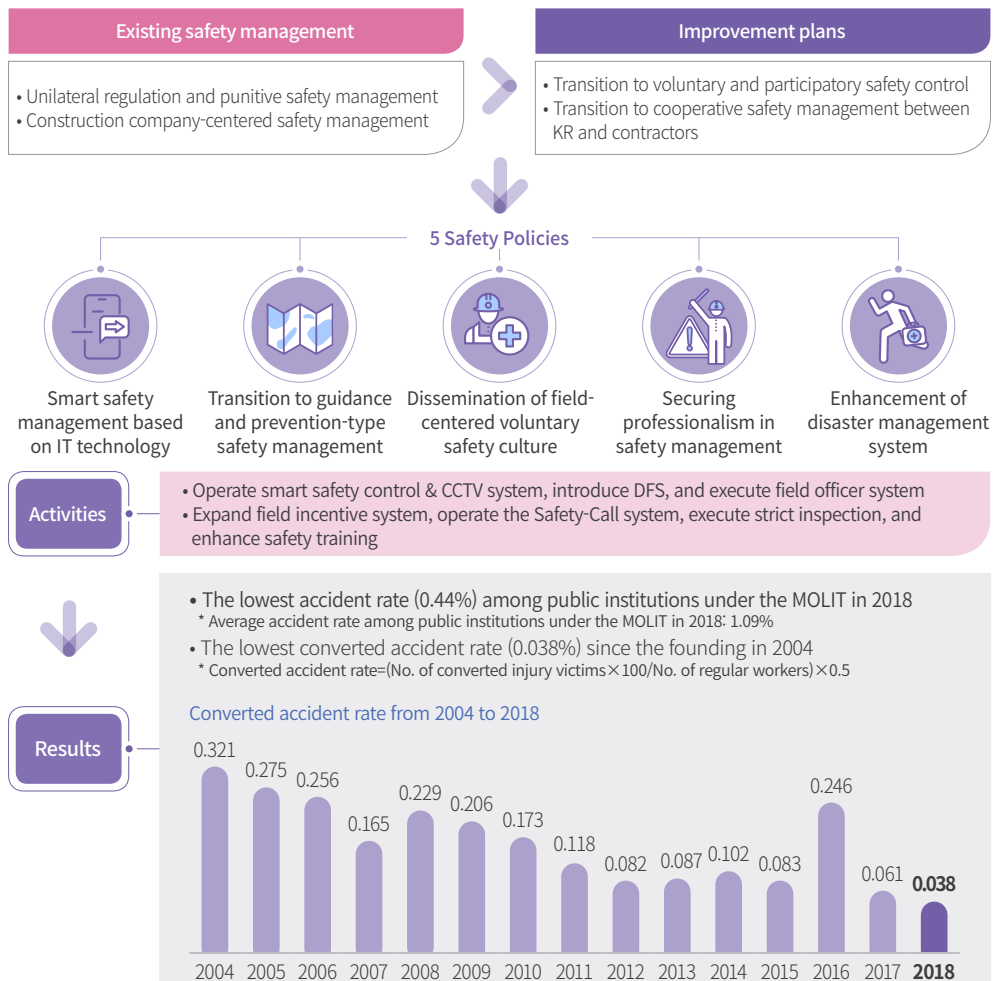
KR established the “Five Key Safety Management Measures” to ensure safety at railway construction sites based on autonomous safety management system. In response to diverse and complex accident causes, KR upgraded the IT-based safety management system to increase the accessibility to safety management and the ability to prevent accidents. KR will create a safe society in which all workers and people are safe.

Strategy for Railway Safety

Strengthen the Safety Management System and Accountability

To establish voluntarily participating safety system beyond conventional safety control, KR is implementing the “Five Key Safety Management Measures.” Moreover, the smart safety system was introduced to preemptively detect accidents at construction sites and safety accidents of people and conduct company-wide prior inspection. To raise site staff’s awareness of safety, KR operates a variety of safety programs such as designating responsible staff, inspecting mutually, and conducting mandatory education for train guards.

[5 Key Safety Management Plans]



Construct Safe Railway



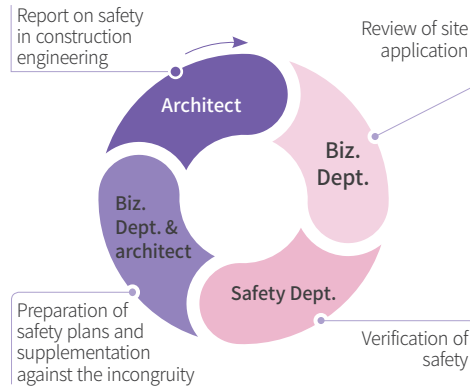
*DFS: KR Safety Dept. verifies the site worker safety assurance report written in consideration of working methods and space in the stage of working design

Build Safety Management System

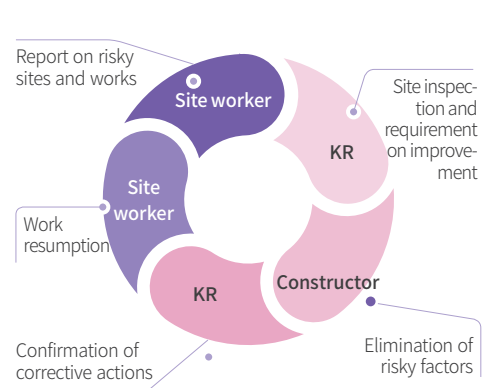
Paradigm Shift to Preventive and Autonomous Safety Management

KR is spreading the safety management culture centered on guidance and prevention beyond just response-driven safety control. As part of that, the DFS* was introduced to consider worker safety from the design stage and have the architects be responsible for safety management. It is being applied to design of all projects. Moreover, KR operates the Safety-Call system which enables field workers to notify dangerous situations on the railway construction sites anonymously to create the voluntary safety management environment, thereby rapidly conducting reports on potential risks and taking countermeasures.

[DFS Support System]



[Safety-Call Operation System]



▪ CCTV Operation

Operation in 2018	
Seoul Metropolitan Regional Office	79 locations in 22 sites
Yeongnam Regional Office	103 locations in 34 sites
Honam Regional Office	26 locations in 14 sites
Chungcheong Regional Office	29 locations in 14 sites
Gangwon Regional Office	55 locations in 17 sites

Develop IT-Based Smart Safety Management System

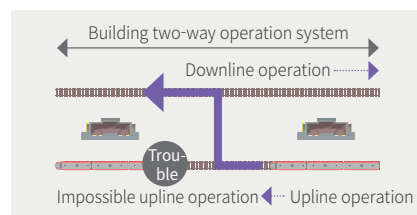
KR is operating the smart safety management system to ensure more professional safety control. The ICT-based smart railway safety management system makes it easy to check the location of workers and equipment, control project history, evaluate risk level, and manage vulnerable places, which enhance efficiency in safety management. Moreover, it developed the risk prediction system to build the database of the accident case analysis and the risk factors of each work and notify the risk factors for each process to the field through a text message in advance. The CCTV management system enables the inspection of sites in real-time through CCTV without having to visit the site and investigate the risk factors to take the countermeasures.

* ICT (Information and Communication Technologies): A general term for the information technology and communication technology

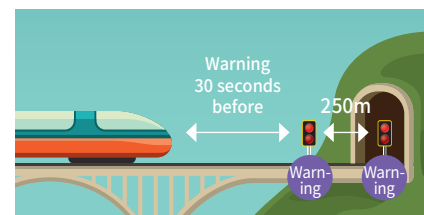
Establish a System for the Safety of Operating Line Workers

KR has developed the two-way automatic control signal system (installed it in three places and plan to install in one place in Gyeongui Line) to prevent accidents caused by human error such as misunderstanding of signal that may occur when the line is operated by hand signal between two stations when the train drives in reverse direction. The tunnel warning system was expanded to general railways as well as high-speed railways and activating an alert 30 seconds before trains enter the tunnel is mandatory. KR will strive to fundamentally remove risk factors at all worksites.

[Two-Way Operation Signal System]



[Warning Device in Tunnel]





Build Eco-friendly Railway



In response to increasing environmental issues such as fine dust and global warming, KR is focusing on environmental management and eco-friendly railway projects. Our prevention-focused environmental management pursues railway construction in harmony with ecosystem and eco-friendly technology development to provide pleasant railway conditions.

Establish Eco-friendly Management System

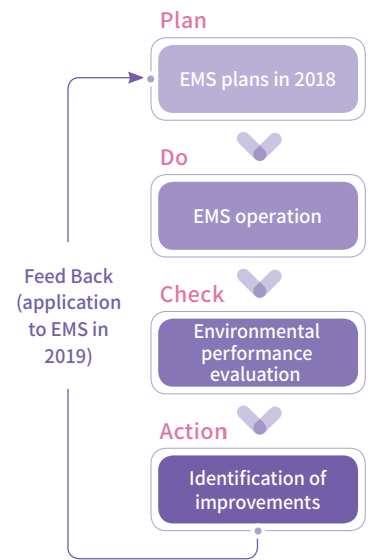
Internalize the ISO 14001-Based Environmental Management System

KR operates the international standard (ISO 14001) for systematic environmental management. Through the system, we have identified and improved the problems in environmental management and related procedures and secured the confidence on the adequacy of the system inside and outside the company. Moreover, it becomes possible to quantify and deeply analyze environmental performance and enhance feedback system. Our phased environmental management system helps construction department and suppliers comply with relevant regulations and efficiently perform their works.

Reestablish Social Value-Added Environmental Management

KR is expanding social values through proactive environmental management. Major activities include preparing air quality criteria for subway station, introducing high-pressure watering truck to solve fine dust issue, minimizing impacts on ecosystem by operating the "Ecology Survey Group," and creating ecological forest. KR also expanded the coverage of environmental information disclosure for recent three years by voluntarily adding items such as investment in reducing resource and energy consumption and wastewater discharge.

Environment Management System



Three Directions for Eco-friendly Railway Construction

Concept	Construct sustainable railway facilities for preserving global environment and convenient living conditions		
Goal	Realize social value through building eco-friendly rail network		
Internal & external environment	National tasks	KR Mission	
	<ul style="list-style-type: none"> Develop and foster eco-friendly future energy Faithfully respond to the Paris Agreement 	<ul style="list-style-type: none"> Faster, safer and more comfortable railways going with the people 	
Three directions	Low carbon railway	Comfortable railway	Nature-friendly railway
	<ul style="list-style-type: none"> Cultivate eco-friendly railway business Introduce low carbon technology and materials 	<ul style="list-style-type: none"> Reduce fine dust in subway stations Create park on idle rail sites 	<ul style="list-style-type: none"> Perform environmental impact evaluation Promote animals and plants protection plans

Build Eco-friendly Railway



Eco-Friendly Railway to Cope with the Paris Agreement

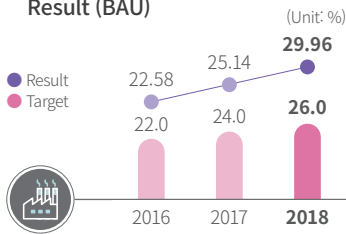
Solid Climate Change Response System

KR is responding to climate change, which is the global issue, by implementing the system to adapt to climate change. With the goal of developing the sustainable foundation to cope with climate change for public safety, KR is implementing 19 tasks and has established the cooperation with government agencies and execution management process to strengthen the performance of the tasks.

Climate Change Response System

Vision	Construct safe and comfortable railway by adapting to climate change initiative		
Goal	Establish sustainable climate change response foundation for the safety of people		
Directions	 Establish risk management system	 Enhance adaptation competence	 Prepare execution base
Detailed goals	1.1 Prepare efficient management base 1.2 Connect railway asset management 1.3 Build sustainable monitoring system	2.1 Tighten engineering and construction criteria 2.2 Improve disaster response ability 2.3 Build damage prevention system 2.4 Secure expertise in climate change response	3.1 Train adaptation to climate change 3.2 Enhance collaborative climate change adaptation system 3.3 Perform climate change impact evaluation 3.4 Strengthen connection system with relevant institutions
Key tasks	5 tasks	9 tasks	5 tasks

KR's GHG Reduction Target & Result (BAU)



Respond to Climate Change through Developing Eco-Friendly Technologies

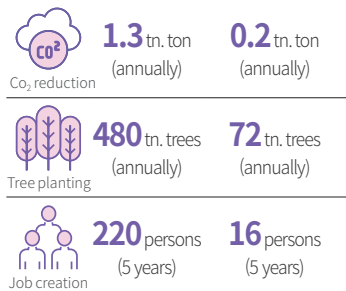
KR is proactively coping with climate change by introducing eco-friendly technologies. We developed and applied 25.8kV eco-friendly insulator switch* and low-carbon bridge technology and expanded the installation of EV charging system in railway stations and sophisticated eco-friendly soundproof walls. Particularly, KR reduced annual CO₂ emission by 1.5 tons (29.96% reduction from BAU*, exceeding the original target) equivalent to the effect of planting 560,000 trees, which resulted in winning the "2018 Green Management Award."

* BAU (Business As Usual): Estimated greenhouse gas emission

* Eco-Friendly Insulator Switch: Switchgear (to Switch Electric Tracks) Using Eco-Friendly Insulation Medium

Effect from eco-friendly switchgear

Effect from eco-friendly EV charging equipment



[Development of Eco-friendly Technologies]

EV charging equipment at stations	Eco-friendly low carbon bridge	Eco-friendly soundproof wall
<p>Install rapid charging equipment on over 1% space of parking lot</p>	<ul style="list-style-type: none"> Win technology award from KSSC (Jun.) Non-painted eco-friendly bridge* Double breakdown safety Reduce KRW 6.7 billion per bridge (400m) 	<ul style="list-style-type: none"> Win Top 10 Railway Technology Award in 2018 (eco-friendly soundproof wall) Block noise and secure prospect right Reduce 18% of construction cost

* Prevention of air and water pollution by fundamentally blocking environmental pollutants



Design of Sustainable Eco-Friendly Railway Station

KR pursues the construction of eco-friendly station to be in step with the government's GHG reduction policy and mandatory application of zero energy to public institutions in 2020. As part of that, we set up the "Zero Energy Roadmap for Stations" and performance guidelines and design criteria for each station facility. Other activities include holding discussion meetings with suppliers, attending the 2018 Railway Construction Forum, and publishing academic papers. KR will strive to provide passengers with eco-friendly spaces by constructing zero-energy consumption stations.

[KR's Zero Energy Station Roadmap]

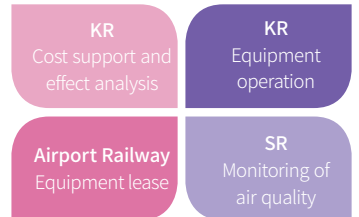
Classification	2018		2020		2025	2030
	Minimum	Suggestion	Minimum	Suggestion	Minimum	Suggestion
Certification on zero energy building	-	-	5th grade	4th grade	3rd grade	1st grade
Building energy efficiency grade	1	1*	1**	1**	1***	1***
Energy independence rate (primary energy)	-	-	Over 20%	Over 40%	Over 60%	Over 100%
Supply obligations rate of new and renewable energy	Over 24%		Over 30%		Over 30%	Over 30%
Building energy management system (BEMS)	-	Installed	Mandatory			

Proactive Environmental Enhancement Activities

Introduce High-Pressure Watering Trucks to Reduce Fine Dust in Subway Stations

To solve deteriorating air quality in subway stations and tunnels, KR has been using the high-pressure watering trucks for the improvement of air quality in closed space by spraying water (ground cleaning) and absorbing scattered dust. To maximize the improvement effect, we have cooperated with external organizations for the test operation of watering trucks in Ulhyeon Tunnel of Suseo KTX, proving the reduction of fine dust by about 11.5% compared to the average concentration. Based on the result, KR decided to purchase more high-speed watering trucks in 2020 to ensure healthy railway environment.

▪ Air Quality Improvement by Using Watering Truck



Create Ecological Forest for Railway, Human, and Nature in Harmony

KR pursues the harmony between development and ecological preservation in the railway construction process. For example, we constructed a park on the top with the space of 156,000 m² of Ansan City section of Suin Line and the urban forest in Seonbu Station between Sosa and Weonsi by reflecting the needs of residents and local government gathered through surveys and meetings. We also signed an MOU with Gimhae City Hall to create an urban forest including bicycle road, walking trail, and rest area on idle tracks in Jinyeong with the schedule of completion in 2021. KR will continue to focus on eco-friendly state-owned asset development projects for coexistence of railway, human, and nature.



Ecological forest on Ansan City section of Suin Line

[Before & After the Creation of Urban Forest on Waste Rail Site in Jinyeong, Gimhae-si]





PROMISE 4

Enhancement of Organizational Culture

Management Approach

KR is carrying out the campaign for open communication and unity among employees to create an exciting organizational culture. We also offer a wide range of fringe benefits such as resting and childbearing support for work-life balancing to meet employees' requirements. Moreover, the Labor-Management Council and Labor-Management Joint Committee are regularly convened to discuss labor conditions and improve systems. Systematic job trainings are also provided to foster competence in railway business.

Major Performance



67 points
(Up 17% YoY)

Great Workplace (GWP) index



43.10 %

Rate of flexible work system use



109 hours

Training hours per capita



Family-friendly Company for six years in a row (Ministry of Gender Equality and Family)

External certification

In This Section

01_ Create Exciting Workplace

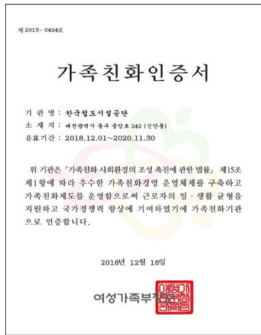
02_ Develop Human Resources



Create Exciting Workplace



■ Certification on family-friendly management



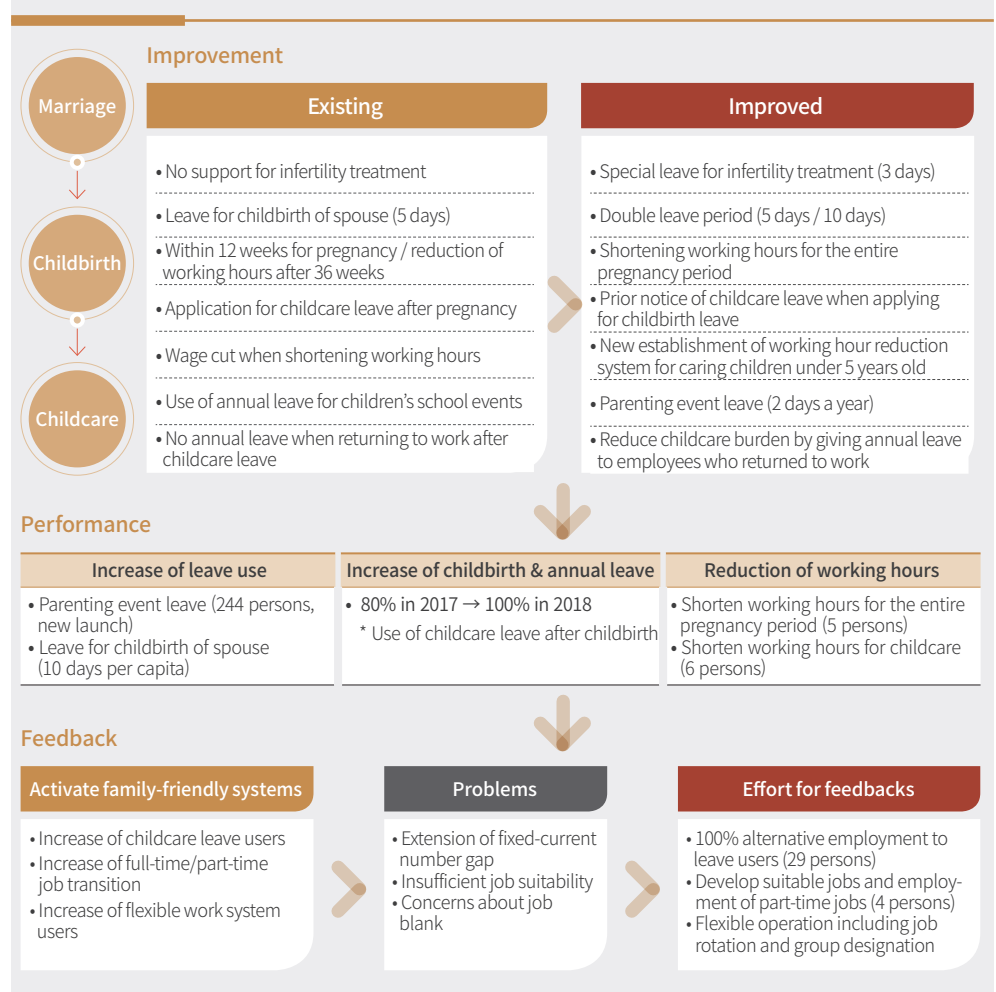
■ Employment of Socially Balanced Talents (Unit: persons)

Employment of socially balanced talents	9	+200%	27
New female employment	9.5	+121%	21
Female workforce	211	+9.5%	231
Female managers	35	+11.4%	39
HR integrity (points)	8.43	+3.8%	8.75
	2017		2018

Obtain the Family-Friendliness Certification from the MOGEF for Six Years in a Row

KR has established the work-childcare balance support system throughout the lifecycle to create happy workplace for working and raising children. We also gather employees' opinions through the Labor-Management Council and the Labor-Management Conference and improve the system through the Labor-Management Joint Committee and the Gender Equality Committee to improve the schemes specific to each lifecycle. For example, 244 employees used the newly introduced "Parenting Event Leave" in 2018. Our efforts for work-childcare balance have resulted in obtaining the family-friendliness certification from the Ministry of Gender Equality and Family for six years in a row. KR is also steadily upgrading the work-life balance system through feedbacks including the alternative employment to leave of absence.

[Work-Childcare Balance Supports Tailored to Life Cycle]



Improve HR System in Consideration of the Socially Underprivileged

KR expanded hiring of the socially underprivileged by creating a special screening procedure for them. We have also strived to break down the glass ceiling by increasing the rate of new female employees and appointing two female directors (three as of April 2019) for the first time. A total of 29 jobs in 10 duties were developed to hire more part-time employees and give job opportunities to women who are on career breaks. Auditing staff participates in entire employment process and external experts hold a majority in interviewer group. The blind hiring based on job ability is also conducted. KR operates a whistleblowing system and victim remedy measures to prevent hiring irregularities and provide equal opportunities to everyone.



Labor-Management Cooperation

Adopt the Labor-Management Joint Declaration Based on Trust and Unity

In accordance with the paradigm shift toward trustworthy and cooperative labor-management relationship, KR is operating the Labor-Management Council to build an organizational culture pursuing participation and co-prosperity. We also adopted the labor-management joint declaration and set up four strategies with the goal of “KR labor-management partnership to create social values and future” and specified the implementation tasks and KPI. The strong commitment of the CEO, who believes that he is a union member, and the active participation and cooperation of the labor union resulted in the highest satisfaction in labor-management relations (85.7 points) since the survey was conducted.



Labor-management joint declaration (Mar. 15, 2018)

[Mid- to Long-term Roadmap for Labor-Management Relationship]



Goal and Strategy for Labor-Management Relationship in 2018



* Labor-management co-prosperity council Consultative organization (33 persons including working-level staff, lawyers, labors, subcommittee representatives, etc.) and Deliberation Committee (8 persons including executives, lawyers, labor, etc.)

Fulfill Social Responsibility by Practicing Labor-Management Sharing Culture

KR implements various sharing programs through labor-management cooperation. All union members donated their performance-based incentives (KRW 340 million) to the Public Win-Win Solidarity Fund and KR held an idea contest for effective utilization of railway facilities, which resulted in opening a daycare center at Pyeongnae Hopyeong Station for people commuting to work by train. The Labor-Management Council* agreed to the transition of 347 non-regular workers engaging in protecting the head office and national facilities to regular positions. KR will continue to pursue cooperative labor-management relationship to create higher social value.



Informal meeting of labor-management representatives (frequent)

Promote Labor-Management Partnership Based on Communication and Sympathy

With a consensus on jointly solving pending management issues, the labor and management are proactive in formal and informal communication between the representatives and cooperative activities. For example, the CEO of KR visited the labor union on the first day of his appointment to activate communication with them. Other programs aimed at improving labor-management relationship include “KR Generation Sympathy” which helps share culture and trend between generations, “From Junior to Senior” which shares opinions across organizational hierarchy, “KR Book Concert” which shares knowledge, and “Gender Equality Committee” to prevent sexual harassment to improve the labor and management relationship.



Safety prayer (Mar. 17, 2018)

Develop Human Resources



KR strives to strengthen the capabilities by job position and function with a focus on training the world-class professionals to realize its vision of “Rail network beyond Korea to the world.”

Human-Centered Management

Systematize Railway-Specific Talents Cultivation

To cultivate railway-specific talents with global competitiveness, KR seeks to find three kinds of human resources – “creative person” who continuously challenges and pursues the creative ability, “professional person” who pursues the world’s best railway technology and global ability, and “social person” who develops ethics and the spirit of social contribution. We focus on strengthen job competence training, systematic knowledge transfer within the organization, and investment in the education of new growth engines. KR will continue to foster talents by developing systematic and specialized educational programs.

Talents Cultivation Strategy



[Training System]





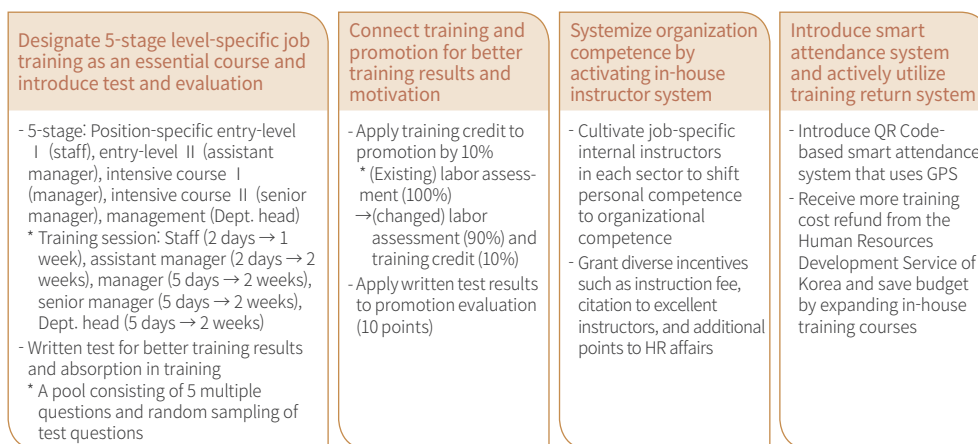
Systematic Job Competence Training

Considering the needs for systematic job competence development due to rapid shift in generations and changes in business environment, KR has built training systems and programs meeting the trend. All employees receive trainings tailored to their job and position and the results are reflected in promotion evaluation. KR will continue to develop training programs to cultivate railway-specific talents.

[Tailored Job Competence Training]



[Internalization of Job Training]



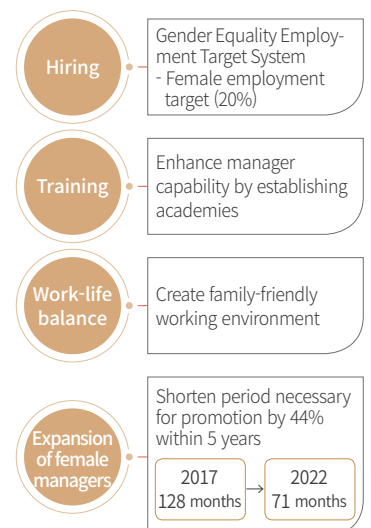
Support for Preparing Retirement through the Lifetime Education System

KR has restructured the lifetime education system for the employees such as the heavy machinery operators who are subject to wage peak scheme. Recognizing that the satisfaction and completion levels of the education are low, KR conducted the personalized retirement design consulting and support the education/training cost to prepare for retirement. In addition, we expanded the educational benefits of non-professional employees and provided the opportunities for them to learn from the experience of the cases senior retirees in Jeju Island. KR intends to provide all support it can to help the employees to prepare for retired life methodically.

Foster Female Leaders and Professionals

KR has established the 5-Year Roadmap for Training of Female Professionals to foster female employees systematically "from hiring to promotion." KR provides the female employees the opportunity to further their education in advanced educational institutes in Korea and abroad and the opportunity to work overseas and appoint female managers in core departments to strengthen their capabilities. As a result of such efforts, the rate of female manager increased from 4.6% (35 persons) in 2017 to 5.3% (39 persons) in 2018, and the rate of female employees to total employees increased by 9.5% (from 211 to 231). We appointed two female executives for the first time in 2018 and expanded hiring of females in career breaks through the job-sharing program.

Systematic Female Workforce Cultivation







APPENDIX

- 01 Sustainability Management Performance
- 02 SDGs and UNGC Principles
- 03 GRI/ISO 26000 Index
- 04 Independent Assurance Report
- 05 Awards and Association Memberships

Sustainability Management Performance

Economic Performance

Summarized Financial Position

Classification	Unit	2016	2017	2018	
Assets	Current assets	KRW 100 million	4,142	6,079	4,144
	Non-current assets	KRW 100 million	173,768	176,584	178,499
	Total assets	KRW 100 million	177,910	182,663	182,643
Liabilities	Current liabilities	KRW 100 million	31,833	36,334	32,156
	Non-current liabilities	KRW 100 million	165,883	164,901	167,470
	Total liabilities	KRW 100 million	197,716	201,235	199,626
Equity	Deficit	KRW 100 million	(19,625)	(18,410)	(16,758)
	Other equity components	KRW 100 million	(181)	(162)	(225)
	Total equity	KRW 100 million	(19,806)	(18,572)	(16,983)

Summarized Income Statement

Classification	Unit	2016	2017	2018
Sales	KRW 100 million	13,411	14,530	16,516
Cost of sales	KRW 100 million	7,833	7,283	9,124
Gross profit	KRW 100 million	5,578	7,247	7,392
Operating profit	KRW 100 million	5,578	7,247	7,392
Non-operating income	KRW 100 million	567	771	637
Non-operating expense	KRW 100 million	6,312	6,803	6,377
Net profit	KRW 100 million	(167)	1,215	1,652

Government Contribution

Classification	Unit	2016	2017	2018
Government contribution	KRW 100 million	56,902	57,528	36,596

Distribution of Economic Value

Classification	Unit	2016	2017	2018
Sales, government contribution, bond issuance, etc.	KRW 100 million	117,443	119,453	105,371
Suppliers (ordering investment projects)	KRW 100 million	22,527	20,195	18,035
Financial expense (principle and interest, etc.)	KRW 100 million	30,442	28,195	29,640
Employees (labor cost)	KRW 100 million	1,252	1,255	1,377
Government (tax and due)	KRW 100 million	21	29	25
Operation expense of KR (current cost, etc.)	KRW 100 million	346	354	461

Social Performance

Employment

Classification	Unit	2016	2017	2018	
Employment type	Total	Persons	1,443	1,466	1,842
	Regular position	Persons	1,382	1,375	1,460
	Contract workers	Persons	12	12	340
	Non-regular position	Persons	20	22	17
Age	20~29 years old	Persons	146	161	238
	30~39 years old	Persons	218	225	310
	40~49 years old	Persons	512	497	556
	50~59 years old	Persons	495	523	727
	Overs 60 years old	Persons	11	11	29
Minority	Female employees	Persons (%)	197 (14.2)	203 (14.8)	235 (16.1)
	Female employees serving as department head and higher positions	Persons (%)	3 (0.2)	3 (0.2)	3 (0.2)
	Female employees serving as senior and higher positions	Persons (%)	29 (2.1)	32 (2.3)	40 (2.7)
	Employees with disabilities	Persons (%)	48 (3.5)	49 (3.5)	57 (3.8)
New employment	Total	Persons	118	51	108
	Employees with disabilities	Persons	-	-	8
	Female employees	Persons	35	12	21
	High school graduates	Persons	10	8	5
	Vocational high school graduates	Persons	8	5	4
	Science and engineering graduates	Persons	76	45	70
	Local talents	Persons	48	22	41
Turnover	Turnover rate	%	0.4	0.7	0.4
	Regular retirement	Persons	8	9	30
	Voluntary retirement	Persons	37	21	31
Average years of service	Years	18.3	17.9	18.2	

Employment Status by Job

Classification	Unit	2016	2017	2018
Office work	Persons	411	403	472
Public work	Persons	452	457	474
Construction	Persons	81	78	81
Electricity	Persons	214	216	227
Telecommunication	Persons	54	61	60
Machinery	Persons	84	80	77

Sustainability Management Performance

Social Performance

Labor Union

Name of labor union	Date of establishment	No. of union members	No. of employees eligible for labor union	No. of dedicated members
The Labor Union of Korea Rail Network Authority	Jun. 9, 2005	1,573	1,652	7
Korea Rail Network Authority Labor Union	Nov. 30, 2017	13	1,661	-

Job Creation

Classification	Unit	2016	2017	2018
Activation of rail business	Persons	62,995	67,443	67,634
Partnership with the private sector	Persons	4,010	3,869	6,018
Underprivileged class	Persons	224	180	179
Youth interns	Persons	110	179	80

Support for SMEs

Classification	Unit	2016	2017	2018
Rate of purchasing SME products	%	33.3	35.5	36.6
Supports for joint R&D projects/No. of participating companies	Case/companies	7 / 13	10 / 12	5 / 13

Training Hours and Investment

Classification	Unit	2016	2017	2018
Time spent on training per employee	Hours	127	137	109
No. of trainees	Persons	1,391	1,424	1,430
Investment in training per employee	KRW in thousand	1,010	1,180	960

Welfare Benefit and Safety

Classification	Unit	2016	2017	2018
Employee satisfaction	Points	78.7	78	77.6
Employees who used childcare leave	Persons	23	29	25
Rate of return to work after childcare leave	%	100	100	100
12-month service after return to work	%	100	100	94
Safety and security accidents	Cases	-	-	-



Flexible Work System

Classification	Unit	2016	2017	2018
Flexitime work system	Persons	17	14	18
Flexible work system	Persons	199	246	245

Customer Satisfaction

Classification	Unit	2016	2017	2018
Satisfaction on complaints treatment through the e-People system	Points	55.27	59.81	59.20
Supplier satisfaction	Points	88.58	85.49	94.65
Public Customer Satisfaction Index (PCSI)	Points	92.96	90.76	90.986

Industrial Safety

Classification	Unit	2016	2017	2018
Accident rate	%	0.246	0.061	0.038
Average accident rate in the construction industry	%	0.57	0.59	0.75
Railway-related accidents	Cases	14	9	10

Ethical Management and Violation of Laws

Classification	Unit	2016	2017	2018
Comprehensive integrity index of the Anti-Corruption & Civil Rights Commission	Points	7.39	7.98	8.46
Anti-corruption practice evaluation of the Anti-Corruption & Civil Rights Commission	Ratings	2	2	2
Violation of laws	Cases	-	-	-

Social Contribution

Classification	Unit	2016	2017	2018
Time spent on social contribution per employee	Hours/person	7.1	12.3	10.5
Donation	KRW 100 million	2.3	3.1	2.9

Sustainability Management Performance

Environmental Performance

KR (Head Office and Regional Offices)

Energy Consumption

Classification	Unit	2016	2017	2018
Building	TJ	70.8	70.5	75.2
Vehicle	TJ	11.2	8.8	8.7

Water Consumption – Water Supply

Classification	Unit	2016	2017	2018
Water consumption	Ton	46,515.0	44,340.0	46,961.0

GHG Emissions - Building, Vehicle

Classification	Unit	2016	2017	2018	
Building	Direct	tCO ₂ eq	698.5	687.7	957.0
	Indirect	tCO ₂ eq	2,965.6	2,960.7	2,730.9
Vehicle	tCO ₂ eq	777.1	613.5	607.3	

Waste Emission

Classification	Unit	2016	2017	2018
General waste (including recycling)	Ton	155.6	158.8	158.5
Designated waste (including recycling)	Ton	17.3	20.0	18.0
Construction waste (including recycling)	Ton	0.0	41.8	0.0
Recycling	Ton	92.2	94.2	62.5

Major Environmental Indicators

Indicator	Unit	2016	2017	2018
Environmental management index	Points	324.4	347.2	355.6
Rate of GHG emissions	%	22.6	25.1	30.0
Violation of environmental regulations	Cases	0.0	3.0	3.0
Rate of construction waste recycling	%	66.0	95.7	98.8



Railway Construction Site (Suppliers)

Energy Consumption

Classification	Unit	2016	2017	2018
Building	TJ	368.2	384.4	260.4
Vehicle	TJ	159.2	235.4	161.2

Raw Materials Consumption

Classification	Unit	2016	2017	2018	
Rebar	Ton	319,542.8	370,641.0	284,496.0	
Rail	New materials	Ton	38,384.0	38,601.0	23,467.0
	Recycling	Ton	412.0	156.0	236.0
PC sleeper	New materials	Units	168,232.0	590,476.0	219,303.0
	Recycling	Units	22,785.0	22,114.0	6,967.0
Wooden sleeper	New materials	Units	778.0	520.0	4,861.0
	Recycling	Units	-	480.0	1,900.0
Aggregate	General	Ton	3,071,889.7	2,837,743.0	1,282,596.0
	Rotate	Ton	71,189.7	31,366.0	18,966.0
Cast	Wood	m ²	1,670,527.0	1,379,619.0	1,257,546.0
	Substitute	m ²	1,256,673.0	1,703,017.0	1,038,674.0

Water Consumption

Classification	Unit	2016	2017	2018
Total	Ton	1,904,016.7	2,456,071.8	2,514,179.9
Recycled water	Ton	38,053.5	47,697.0	8,212.0

GHG Emission

Classification	Unit	2016	2017	2018	
Building	Indirect	tCO ₂ eq	18,074.1	18,674.0	12,197.1
	Direct	tCO ₂ eq	1,293.5	1,598.2	1,559.3
Vehicle	Direct	tCO ₂ eq	11,055.8	13,347.9	11,204.5

Sustainability Management Performance

Environmental Performance

Waste Emission

Classification		Unit	2016	2017	2018
Construction waste	Emissions	Ton	1,272,028.3	754,975.6	694,382.3
	Recycled	Ton	748,270.9	722,504.4	686,141.3
Worksite waste	Emissions	Ton	287,827.9	292,597.0	230,783.0
	Recycled	Ton	246,752.6	178,843.3	208,391.0
Designated waste	Emissions	Ton	19,364.8	17,272.0	15,709.0
	Recycled	Ton	6,556.5	5,633.0	105.0

Air Pollutants Emission

Classification		Unit	2016	2017	2018
Annual fine dust emission		kg	104.6	-	160.0
Operation of air pollutants emission facilities		Places	9.0	-	3.0

Water Pollutants Emission

Classification		Unit	2016	2017	2018
Annual wastewater emission		Ton	6,001,193.0	11,959,153.7	8,653,491.0
Operation of wastewater emission facilities		Places	145.0	189.0	144.0

SDGs and UNGC Principles



The UN's Sustainable Development Goals (UN SDGs), suggested in September 2015, are composed of 17 goals and 169 targets that the international society should achieve during next 15 years (2016-2030), and these goals contain the concept of development that satisfies the needs of future generations as well as the needs of today. KR positively supports the UN SDGs, which have been established to change our world to a better place, and also wants to contribute to the achievement of the SDGs through understanding the chances for future business in response to the challenges involved in sustainable development, and through strengthening the value of sustainability.

Execution of the UN SDGs

UN SDGs	KR's Major Activities
Goal 1 No poverty	<ul style="list-style-type: none"> • Activate social contribution programs for local communities in Korea • Global contribution: Social contribution activities in overseas areas
Goal 4 Quality education	<ul style="list-style-type: none"> • Systematize railway-specific talents cultivation • Transfer railway technology and business knowhow to Sri Lanka, Egypt, and Indonesia • Conduct dispatched and commissioned education to cultivate global talents
Goal 5 Gender equality	<ul style="list-style-type: none"> • Foster female leaders and professionals • Obtain the family-friendly certification from the MOGEF for 6 years in a row • Activate communication on gender equality at the Gender Equality Committee
Goal 7 Affordable and clean energy	<ul style="list-style-type: none"> • Promote new and renewable energy business by utilizing railway infrastructure • Design sustainable eco-friendly stations by establishing a zero energy roadmap
Goal 8 Decent work and economic growth	<ul style="list-style-type: none"> • Revamp an organization dedicated to job creation • Create quality private jobs by building an ecosystem for co-prosperity • Support matching job seekers and firms through the job-creation portals
Goal 9 Industry, innovation and infrastructure	<ul style="list-style-type: none"> • Promote the construction of inter-Korean rail network based on a master plan • Expand metro rail network which helps work-life balance of citizens • Improve outdated railway facilities and modernize outdated bridges
Goal 10 Reduced inequalities	<ul style="list-style-type: none"> • Improve HR system to consider the socially marginalized • Conduct the "Foreign Workers' Day" to boost their morale and help social adaptation • Eliminate barriers to SMEs by fully improving unfair practices
Goal 11 Sustainable cities and communities	<ul style="list-style-type: none"> • Promote the Bridge-ZONE for the socially marginalized by utilizing idle rail sites • [Station-C] Install mobile module-type offices on five stations • Build a daycare center in a station to ease childcare burden
Goal 13 Climate action	<ul style="list-style-type: none"> • Build a climate change response system • Install rapid EV charging equipment on parking lots in stations • Apply low carbon bridge technology and install eco-friendly soundproof walls
Goal 15 Life on land	<ul style="list-style-type: none"> • Build and operate the environmental management system (ISO 14001) • Create ecological forest where railway, people, and nature can coexist



KR joined the UN Global Compact in 2007 and has been complying with the 10 principles in the areas of human rights, labor, environment, and anti-corruption.

Subscription to and Support for the UNGC

Principle		
Human Rights	Principle 1	Companies shall support and respect protection of internationally proclaimed human rights.
	Principle 2	Companies shall make sure that they are not complicit in human rights abuses.
Labor	Principle 3	Companies shall uphold the freedom of association and the effective recognition of the right to collective bargaining.
	Principle 4	Companies shall uphold the elimination of all forms of forced and compulsory labor.
	Principle 5	Companies shall uphold the effective abolition of child labor.
	Principle 6	Companies shall uphold the elimination of discrimination in employment and occupation.
Environment	Principle 7	Companies shall support a precautionary approach to environmental challenges.
	Principle 8	Companies shall undertake initiatives to promote environmental responsibility.
	Principle 9	Companies shall encourage development and diffusion of environmental-friendly technologies.
Anti-corruption	Principle 10	Companies shall work against corruption in all its forms, including extortion and bribery.

GRI/ISO 26000 Index

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Independent Assurance Report

TO THE MANAGEMENT OF KOREA RAIL NETWORK AUTHORITY

The Institute for Industrial Policy Studies (hereinafter “Auditor”), hereby presents the following statement of assurance, upon the request for auditing the 2019 Sustainability Report (hereinafter “Report”) of Korea Rail Network Authority (hereinafter “KR”) as a licensed sustainability assurance provider.

Responsibility & Objective

KR is responsible for economic, environmental, and social dimensions of performance measures and all statements contained in this report. The objective of the assurance is to offer professional counsel for improving the quality of the report by; checking whether there were any errors or bias present in the Report; by assessing whether the data collection system is in appropriate working order; and by examining the process of identifying issues of material importance to sustainability management.

Assurance Type & Level

The Auditor referred to AA1000AP (2018)¹, ISAE3000², and GRI Standards³ for the assurance of the Report.

Assurance Scope	Economic, environmental and social dimensions of the report's performance measures and objectives
Assurance Type & Level	Type II - Moderate level
Assurance Criteria	<ul style="list-style-type: none"> • “IPS Assurance Manual™” to verify compliance against the four core principles of AA1000AP (2008) • “IPS Performance Indicators Assurance Criteria™” to assess the reliability of performance indicators based on ISAE3000 • GRI Standards: The compliance of the “Core Option” criteria

Assurance Process and Activities

The Auditor confirmed ① the inclusivity, materiality, responsiveness, and impact of the reported content; ② the reliability of the reported performance data; and ③ the GRI Standards “In accordance” criteria.

- Review of KR’s identification process of material issues and following results
- Review of the stakeholder engagement process
- Review of data samples, other than financial statements, used as sources for economic, social and environmental quantitative performance measures
- Review of reference materials underlying economic, social and environmental qualitative performance measures
- Review of the Report’s compliance with GRI Standards

The Auditor conducted written correspondence and in-person interviews with the reporting management and staff, within KR, in the process of assurance measures.

Assurance Findings

The Auditor discussed about the Report’s editing with KR through written correspondence and in-person interviews and reviewed the final draft of the Report to confirm whether our requests and recommendations for revision were reflected. As a result, the Auditor could not find any contents violating the following assurance principles, or any evidence showing major errors or bias in the performance information or claims stated within the assurance scope.

[Inclusivity] Were KR’s stakeholder engagement plans and processes appropriate?

It is the Auditor's view that KR has put in place a process for stakeholder engagement to better reflect stakeholder views in its actual management activities, in recognition of the importance of communication and cooperation with stakeholders for pursuing sustainability management. It has been confirmed that the Public Participation Innovation Corps and the People Mentor Group are particularly representative processes for listening to the opinions of KR’s core stakeholders. The Auditor has not found any important stakeholders left out from this process.

[Materiality] Does the Report offer substantive information of material importance to KR’s economic, environmental and social stakeholders?

The Auditor confirmed that KR is identifying material issues affecting both stakeholders and management activities of the Authority and is appropriately disclosing the management status of those issues. In particular, the identification of sustainability issues through materiality analysis and the facilitation of methods to prioritize material issues through stakeholder survey results appear to be KR’s core “materiality assessment process.” No omissions were discovered by the Auditor, in terms of sustainability management information important to stakeholders.

[Responsiveness] Does the Report provide an adequate response to stakeholder demands and interests?

The Auditor confirmed that KR is operating diverse engagement channels appropriate for each key stakeholder and is identifying material reporting issues through those opinions collected in the process. The introduced themes of “Securing the Safety of Rail Workers and Enhancing the Safety Management of Rail Facilities” were found to be areas of high stakeholder interest. It has been found in this process that KR has appropriately responded to stakeholder demands and interests.

[Impact] Does KR identify and measure economic, social, and environmental impacts on stakeholders and disclose the results through the Report?

¹ AA1000 – Accountability Principles 2018: One of the sustainability report assurance standard series established by the non-profit organization AccountAbility based in the UK, in order to audit corporate social responsibility and sustainability development, thus explaining a set of auditing principles. It was revised with the addition of the “Impact” principle to the existing AA1000APS (2008) in 2018.

² International Standard on Assurance Engagements 3000: “Assurance Engagement Principle other than Audits or Reviews of Historical Financial Information” established by the International Federation of Accountants (IFAC)

³ The Global Reporting Initiative (GRI) is a non-profit organization established in 1997, by the Coalition for Environmentally Responsible Economies (CERES) and the United Nations Environment Programme (UNEP), releasing a sustainability reporting framework in 2000 for multinational enterprises. Following the revised G4 version focused on supply chain, governance, ethics & integrity, anti-corruption, GHG emissions & energy disclosures, the GRI released the GRI Standards in 2016, a new guideline with modular structure to ensure more systematic reporting process

It is the Auditor’s opinion that KR is appropriately disclosing economic, environmental, and social impacts through analysis of ripple effects on local economies, inspection of effects on rail facilities, and evaluation of effects on climate change through the Report. Moreover, the Auditor confirmed that KR conducts fact-findings and impact evaluation in the process of human rights management and analyzes their social and environmental impacts on stakeholders in the aspect of business operation.

[GRI “In Accordance” Criteria]

The Auditor has recognized that the Report is in accordance with the “Core Option” criteria of the GRI Standards.

[Reliability of Performance Indicators]

The Auditor confirmed that the performance indicators presented in the Report are free from bias or error that would affect stakeholders’ judgement of KR. Followings are the key performance indicators the Auditor has recognized.

Category	Issue	Performance Indicator
Ethical Management	Anti-corruption	Performance in ethical management: 3rd grade (comprehensive integrity level), 8.70 points (external integrity level), 8.25 points (internal integrity level)
	Establishment of Ethical Management System and Compliance	Performance in system improvement: Adding points for social responsibility to the evaluation criteria for the Comprehensive Bidding System
Special Page #2	Securing the Safety of Rail Workers and Enhancing the Safety Management of Rail Facility	Lowest incident rate among public corporations: 0.038% No. of rail safety accidents: 19 in 2017 and 13 in 2018
Reinforcing the Development of Rail Technologies	Expanding R&D of Rail-related Technologies	Expected effects from building the land compensation system: Reduction of 54,979 hours a year and KRW 1.8 billion
Improving the Value of Rail Assets	Improving Infrastructure and Building Support Facilities around Stations	Revenue from operating private-funded stations: KRW 28.4 billion
Shared Growth	Increasing Needs for Fair Competition and Trade	VOC improvement rate by the Fair Economy Activation Corps (TF): 100%
Building Eco-friendly Rail	Air Pollutants (GHG, PM-10, etc.)	GHG emissions (buildings, vehicles): 957tCO ₂ eq (direct), 2,730.9tCO ₂ eq (indirect), 607.3tCO ₂ eq (other indirect)

* 35 Qualitative and 17 quantitative performance indicators with regard to 15 material issues were reviewed, but only a few are presented in this assurance report.

Recommendations

The Auditor highly values the Report’s endeavor to ① establish material issues closely associated with KR’s four core values; ② appropriately reflect the key interests of every stakeholder through the Public Participation Innovation Corps, People Mentor Group, stakeholder interview, and surveys; ③ transparently disclose the Authority’s economic, environmental, and social performance improvement based on internal and external sustainability agendas including social value realization, human rights management, the UN SDGs, and the Ten Principles of UNGC.

Recommended in future reports with better quality are the followings:

- Clarity: Explaining technical terminologies and English abbreviations used in the railway industry, adding the basis and formula for calculating ripple effects
- Accuracy: Securing a system to manage basic data including the number of employees which are subject to change due to source, gathering criteria, and disclosure condition
- Comparability: Providing comparable benchmark data of public corporations under the Ministry of Land, Infrastructure, and Transport or peers when presenting performance indicators

Independence of the Auditor

The Auditor does not have any for-profit or commercial affiliation with KR and did not involve in any of the preparations of the Report, with the exception of this third party assurance statement.

Qualifications of the Auditor

The Institute for Industrial Policy Studies is a “Third Party Assurance Provider” engaging in sustainability report assurance for corporations and public organizations nationwide. The auditing team participating in the assurance of this report consists of experts specialized in disciplines of business administration, economics, and accounting, and also with many years of accumulated experience and professional training in the fields of ethical management, human rights management, CSR, and sustainability.

Tae Hyun Kim

August 2019

Chairman of the Institute for Industrial Policy Studies, **Tae Hyun Kim**



Awards and Association Memberships

Awards in 2018

Achievement	Hosted by	Significance
Presidential Prize at the National Quality Control Circles for 9 consecutive years	Korean Agency for Technology and Standards under the Korea Standards Association	Increase of work efficiency, budget saving, and enhancement of public concern (Aug. 2018)
Gold Prize (2 kinds) and Special Prize (2 kinds) at the International Convention on Quality Control Circles 2018	Association of Pioneer Quality Control Research	Sharing of KR's best practices in management innovation with 475 teams from 13 countries and increase of KR brand awareness (Oct. 2018)
Grand Prize at the 2018 Safety Management Award	Ministry of Employment and Labor	Achievement of the lowest accident rate at construction site among ordering public institutions under the Ministry of Land, Infrastructure and Transport (Dec. 2018)
Top 10 Railway Technology Award in 2018	Korean Society for Railway	Recognition for developing Korean train control system and soundproof facility optimization technologies (Nov. 2018)
Grand Prize (transport sector) at the 2018 Project of the Year	Korea Project Management Association	Efficient and systematic management of the Wonju-Gangneung railway construction project and contribution to successful execution of the Pyeongchang Winter Olympics (Nov. 2018)
Technology Award from the Korean Society of Steel Construction	Korean Society of Steel Construction	Development of eco-friendly low carbon bridge technologies (Jun. 2018)
Participation Award (UCC sector) at the 2018 People-Participating Contents Contest	Anti-Corruption & Civil Rights Commission	Efforts for disseminating the culture of integrity (Dec. 2018)
Citation for Excellent Institution in Utilizing State-Owned Assets	Ministry of Economy and Finance	Creating social value through creative idle railway utilization (Oct. 2018)
Minister Prize in Commemoration of the ChildFund Korea's 70th Anniversary	Ministry of Health and Welfare	Contribution to the development of child welfare (including marginalized group around railway and support for youth) in local communities (Oct. 2018)
Grand Prize at the Idea Contest (public sector) of the Public Workers Solidarity Foundation	Public Workers Solidarity Foundation	Fulfillment of social responsibility by building a daycare center in a station (Jun. 2018)

Association Memberships

Association
UIC: International Union of Railways
Korea Industrial Technology Promotion Association
Korea Institute of Electrical Engineers
Korea Suggestion System Association
AKI: Asosiasi Kontraktor Indonesia
Korean Association for Audit
Korea Association for Railway
Business Ethics and Sustainability Management Forum
Transparent Society Practice Network
Korea Industrial Safety Association
Korea Public Institution Audit Conference
International Contractors Association of Korea
Korea Project Management Association

Association
Power Breakfast of KSA Daejeon
IPMAK: International Project Management Association Korea
Daejeon Chungcheong Audit Conference
Korea Fire Safety Institute
UN Global Compact Korea
Korea Association of Ecological Restoration
Korea Emergency Planning Officer Council
Korea Railway Association
Korea Management Association
Korean Tunneling and Underground Space Association
AKCI: The Association of Korean Contractor in Indonesia
Korean Society of Transportation



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