ESCAP
Economic and Social Commission for Asia and the Pacific

Regional AV Policy Guidebook : Republic of Korea

Navigating the Future: Regional Conference on Autonomous Vehicles in Asia and the Pacific

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Agenda

1. Vision & Strategy
    - Technical Strategy
    - Deployment Environment
    - Test Infrastructure
    - Legal Framework
    - Governance
    - Industry Players

2. Addressing Current Challenges
    - Local Deployment
    - New Legal Mechanisms
    - Labor & Market Transition
    - Societal Impact
    - Inclusive Mobility

Current State of AV Deployments on the Ground in ROK

Nationwide Deployment Footprint

- Over 55 Pilot Operation Zones designated across 17 metropolises and provinces.
- Active fleet scaled from ~165 vehicles in late 2025 to adding 200 software-defined vehicles (SDVs) in Gwangju alone in 2026.

Passenger Mobility Services (Urban & Regional)

- Late-Night Public Transit (Seoul): World-first 'Early Morning Companion' autonomous bus operating during off-peak hours (integrated with Kakao).
- On-Demand Urban Robotaxis (Seoul Gangnam & Sangam): 42dot's TAP! shuttle and SWM's Level 4 robotaxi fleets across high-density arterial corridors.
- Tourism & Rural Shuttles (Jeju & Sejong): Year-round fixed/on-demand public passenger services (NemoRide, Tamra Car, and Sejong BRT).

Heavy Freight & Logistics Operation

- Middle-Mile Expressway Hauling: RideFlux 25-ton autonomous trucks running daily commercial logistics routes between manufacturing centers and logistics hubs.
- Corridor Access: Full commercial access across all 44 expressways (5,224 km) under a unified network-wide pilot zone.

1. Vison & Strategy: ROK AV Policy Roadmap

Core Policy Vision

AVs are designated as a national flagship strategic industry integrating AI, 5G/LTE communications, high-definition maps, and smart road infrastructure.

- Phased Approach: **Demonstration → Institutionalization → Diffusion**
- Dual Goal: Innovation promotion balanced with stringent safety governance.

Dual-Track Regulatory Model

Opening innovation pathways through regulatory exemptions while continuously reinforcing safety governance.

- **Sandboxing:** Pilot Operation Zones & Temporary Permits
- **Governance:** KADAS assessment, CSMS, OTA, and accident investigation

Scaling Deployment

165 → 365+

AV Fleet Expansion (2025–2026)

55+ Pilot Zones across 17 cities. Gwangju designated as first "Demonstration City" adding 200 software-defined vehicles in 2026.

2. Technical Strategy: Hybrid Synergy - In-Vehicle AI & C-ITS Infrastructure

LTE-V2X - Single C-ITS Standard

In December 2023, Korea finalized **LTE-V2X** as the single national C-ITS communication standard, resolving long-standing spectrum debates.

- Integrated roadmap combining vehicle intelligence (AI/sensors) with infrastructure intelligence (V2X/traffic signals).
- Real-time sensor-sharing between roadside units (RSUs) and AV fleets.

November 2025 Competitiveness Plan

Redefining AVs as a core national application for the administration's **'AI Grand Transformation'** initiative.

- **Level 3:** Rationalizing safety standards for commercial production.
- **Level 4:** Establishing a 'Permit First, Regulate Later' regulatory system.
- Bundling dedicated GPU clusters, AI training centers, and city living labs.

3. Deployment Environment: Highways Unlocked - 5,224 km Expressway Network

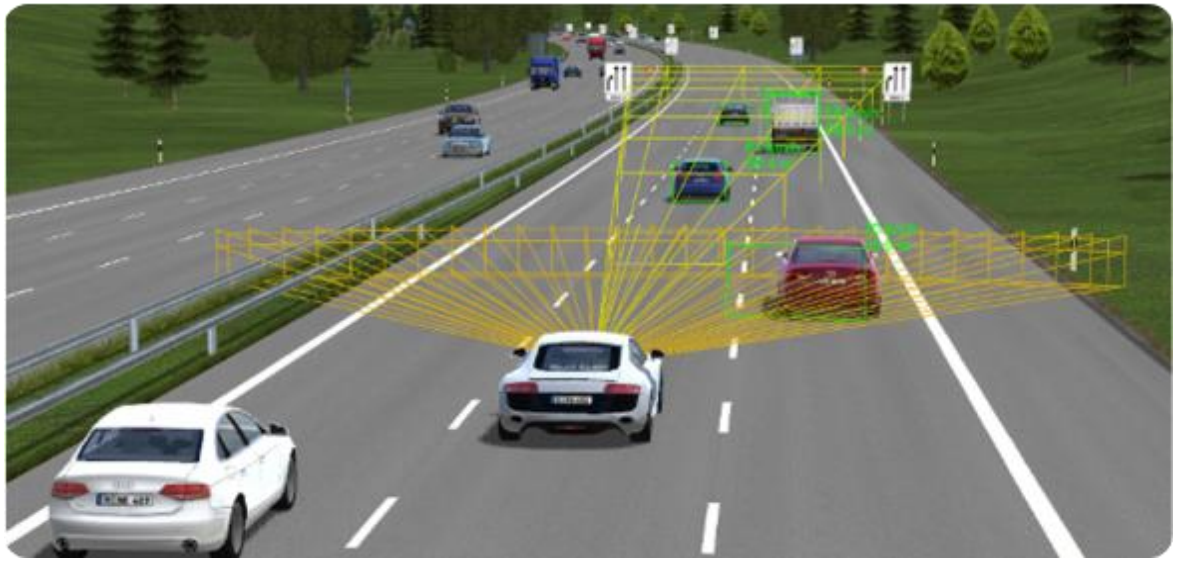
Historic Milestone (March 5, 2025)

MOLIT officially designated **all 44 national expressways (5,224 km)** as a single, continuous Pilot Operation Zone.

- Shifted highway deployment from fragmented segments to a unified nationwide corridor.
- Enables continuous urban-to-highway real-world data collection.

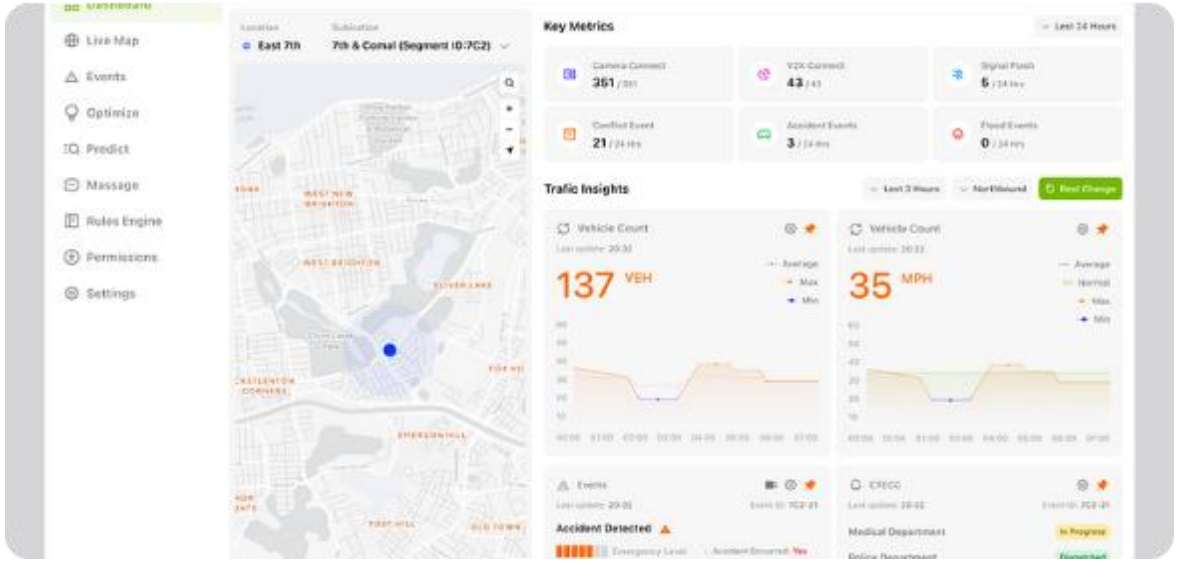
Middle-Mile Freight Logistics

Accelerates commercialization for heavy-duty autonomous freight trucks, paid long-haul delivery, and platooning services.



Source: blog.ptvgroup.com(https://blog.ptvgroup.com/wp-content/uploads/2024/07/IVH-Virtual-Test.png)

4. Test Infrastructure: Proving Ground to Citywide Lab



Source:
dribbble.com(https://cdn.dribbble.com/userupload/45058928/file/24d08dd096dbd9916f97da0ced567cd4.png?resize=752x&vertical=center)

Four-Stage Validation Continuum

- **K-City (Hwaseong):** 360,000m² state-of-the-art closed proving ground operated by KATRI/TS. Simulates complex urban environments & 5G testing.
- **Pilot Operation Zones:** Designated urban routes (55+ zones in Seoul, Sejong, Jeju) for real-traffic trials
- **Living Labs (Dec 2024~):** Integrated urban testbeds interacting with real pedestrians and mixed traffic.
- **Flagship Demonstration City (Gwangju 2026):** Citywide living lab uniting 200 SDVs, cloud control networks, and commercial fleets.

5. Legislative Foundation: The Autonomous Vehicle Act

Apr 2019 / May 2020

Enactment & Enforcement of the *Autonomous Vehicle Act*.

- Established Pilot Operation Zones and Temporary Operation Permits.
- Provided legal exemptions for real-road service demonstrations.

Mar 2024 / Mar 2025

Major Revision Enforced in March 2025.

- Introduced **Performance Certification & Suitability Approval** for vehicles without established safety standards.
- Transitions toward Type Approval equivalent for Level 3+ mass production.

Apr - Jun 2025

Subordinate Regulations Refinement.

- Detailed procedures for post-market management and safety recall protocols.
- Special provisions for processing anonymized video data in real time.

6. Multi-Ministerial Governance: Role Division

Ministry / Agency	
MOLIT (Ministry of Land, Infrastructure & Transport) /**KATRI/TS** (Korea Transportation Safety Authority)	Lead agency overseeing AV Act, Pilot Zones, Temporary Permits, Safety Standards & KADAS framework.
MSIT (Ministry of Science and ICT)	AI computing infrastructure, GPU allocation, telecommunication spectrum, and video data governance.
MOTIR (Ministry of Trade, Industry and Resources) / **KATECH** (Korea Automotive Technology Institute)	Auto parts supply chain, hardware manufacturing competitiveness, international standards & industrial R&D.
National Police Agency / PIPC (Personal Information Protection Commission)	Traffic enforcement & road rules / Personal information & anonymized video data regulations.
KADIF (Joint PMO)	Manages $750M+ inter-ministerial R&D fund connecting research, testing, standards & commercialization.

7. AV Ecosystem: Key Industry Champions

OEMs & Software Centers

42dot (Hyundai Motor Group): Group's Global Software Center developing E2E Atria AI; unveiling 'SDV Pace Car' in late 2026. Motional handling overseas robotaxis.

Tier-1 Hardware & Sensors

HL Klemove: Co-developing next-gen SDV architecture with Infineon; 4D imaging radar and Domain Control Units (DCUs).

Mobility Platforms

Kakao Mobility: Integrated AV rides into Kakao T app. Partnered with taxi unions in Feb 2026 for 'Korean-style Robotaxis'.

AV Software & Logistics Startups

- **Autonomous A2Z:** Secured Korea's 1st AV export approval (ROii to UAE); seeking Level 4 vehicle certification.
- **SWM:** Launched 2,000 TOPS AP-700 controller with Lenovo/Nvidia.
- **RideFlux:** Operating 25-ton autonomous cargo logistics in Jeju.

8. Current Challenges: Key Bottlenecks to Level 4

Cybersecurity

- 2025 Parliamentary Audits highlighted gaps in SDV software hacking inspections and over-the-air (OTA) update security checks.

C-ITS Verification

- Audit scrutiny regarding the buildout speed and empirical cost-efficiency proof for LTE-V2X roadside infrastructure.

AI Data & Compute

- Legal uncertainties around private vehicle video data usage and acute shortages of high-performance GPU clusters for model training.

Social Friction

- Friction with incumbent taxi/bus operators over market entry, requiring government tripartite transition bodies in late 2025.

9. Municipal Deployments: Solving Local Mobility



Source: www.vecteezy.com(https://static.vecteezy.com/system/resources/previews/070/634/425/non_2x/autonomous-shuttle-bus-in-urban-environment-with-modern-architecture-and-colorful-facades-photo.jpeg)

City-Level AV Service Innovations

- **Seoul:** Launched the world's first 'Early Morning Companion' autonomous bus (Oct 2024) to assist early-shift workers. Integrated into Kakao T app.
- **Jeju Island:** Year-round public shuttles (Tamra & NemoRide) plus 25-ton autonomous freight logistics between logistics centers and ports.
- **Chungcheong Region:** Intercity BRT autonomous routes connecting Daejeon, Sejong, and Cheongju Airport.

10. Unmanned Operations: New Legal Mechanisms

Fully Autonomous Road Bill

- Dedicated legislation submitted to National Assembly (June 2025) establishing rules for operation in the total absence of a human driver.

Remote Supervision

- Codifies technical oversight obligations, remote controller qualifications, and administrative authority for emergency pull-overs and detours

Liability & Subrogation

- Establishes primary insurance coverage for rapid victim relief, followed by clear subrogation rules among operators, OEMs, and software vendors based on data logs

11. Labor & Market Transition: Addressing Labor & Industry Impact

Structural Disruption Risk

Bank of Korea (2025 Report) warned that AI-based End-to-End autonomous driving could severely disrupt incumbent taxi and public transport ecosystems.

- Real-road data and large-scale AI computing become the core competitive moats.
- Driverless operations lower operating expenses, pressuring traditional transit business models.

Transition Policy Package

Government initiatives launched in late 2025 to manage social transition.

- **Formal Tripartite Discussion Body:** Dialogue with taxi unions on license buyouts and fleet conversion.
- **Accident Liability Task Force (2026):** Clarifying operator vs manufacturer liabilities.
- **Reskilling Pathways:** Training drivers as remote supervisors and fleet safety controllers.

12. Societal Impact: Safety & Carbon Neutrality

System-Centric Traffic Safety

Eradicates human driving errors—the leading cause of traffic fatalities.

- **C-ITS Synergy:** Real-time signal phase timing and hazard alerts via LTE-V2X prevent collisions in low visibility.
- **Accident Investigation Committee:** Transparent data-sharing and mandatory log analysis to prevent recurring faults.

Environmental Sustainability

Supports national net-zero greenhouse gas emission goals:

- **Eco-Driving Algorithms:** Smooth acceleration and braking reduce energy consumption by 12–15%.
- **Freight Platooning:** Middle-mile highway logistics optimization reduces heavy diesel fuel burn.
- **Living Lab Orchestration:** Optimizes traffic flow, reducing urban congestion gridlock.

13. Inclusive Mobility: Lessons for Asia and the Pacific

Public Welfare Model

- Unlike aggressive discount models, ROK AVs integrate directly into the **unified public transit fare system** with full transfer discounts, serving aging rural transit deserts.

- **Key Regional Takeaways**

- **Dual-Track Sandboxing:** Combine vehicle permits with geographic pilot zones.
- **Standardized Connectivity:** Pick clear C-ITS standards early.
- **Social Consensus:** Engage transport unions early in policy design.

ROK AV Outlook: The Next Frontiers and Market Challenges

Next Commercial Frontiers (2026–2028)

- Transition to Unmanned Level 4: Transitioning from human fail-safe onboard to fully driverless robotaxis and shuttles by late 2026 (led by A2Z, 42dot, Motional).
- Dedicated SDV Architectures: Unveiling next-generation OEM 'SDV Pace Cars' integrated with proprietary End-to-End (E2E) AI foundation models.
- Scaling Middle-Mile Logistics: Commercial rollout of heavy truck platooning across the 5,224 km national highway corridor.

Core Regulatory & Institutional Hurdles

- Enacting Driverless Legislation: Passing the Fully Autonomous Vehicle Road Operation Act to define remote supervisory liability and police enforcement rules.
- Public AI Computing & Video Data: Securing national GPU training centers and establishing clear de-identification rules for exterior vehicle video data.

Workforce & Market Integration

- Institutionalizing the Tripartite Taxi Discussion Body to manage medallion conversions, revenue-sharing, and reskilling drivers as remote fleet operators.

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