INTERNATIONAL ROAD TRANSPORT RESEARCH

FACTSHEET SOUTH KOREA

This series of factsheets highlights main framework conditions as well as goals and significant future trajectories of road transport research (RTR) for China, Korea, Japan, the U.S. and the EU for the next 10 – 15 years. This is an activity of the EU-project FUTURE

Strategic Innovation Policy Goals and Programmes

Energy & Environment

- 2030: 35 % reduction of GHG emission compared to 2018
- Hydrogen economy policy as a key field of future economy & IGE[1]
- 2030: Installation of 660 H_2 refuelling stations
- Green new deal (60 b$, MOE & MOTIE)[3]
- 2025: Provision of 200,000 H_2 vehicles

Electrification

- 2023: Increase of EV & FCV sale to 10 % 2030: 33 % increase[3]
- 2025: 15,000 rapid charging stations & 30,000 slow chargers[3]
- Government plans for performance improvements of EVs (300 m$)[2]
- Incentives, subsidies for EVs & PHEVs (_600 m$)

Automation & Connectivity

- 2024: Legislation, transport systems & infrastructure for L4 on main roads[3]
- 2021: L3 AV deployment 2027: L4 AV deployment[3]
- 2030: World leader in AV technology[2]
- R&D plan for commercialisation of L4 AVs (cross-ministry, 900 m$)[3]
- Land transportation innovation fund – AV (28 m$, MOLIT)[6]
- Digital new deal: Integration of data, network & AI (32 b$, MSIT)[4]

Urban Mobility

- 2021: Master plan for intelligent transportation system 2030 (MOLIT)[5]
- Safe, affordable & environmentally friendly transport system
- Land transportation innovation fund – Smart city (28 m$, MOLIT)[6]

Freight & Logistics

- Establish smart logistics & distribution systems
- Land transportation innovation fund – Smart logistics (28 m$, MOLIT)[6]

Road Safety

- 2030: Reduction of road death by three quarters
- Guarantee of Automobile Accident Compensation Act

Research Activities

Energy & Environment

- R&D on various green technologies in the transport sector
- Eco-friendly mobility of the future (2020-2025, 17 m$)
- Establishment of fuel cell plants & infrastructure for the distribution of H_2

Electrification

- Battery leasing project: 80,000 units per year by 2029
- Carbon Free Island 2030 project: EV trial on Jeju Island
- Adaptable electric vehicle platform "E-GMP" by Hyundai

Automation & Connectivity

- Traffic control system first established in Seoul metropolitan area (2024) & nationwide (2030)
- 2024: AD infrastructure on major roads city-wide including all 5,500 km of express toll roads, including V2I on major roads, detailed HD maps, integrated traffic control system, strengthened security
- 5G vehicle to everything (5G+ strategy)
- Temporary permit scheme for AV test-operation on public roads (MOLIT)
- Digitalisation of SOC Project incl. adaptation of C-ITS on major roads
- 2027: Major city-wide autonomous driving infrastructure project in Seoul (125 m$)
- K-City: Mock city build for testing AVs (10 m$)
- Digital Twin Project (1.5 m$, 2020-2025)
- C-ITS pilot projects in Sejong-Yusung (2017), Seoul & Jeju (2019), Ulsan & Gwangju (2020)
- Sejong – Urban Connected Automated Shuttle Systems (2021)

Urban Mobility

- Smart City Songdo: Planned city with focus on innovative urban mobility
- Management of urban infrastructure using ICT & utilisation of city data
- From 2021: Pilot public services e.g. autonomous mass transit, street cleaning cars, autonomous patrol cars
- 108 platforms utilizing CCTV for traffic management
- Urban mobility operating system (by 42dot – TaaS startup)
- Smart city challenge
- Sejong Smart City
- 2022: 50 units of autonomous shuttle buses in cities & towns

Freight & Logistics

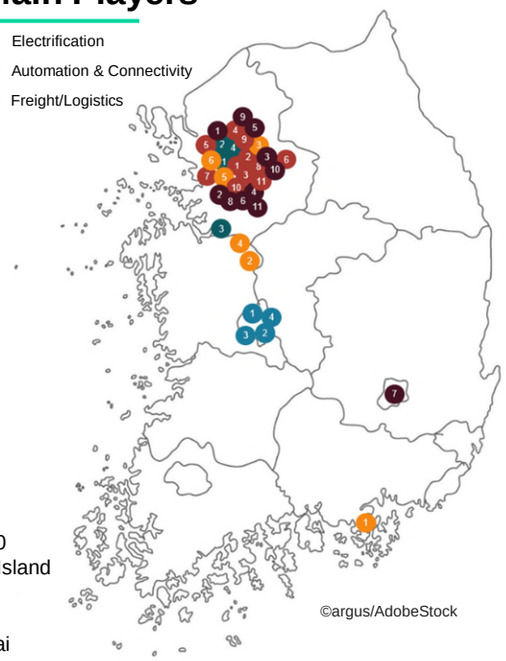
- Test bed for AD & truck platooning of commercial vehicles in Gunsan
- Pilot projects for flying cars (2025)
- R&D on logistics technology e.g. delivery systems utilizing robotics, IoT & big data
- Building smart logistics & distribution system with 11 smart distribution centers (2020-2025)

Road Safety

- Guarantee of Automobile Accident Compensation Act: Liability standard, obligation to attach AD data recorder, accident investigation committee

Main Players

- Electrification
- Automation & Connectivity
- Freight/Logistics



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Research Institutes

1. Korea Electrotechnology Research Institute
2. Korea Transport Institute
3. Electronics and Telecommunications Research Institute
4. Korea Automotive Technology Institute
5. Korea Automotive Testing & Research Institute
6. Korea Institute for Advancement of Technology

Suppliers

1. LG Energy Solutions
2. SK Innovation
3. Samsung SDI
4. MORAI
5. Seoul Robotics
6. Bitsensing
7. Mando Corp.
8. Smart Radar Systems Inc.
9. Hyundai Mobis
10. Hyundai Autron
11. Chemtronics

Innovation Policy

1. MOTIE
2. MOLIT
3. MSIT
4. MOE

OEMs

1. Hyundai
2. KIA
3. Ssangyoung
4. GM Korea
5. Daewoo
6. Renault Samsung Motors

Mobility Service Providers

1. StradVision
2. Prosense
3. Mobiltech
4. Wayties
5. ThorDrive
6. FESCARO
7. Sonnet.ai
8. Unmanned Solutions
9. 42dot
10. Autocrypt
11. Mappers

Socio-Economic Developments

- Economic growth & industrial development is more important than technology application or solving social issues within South Korea
- SME & Start-up culture is very slowly developing

Impacts of COVID-19

- Production support (simplifying import procedure for auto parts; allowing more than 52 working hours per week)
- Liquidity support (employment retention subsidies; R&D support for localisation of auto parts; loan & credit guarantee program for SMEs; Extension of debt maturity periods)
- COVID-19 has sped up AV legislation & adoption

Conclusions

South Korea's objective is it to commercialise AV products and components to become international export leader. AV policy has therefore been mainly established for economic growth & industrial development. South Korea wants to use this push in technology expertise to increase the domestic supply ratio up to 80%.

South Korea has an excellent 4G coverage supplemented by 5G services, which enables connected mobility applications and leads to a strong focus on C-ITS.

South Korea promotes H_2 technologies over battery technology research.

References

[1] MSIT (2017) Innovation Growth Engines
[2] IEA (2021) HEV TCP Annual Report 2021
[3] MOTIE (2019) Future Car Industry Development Strategy 2030
[4] Government of the Republic of Korea (2020) Korean New Deal
[5] MOLIT (2021) Intelligent Transport System Master Plan 2030
[6] MOLIT (2022) Report on 22nd Land Transport Innovation Fund

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