Enhancing Smart Transportation on Road Safety through the Exploration of Intelligent Vehicle Solutions: International Symposium

Final Report

APEC Policy Partnership on Science, Technology and Innovation

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Produced by

Automotive Research & Testing Center (ARTC)

For
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 68919 600
Fax: (65) 68919 690
Email: info@apec.org
Website: www.apec.org

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Executive summary

This report focuses on “Smart Vehicle Solutions” applied to vehicles, emphasizing the applications and global trends of technologies such as Advanced Driver Assistance Systems (ADAS), autonomous driving, automotive AI and Vehicle-to-Everything (V2X) in road safety and smart transportation development.

As economies actively promote transportation digitalization and vehicle intelligence, these technologies have become critical enablers for improving road safety, reducing accident risks and facilitating industrial transformation.

To promote international exchange and policy dialogue, the “APEC International Symposium on Smart Vehicle Technology” was held on 8–9 April 2026. Government representatives, industry experts and academic researchers from APEC economies participated. Through symposium discussions and site visits, participants gained deeper insights into smart vehicle development and shared professional perspectives and practical experiences regarding policy directions, technological applications and industrial challenges.

The symposium also incorporated questionnaires and feedback collection to analyze differences and areas of consensus among economies in terms of policy implementation, technological development and application status. These findings serve as an important foundation for future policy recommendations and international collaboration.

These efforts will accelerate the safe deployment and large-scale adoption of smart vehicle technologies while jointly advancing smart mobility development in the Asia-Pacific region.

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1. Market and Technology Development of Smart Vehicle Solutions

1.1 Rise of ADAS and Global Road Safety Demand

Advanced Driver Assistance Systems (ADAS) have played a crucial role in the global automotive industry in recent years. According to the World Health Organization, road traffic accidents cause approximately 1.3 million deaths annually, making ADAS a key technological solution for reducing accidents and casualties. Functions such as Automatic Emergency Braking (AEB) and Lane Departure Warning (LDW) have proven effective in preventing collisions. Studies in Europe and the United States indicate that AEB can reduce rear-end collisions by approximately 38%.

Beyond objective safety, public perception of safety is also a critical factor in transportation success. Research in the United Kingdom (UK) suggests that addressing passengers' perceived safety concerns could encourage up to 10% of the population to reconsider using public transport. Finnish studies further show that a sense of safety is positively correlated with the frequency of public transportation usage.

Governments across economies are increasingly recognizing the potential of smart vehicles and autonomous driving technologies. They are promoting ADAS adoption through mandatory regulations and policy incentives. For example, the European Union's General Safety Regulation (GSR) (implemented in 2022 and fully enforced by 2024) mandates features such as

Intelligent speed assistance, reverse detection, driver monitoring systems, event data recorders, cybersecurity capabilities, lane-keeping and automatic braking.

The National Highway Traffic Safety Administration (NHTSA) proposed mandatory AEB requirements in 2020 and updated the NCAP 5-star rating system in 2024, incorporating pedestrian AEB, lane-keeping systems and blind-spot detection. Additionally, cybersecurity best practices were updated in 2022 to address risks such as hacking and data breaches.

1.2 Automotive Manufacturers' ADAS Strategies

Japan's development of automotive AI primarily focuses on ADAS and human-machine collaboration to address the challenges of an aging society and labor shortages in transportation. In 2022, the Japan Automobile Manufacturers Association (JAMA) and the Japan Auto Parts Industries Association (JAPIA) released Version 2.0 of their automotive cybersecurity guidelines. These guidelines introduced supply chain self-assessment frameworks and annual auditing mechanisms, incorporating requirements such as firmware integrity, component authenticity, version control, vulnerability management and supply chain audits. This effectively embeds chip- and ECU-level cybersecurity processes into mass production thresholds while aligning with international standards such as NIST and ISO/IEC and addressing in-vehicle OTA security. Such global trends have further increased the emphasis on automotive AI and ADAS, accelerating the diffusion of these technologies from advanced economies to emerging markets.

ADAS has increasingly become a core technology in the global automotive industry, attracting significant attention in terms of both market size and growth momentum. Beyond enhancing driving safety, it serves as a foundational architecture for autonomous driving. Its operation involves sensors detecting environmental data, which is then processed by microcontrollers to execute vehicle control actions such as acceleration, braking and steering. Applications

include automatic emergency braking, lane-keeping assistance, blind-spot detection and traffic sign recognition.

According to forecasts, the market size of industries associated with autonomous driving, V2X, the sharing economy and smart cities is expected to reach USD 800 billion by 2030. Market research further indicates that the global ADAS market will grow from USD 57.94 billion in 2025 to USD 125.41 billion in 2030, representing a compound annual growth rate of 16.7%. This growth is primarily driven by increasingly stringent vehicle safety regulations, rising consumer demand for safety and convenience and the rapid adoption of electric vehicles (EV), which is accelerating upgrades in in-vehicle electronic systems.

Traditional automakers such as Toyota, Volkswagen, Ford and Mercedes-Benz continue to strengthen the stability and safety of ADAS technologies by leveraging their mass production experience and global supply chain advantages. For instance, Toyota's Safety Sense integrates multiple active safety features and has been extended to mid-range vehicle models. Volkswagen is advancing localization strategies in the Chinese market by collaborating with Horizon Robotics to develop ADAS systems and plans to introduce next-generation smart electric vehicles tailored for local demand. Ford's Blue Cruise system offers features such as automated lane changes and driver monitoring, while Mercedes-Benz utilizes real-world sensors and imaging data collected from its global fleet to enhance the training and decision-making capabilities of its autonomous driving systems.

In the United States, Tesla promotes Full Self-Driving (FSD) through an end-to-end architecture, utilizing a vision-based perception architecture. By combining high-resolution, wide-angle cameras with radar, Tesla enhances environmental perception accuracy under challenging conditions such as nighttime or adverse weather, demonstrating its strength in algorithm development and data-driven learning.

Emerging Chinese automakers such as NIO, XPeng and Li Auto are rapidly advancing the deployment and commercialization of ADAS technologies, with a strong focus on innovation and in-house research and development. NIO's self-developed intelligent driving chip, the "Shenji NX9031," is scheduled to be first deployed in its flagship sedan ET9 in the first quarter of 2025, with both the chip and its underlying software fully designed in-house. XPeng has introduced its proprietary "AI Turing" intelligent driving system and announced that all future vehicle models will be equipped with its self-developed Turing chips, aiming to enhance system integration and computational efficiency. Meanwhile, Li Auto has developed its in-house ADAS chip, "Shumahe," with support from Chinese Taipei-based ASIC design company Alchip Technologies, which has prior experience in designing Tesla's Dojo chip. Alchip's involvement in the front-end design process highlights the critical role of Chinese Taipei's semiconductor industry in the global smart vehicle supply chain.

Chinese domestic brands have already captured a 67% market share in the local market, while foreign brands continue to lose competitive ground. According to the AlixPartners 2025 Global Automotive Outlook, Chinese new energy vehicle manufacturers leverage cost advantages, government subsidies, insurance incentives and cash rebates to lower purchasing barriers for consumers. They actively adopt AI-driven solutions to enhance operational efficiency across both manufacturers and suppliers. Although geopolitical uncertainties have slowed exports of Chinese original equipment manufacturers (OEMs), the industry is adopting "new operating models" through partnerships and joint ventures, enabling vehicles to reach the market twice as quickly while reducing investment costs by 40% to 50%. The report also forecasts that Chinese automakers will actively expand into the European market, with their market share projected to double to 10% by 2030, while European manufacturers may face declining capacity utilization.

The Asia region is expected to become the fastest-growing automotive market, with major economies such as China and Japan forming the world's largest automotive markets. The Indian government is actively promoting electric vehicle adoption and smart mobility policies also, with a target that 30% of new vehicles will be equipped with Level 2 ADAS technologies by 2030. Driven by the convergence of localization strategies, chip integration, software platforms and the commercialization of autonomous driving, ADAS is no longer merely a safety feature but has become a core determinant of future competitiveness within the automotive industry. It will profoundly influence global automakers' technological strategies, business models and market positioning.

From a broader perspective on global automotive strategies, localized technology integration and platform development are emerging as key priorities for the future. Given the increasing number of collaborations between international automakers and Chinese ADAS technology companies, it is evident that China's long-term investments in electric vehicles and autonomous driving technologies are gaining recognition from global players. To remain competitive in the Chinese market, international automakers are expanding the depth and scope of cooperation with Chinese partners in areas such as ADAS chips and software services. This trend is expected to drive further collaboration between global automakers and Chinese firms in the ADAS domain in the coming years.

1.3 Market Comparison: North America, Latin America, Northeast Asia and Southeast Asia

Different economies exhibit distinct market and technological development patterns based on their institutional frameworks and industrial conditions. This report reviews the current market and technological landscape of vehicle intelligence solutions, including automotive AI and ADAS, across APEC regions.

1.3.1 North America: Technology-Driven Innovation

In North America, development is largely market-driven. The United States maintains a leading position in automotive AI, supported by strong venture capital, a mature innovation ecosystem and major technology firms. Companies such as Waymo, Aurora, Tesla and Nvidia are actively advancing autonomous driving software, AI chips, sensors and smart cockpit technologies, forming a comprehensive industry ecosystem. The United States federal-state governance structure enables diverse testing and innovation environments, which accelerates the development of autonomous driving technologies, while also creating challenges related to regulatory inconsistency.

The United States places particular emphasis on the development of Level 4 and Level 5 autonomous driving systems. Through early market entry, large-scale on-road testing and strong support from research institutions, it has established a clear competitive advantage. Tesla's vertical integration and in-house chip development, combined with Nvidia's leadership in GPUs, have driven comprehensive hardware-software integration. Supported by policy incentives, capital investment and robust R&D capabilities across academia and industry, the United States has become one of the most important markets for autonomous driving experimentation and deployment.

Canada leverages its strengths in AI research to focus on autonomous freight and computer vision technologies, with startups playing a key role in market applications. For instance, Waabi specializes in autonomous trucking by combining deep AI research with innovative business models. LoopX develops autonomous systems for mining and other closed or semi-enclosed environments, demonstrating strong practical applicability. Algolux focuses on AI-driven computational imaging and vision algorithms, enhancing vehicle perception under complex lighting and harsh environmental conditions.

1.3.2 Latin America: Growth Through Localization

The automotive industry in Latin America has experienced relatively slow growth due to economic fluctuations. Nevertheless, Mexico and Brazil remain the primary contributors to the region's ADAS market. Mexico ranks as the third-largest vehicle producer in the Western Hemisphere, following the United States and Brazil, making it a key manufacturing hub in the region.

Local suppliers in Mexico have overcome technological barriers in millimeter-wave radar by leveraging reverse engineering, reducing costs by approximately 35% compared to imported products. By the first quarter of 2025, localized sensors accounted for around 28% of the market, reducing reliance on imports. Severe traffic congestion in Mexico City has also prompted government-led transportation reforms and parking management policies, which are expected to increase demand for parking assistance systems and ADAS systems. In Peru, strong economic growth has driven increasing demand for ADAS in the luxury vehicle segment, indicating significant future growth potential.

During the symposium, the invited speaker from Peru highlighted that Lima, as one of the most congested cities in the world, suffers from severe economic and social impacts, with annual losses estimated at USD 7 billion, or approximately 2% of GDP. To address this issue, the city has launched an autonomous taxi initiative that collects localized data and develops 3D mapping models to correct biases in international AI systems. The highly irregular nature of local traffic patterns provides diverse and challenging datasets, which help improve AI system performance in extreme scenarios and enhance overall system robustness. The initiative also creates income opportunities for local drivers through data contribution mechanisms.

1.3.3 Northeast Asia: Deployment and Commercialization

In Northeast Asia, major economies closely integrate technological development with commercial deployment, setting clear implementation targets. China accelerates the deployment of ADAS and autonomous driving technologies through centralized planning and large-scale pilot programs, while increasing investments in core AI technologies and applications to strengthen industrial competitiveness and enable large-scale deployment.

Companies such as Baidu Apollo, Pony.ai and WeRide are actively advancing Level 4 autonomous driving and robotaxi commercialization, while XPeng and BYD enhance product differentiation through in-house chips and intelligent systems. Leveraging vast market scale and extensive real-world driving data, China has become a key driver of global smart vehicle technology development.

Japan adopts a gradual development approach, emphasizing human-machine collaboration and applications for aging societies. Companies such as Denso and Toyota continue to invest in sensors and autonomous driving platforms, demonstrating a stable development trajectory. Korea, led by Hyundai Motor Group, actively promotes the integration of autonomous electric vehicles and emerging technologies, building a comprehensive ecosystem. Chinese Taipei, meanwhile, demonstrates strengths in automotive electronics and testing technologies, leveraging industrial collaboration to strengthen integration into the global supply chain.

1.3.4 Southeast Asia: Foreign-Led and Policy-Driven Development

In Southeast Asia, the automotive industry is largely dominated by foreign automotive manufacturers. Economies such as Indonesia and Thailand have developed into regional manufacturing hubs, although the overall supply chain remains dominated by Japanese, American and European brands. As

technologies mature and costs decline, ADAS solutions are becoming less dependent on localized data, facilitating deployment in developing markets.

Economies such as Indonesia; Malaysia; and Thailand are promoting ADAS development through regulatory measures and tax incentives, including linking ADAS adoption to electric vehicle tax benefits or planning to introduce mandatory safety system requirements. Viet Nam focuses on establishing technical standards and certification mechanisms, while the Philippines remains focused on basic safety policies. Overall, the Asia-Pacific region is regarded as the fastest-growing ADAS market, with economies gradually strengthening policies and applications to keep pace with advances in vehicle safety technology.

1.4 ADAS Market Size Estimation and Future Growth Potential

The market potential of ADAS can be estimated based on new vehicle sales data. Using 2024 vehicle sales figures from the FOURIN Global Automotive Monthly Report as a baseline and assuming that each vehicle is equipped with standard AEB and Blind Spot Detection (BSD) features, the cost of BSD is estimated to range from approximately TWD 10,000 to TWD 20,000 while AEB ranges from TWD 8,000 to TWD 35,000. Combined, the average cost per vehicle is estimated to range from USD 600 to USD 1,800 (approximately TWD 18,000 to TWD 55,000). This cost range serves as the basis for estimating the potential market size. As governments increasingly mandate key ADAS features, demand for related hardware and systems is expected to increase, thereby further expanding the global smart vehicle market (see Table 1).

Table 1. Estimated ADAS Market Size (2024)

Region	Economy	New Vehicle Sales (Thousands of Units)	Market Size – Lower Estimate[1]	Market Size – Upper Estimate[2]
North America and Latin America	Canada	1,876	11.26B	3.377B
	Mexico	1,554	0.932B	2.797B
	Peru	169	0.102B	0.305B
	United States	16,336	9.802B	29.405B
Northeast Asia	China	26,281	15.769B	47.306B
	Japan	4,421	2.653B	7.958B
	Korea	1,631	0.979B	2.936B
	The Russian Federation	1,834	1.100B	3.301B
	Singapore	51	0.031B	0.093B
	Chinese Taipei	458	0.275B	0.824B
Southeast Asia	Indonesia	866	0.519B	1.558B
	Malaysia	817	0.490B	1.470B
	The Philippines	475	0.285B	0.855B
	Thailand	573	0.344B	1.031B
	Viet Nam	494	0.297B	0.890B
Oceania	Australia	1,237	0.742B	2.227B
	New Zealand	129	0.077B	0.232B
Total		59,202	35.521B	106.563B

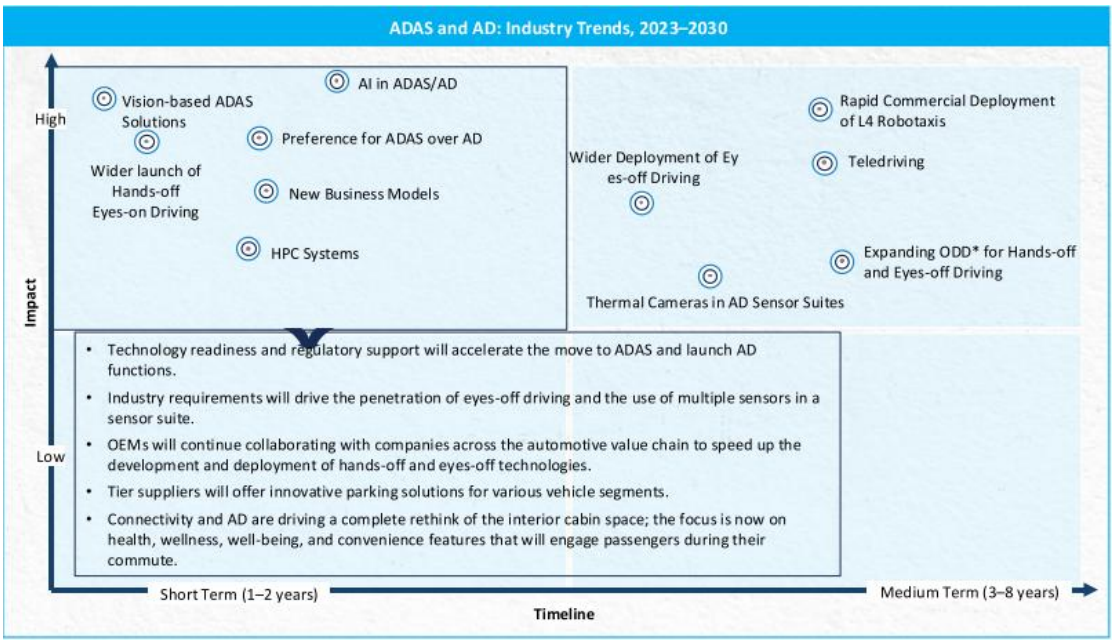
* Economies are organized according to region.

[1] The lower-bound estimate of market size assumes USD 600 per vehicle.

[2] The upper-bound estimate of market size assumes USD 1,800 per vehicle.

Source: PAMO (2025)。*安全輔助系統(ADAS)值得投資嗎？開老車的你，搞懂再上路。* https://www.pamolaw.com/adas-worth-it-or-not/ [PAMO (2025). *Is Advanced Driver Assistance Systems (ADAS) a worthwhile investment? If you drive an older car, understand this before hitting the road.*] ； FOURIN (2025). *FOURIN's Monthly Reports on the Global Automotive Industry-Dec 2025. 484.*

In summary, Advanced Driver Assistance Systems (ADAS) have emerged as a pivotal global trend in automotive safety technology. They not only help reduce traffic accidents and casualties but also align with government policies promoting smart mobility and autonomous driving. In the short to medium term, most autonomous driving development will focus on enabling driving functions that require minimal or no driver intervention or supervision (see Figure 1)



Source: Frost & Sullivan (2025). *APAC ADAS and Autonomous Driving Outlook and Growth Opportunities, 2025*. EMIS. https://www.emis.com/v2/industries/profile/3.1.3

Figure 1. Trends in the ADAS and Autonomous Driving Industry (2023–2030)

With the continuous advancement of ADAS technologies and the increasing integration of AI applications, system-level integration of algorithms, chip performance and vehicle control systems will become increasingly critical. Looking ahead, in addition to continued improvements in hardware capabilities, companies with strong system integration and engineering capabilities are expected to emerge as key players in the ADAS industry. The interaction among technological maturity, policy support and consumer demand will form a positive feedback loop, driving the industry toward greater intelligence and improved safety. This report focuses on APEC economies, conducting a

comprehensive analysis of policy and regulatory frameworks, market development and technological innovation.

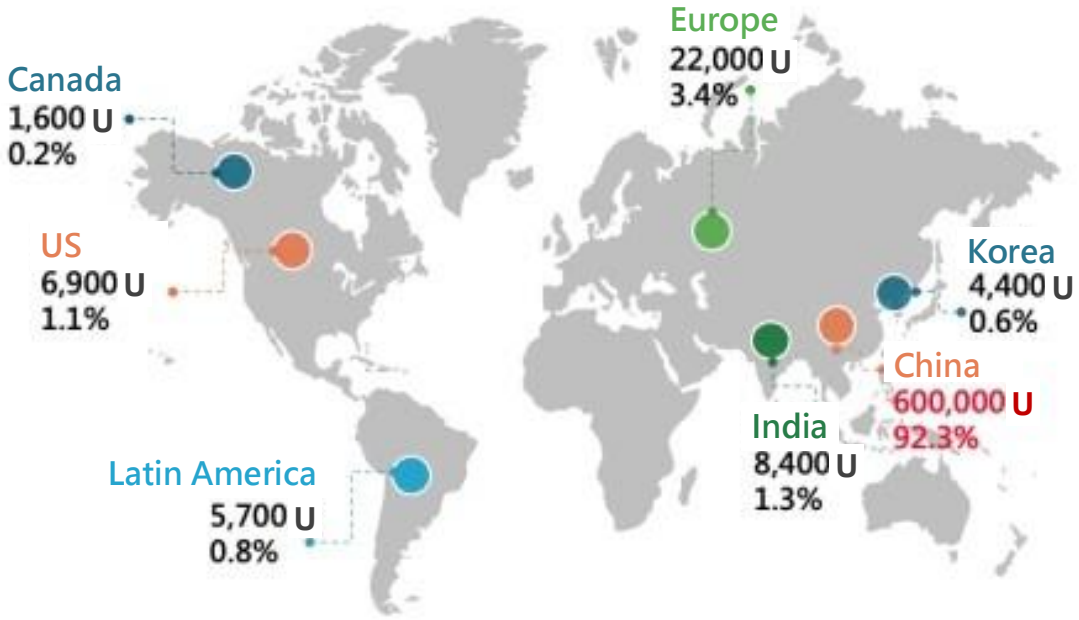
2. Best Practices of Smart Vehicle Solutions in Public Transportation

2.1 Current Status and Development of Autonomous Buses

2.1.1 Current Status of Autonomous Buses

According to the Global EV Outlook 2024 by the International Energy Agency (IEA), the global electric vehicle market continues to expand strongly, driven by sustained growth in major markets and rapid expansion in emerging economies. In the first quarter of 2024, global EV sales reached approximately 17 million units, representing a 25% year-on-year increase and indicating stable market momentum. Electric buses have likewise demonstrated steady growth. According to Bloomberg NEF (BNEF), electric buses accounted for approximately 26% of total EV sales in 2023, with around 50,000 units sold worldwide and a cumulative global fleet of approximately 650,000 units, representing about 3% of the global bus stock. China remains the world's largest market leader.

The growth of the electric bus market is primarily driven by intensified competition among manufacturers, declining battery and vehicle costs and continued government policy support, making it a key driver for the electrification of public transportation.



Source: 葉志逸(2024)。*2023 年全球電動巴士趨勢及各大區域市場現況*。ARTC。https://www.artc.org.tw/tw/knowledge/articles/13765 [Yeh, Chih-Yi (2024). *Global Electric Bus Trends and Current Status of Major Regional Markets in 2023*. ARTC.]

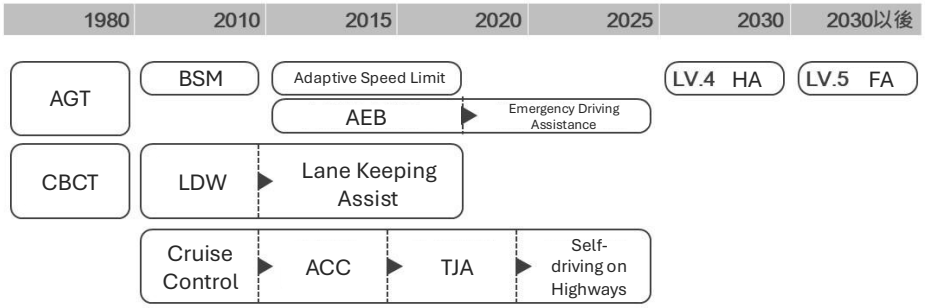
Figure 2. Total Number of Electric Buses in Major Global Economies (2023)

Operating costs are a critical factor in the adoption of electric buses. Studies suggest that bus operating costs are composed of approximately 80% direct operational costs and 20% indirect costs. Operating costs include labor (50%), capital costs (25%) and other expenses such as fuel and maintenance (25%), with labor accounting for the largest share. In the case of autonomous buses, although additional investment in technology development is required, significant reductions in labor costs can offset these expenditures, resulting in overall economic benefits. This also enables operators to deploy smaller vehicles with expanded fleets to improve efficiency.

From a passenger perspective, fleet management systems can reduce service intervals and waiting times, thereby improving service quality and public acceptance. Studies also suggest that autonomous buses are generally perceived more positively compared to other driverless shuttle systems, facilitating their integration into public transportation networks.

The adoption of autonomous vehicles can improve traffic flow and efficiency. Studies indicate that when penetration reaches 20%, road capacity may increase by approximately 3.6% and up to 14.2% under full adoption. Through V2X communication and intelligent transportation systems (ITS), vehicles can share real-time information, reducing travel time in high-conflict areas such as intersections by around 5%. In fleet operations, real-time communication and cooperative decision-making can reduce collision risks and enhance traffic stability. Information shared by leading vehicles also helps following vehicles optimize speed and route planning, enhancing traffic smoothness.

In terms of technological development, most studies suggest that Level 4 autonomous driving will gradually emerge after 2025. However, due to regulatory constraints and testing requirements, fully autonomous vehicles have not yet been widely commercialized and large-scale market deployment is expected to be delayed by three to five years (see Figure 3).



Source: Azad, M., Hoseinzadeh, N., Brakewood, C., Cherry, C. R., & Han, L. D. (2019). Fully autonomous buses: A literature review and future research directions. *Journal of Advanced transportation*, *2019*(1), 4603548.

Figure 3. Historical Development of Autonomous Driving

Academic studies also indicate that excessive reliance on infrastructure readiness may delay technology adoption. Future development is therefore expected to emphasize vehicle-based perception and decision-making, evolving from sensor fusion to advanced data fusion techniques. With advancements in AI and processing power, vehicles are expected to become key platforms for AI applications.

In the current autonomous bus market, the primary barriers to sales lie in concerns over road safety and high costs, which make it difficult to convince regulators and operators to proceed with large-scale procurement and deployment on public roads. As a result, global sales growth has mainly been observed in electric buses rather than fully autonomous buses. Autonomous buses legally permitted to operate on public roads are mostly deployed through regulatory sandbox programs or are used in controlled environments such as major international events, for example, shuttle services between venues during the Tokyo Olympics. To date, large-scale commercial deployment of autonomous buses remains limited.

In 2020, KPMG released the Autonomous Vehicles Readiness Index, evaluating and ranking 30 economies on their preparedness for autonomous vehicles. Among APEC economies ranked within the top 12 were Canada (12th); Japan (11th); Korea (7th); Chinese Taipei (13th); and the United States (4th), as shown in Table 2. The report evaluates each economy across four key dimensions: policy and regulation, technology and innovation, infrastructure and consumer acceptance (see Table 2).

Table 2. Autonomous Vehicles Readiness Index Rankings (2020)

Economy	Ranking (year)		Economy	Ranking (year)	
	2020	2019		2020	2019
Canada	12	12	United Arab Emirates	8	9
Japan	11	10	United Kingdom	9	7
Korea	7	13	Denmark	10	N/A
Netherlands	2	1	Norway	3	3
Singapore	1	2	Finland	5	6
Chinese Taipei	13	N/A	Sweden	6	5
United States	4	4	Germany	14	8

* The economies were ranked by readiness for autonomous vehicles.

Source: KPMG International (2020). *2020 Autonomous Vehicles Readiness Index*. https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2020/07/2020-autonomous-vehicles-readiness-index.pdf

This report focuses on representative APEC economies in evaluating autonomous driving development, while also referencing selected Asian economies with urban traffic conditions such as Chinese Taipei. It compiles and analyzes the development of autonomous driving technologies and applications across these different economies.

2.1.1.1 China: Policy-Driven Large-Scale Deployment

In 2023, the market size of autonomous commercial vehicles in China reached RMB 108.8 billion, with a compound annual growth rate (CAGR) of 41.6% from 2019 to 2023. In 2018, China mass-produced 100 units of the King Long Apolong autonomous bus, at a time when the market had not yet achieved large-scale commercial deployment. Since 2019, the growth of commercial

vehicle production has provided a solid foundation for the expansion of the autonomous commercial vehicle market. According to the Intelligent Connected Vehicle Technology Roadmap 2.0, China aims to enhance vehicle intelligence, vehicle-to-everything (V2X) technologies and large-scale deployment of intelligent transportation systems by 2030. It is projected that Level 4 and Level 5 autonomous vehicles will account for 20% of total vehicle volume by that year. Increasing demand in low-speed closed and semi-closed environments is also driving higher penetration of autonomous commercial vehicles, further expanding the market.

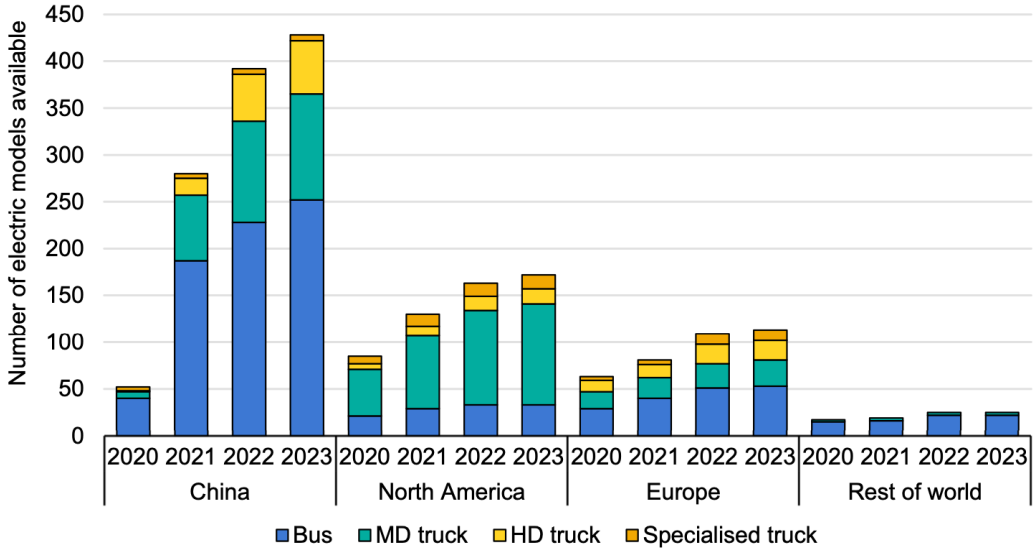
Chinese automakers significantly outpace other economies in the number of electric heavy-duty vehicle types, with a total of approximately 430 models, particularly focusing on buses for urban public transportation. Bus models produced in China account for nearly 40% of the global total. In 2021 alone, Chinese manufacturers introduced 150 new bus variants, covering a wider range of applications and reinforcing China's position as the world's largest electric bus market. Since then, the number of new models has continued to grow, with a more balanced distribution across different market segments, indicating increasing market maturity. As the penetration of autonomous technologies increases, the market size is expected to expand further.

In addition to buses, China also holds a leading position in the development of electric trucks. Sales data indicate that China accounts for most global heavy-duty vehicle sales, making it a key production and sales hub worldwide. Chinese manufacturers are actively integrating autonomous driving technologies into both passenger and freight heavy-duty platforms, with applications in port logistics and mining operations in non-public road environments. These use cases demonstrate China's leadership in deploying autonomous technologies in specialized scenarios (see Figure 4).

Source: IEA (2024). *Global EV Outlook 2024*. https://www.iea.org/reports/global-ev-outlook-2024

Figure 4. Electric Bus Sales Share and Market Share in Major Economies (2015–2023)

As shown in Figure 5, North American automakers produce significantly fewer electric vehicle types than China, focusing primarily on medium-duty trucks, which account for more than 60% of their heavy-duty electric vehicle models. This is largely due to the relatively smaller public transportation market in North America, where buses suitable for urban transit account for only about 10% of total types. As a result, manufacturers tend to target niche markets such as school buses, with approximately nine variants currently available.



Source: IEA (2024). *Global EV Outlook 2024.* https://www.iea.org/reports/global-ev-outlook-2024

Figure 5. Production statistics of electric heavy-duty vehicles in major economies (2020–2023)

2.1.1.2 Japan: Policy-Driven Development of Demonstration Applications

Japan shows an upward trend in its ranking in the Science, Technology and Innovation assessments within readiness reports, rising from 5th to 3rd place and leads all surveyed economies in the number of autonomous vehicle-related patents. In terms of policy and regulation, Japan has introduced two relevant legislative frameworks. The revised Road Transport Vehicles Act clearly defines for automated driving systems and permits drivers of autonomous vehicles to use mobile phones or operate in-vehicle navigation systems, provided they can immediately resume manual control in an emergency. Autonomous vehicle testing regulations include a speed limit of 20km/h, compliance with cybersecurity standards and the installation of in-vehicle recorders to document traffic incidents. In 2025, Japan's Ministry of Land, Infrastructure, Transport and Tourism announced the first commercial

operation of a Level 4 autonomous bus, with Iyo Railway Bus's L4 autonomous buses achieving fully driverless operation without any driver intervention.

The route operated by Iyo Railway Bus in Matsuyama City runs between Iyo Railway Takahama Station and Matsuyama Tourist Port, covering a round-trip distance of approximately 1.6km, making it Japan's first commercially operated Level 4 autonomous bus route. The autonomous bus is manufactured by EV Motors Japan, an electric vehicle company based in Kitakyushu and is equipped with an autonomous driving system developed by BOLDLY, a subsidiary of SoftBank. It uses a total of 42 sensors and cameras to actively detect pedestrians and various objects on the road, with AI technology controlling driving operations. The bus has 12 passenger seats, can reach a maximum speed of 35km/h and operates 60 round trips per day over the 1.6km route, with most operations conducted in autonomous driving mode. When weather conditions are favorable, service intervals can be reduced to 15 minutes and the fare per trip is JPY 230.

This demonstration route employs AI-based autonomous driving technology to deliver a reliable driverless bus service, with the goal of scaling from Matsuyama City to economy-wide deployment and progressing toward full automation. However, the Iyo Railway autonomous bus project is currently operating under full government subsidies and the manufacturing cost of the autonomous bus itself exceeds JPY 100 million. Operational and maintenance costs are also substantial, including vehicle maintenance and sensor calibration, which require technical personnel different from those used in conventional operations. If subsidies are discontinued in the future, the sustainability of the project may be difficult to maintain.

2.1.1.3 Korea: Infrastructure-Driven Development of Smart Mobility

Korea ranks second in the infrastructure assessment of readiness reports, driven by newly included indicators such as broadband speed and mobile connectivity, as well as the economy’s leading 4G network coverage among all economies. Its consumer acceptance ranking is also relatively high, supported by the expansion of autonomous vehicle testing sites, the widespread adoption of ride-hailing services, increased public use of technology and a rising level of consumer technology adoption.

Smart transportation innovations have been rolling out from Seoul since 2024, including the autonomous bus route 'A160 Early Morning Companion Driverless Bus,' designed specifically for late-night commuters such as security guards and cleaning staff. The A160 bus shortens part of the existing Route 160, accommodates 22 seats, operates once per day from Dobongsan Station to Yeongdeungpo Station and stops at 87 stations along the route.

In addition, there is the Han River Bus operating on waterways, measuring 10m in length and weighing 150 tons, with a maximum capacity of 199 passengers per trip. It aims to alleviate road congestion and is also expected to become a new tourist hotspot.

More recently, in preparation for hosting the 2025 APEC Economic Leaders' Meeting, Korea has actively promoted its “Smart Mobility Initiative.” In Gyeongju, the APEC Economic Leaders' Meeting host city, autonomous bus services have been introduced alongside the development of Intelligent Transportation Systems (ITS) to advance smart mobility technologies.

From 10 February to 10 April 2024, a pilot project in Gyeongju provided free autonomous shuttle services within the Bomun Tourist Complex. It used Type B driverless autonomous buses equipped with LiDAR and GPS technology, operating on a 9.4km circular route covering most tourist attractions, with onboard safety personnel and operational staff deployed.

2.1.1.4 The United States: Market-Driven Commercial Development

According to the Global Digitalization Index (GDI), published by Huawei in 2024, which evaluates the ICT development of 77 economies, approximately 70% of global economic growth over the next five years will be driven by digital technologies, with the digital economy expected to grow at an annual rate of 9.2%, significantly outpacing the traditional economy. The United States has consistently ranked first since 2014 and hosts the headquarters of approximately 420 autonomous vehicle companies.

The Autonomous Vehicles Readiness Index highlights that the United States has relatively weaker road infrastructure and tends to position autonomous vehicles primarily used for private use or ride-hailing services. This is reflected in the types of autonomous systems being developed, which are largely focused on passenger cars and taxi fleets. For example, Amazon's Zoox robotaxi is planned to be operated on the streets of San Francisco, featuring a compact design approximately half the length of a conventional SUV and a fully autonomous interior without a steering wheel, pedals, or front seats.

During the period in which Zoox obtained its autonomous vehicle permit from the California Public Utilities Commission, analysis of operational data indicates relatively low utilization rates, suggesting that challenges remain in terms of consumer acceptance and infrastructure readiness in the United States.

Based on the development experience and technological focuses of the United States companies, applications of autonomous buses remain relatively limited in scope, with most innovations concentrated in passenger vehicles and ride-hailing services. The most viable use cases for autonomous buses are in school transportation and mid-range logistics rather than long-distance passenger transport. This may be attributed to the reliance on private vehicles and air

travel for intercity transportation in the United States, resulting in lower demand for bus services and consequently reduced incentives for related technologies.

2.1.2 Development of Autonomous Bus Systems

Global autonomous driving technology is still in an early stage of transition from concept to real-world application. Fully driverless vehicles remain constrained in their deployment due to technological complexity and system integration challenges, making rapid large-scale deployment difficult. Therefore, in the coming years, development will focus on autonomous driving applications in restricted environments, fixed routes and specific operational conditions, such as autonomous buses and robotaxis as public transport services. This direction is also highly aligned with regulatory sandbox testing and pilot operation strategies adopted by many economies.

Driven by global transportation policy initiatives and technological advancement, autonomous buses have gradually become a key platform for the electrification and smart transformation of public transport. The electric bus market has continued to grow and is currently led by China. In the future, electrification and automation will together reshape public transportation systems and drive the development of related industries such as sensors, AI algorithms and vehicle-to-everything (V2X) technologies.

Although autonomous buses require high initial investment costs, they can reduce labor expenses, improve fleet management efficiency and optimize operational scheduling, thereby improving traffic flow efficiency and reducing overall transportation time. Many economies are actively moving toward the commercialization of Level 4 driving buses, primarily through low-speed demonstrations and safety validation as key development strategies.

Chinese Taipei’s autonomous bus development demonstrates clear strengths in information and communication technology (ICT) and system integration

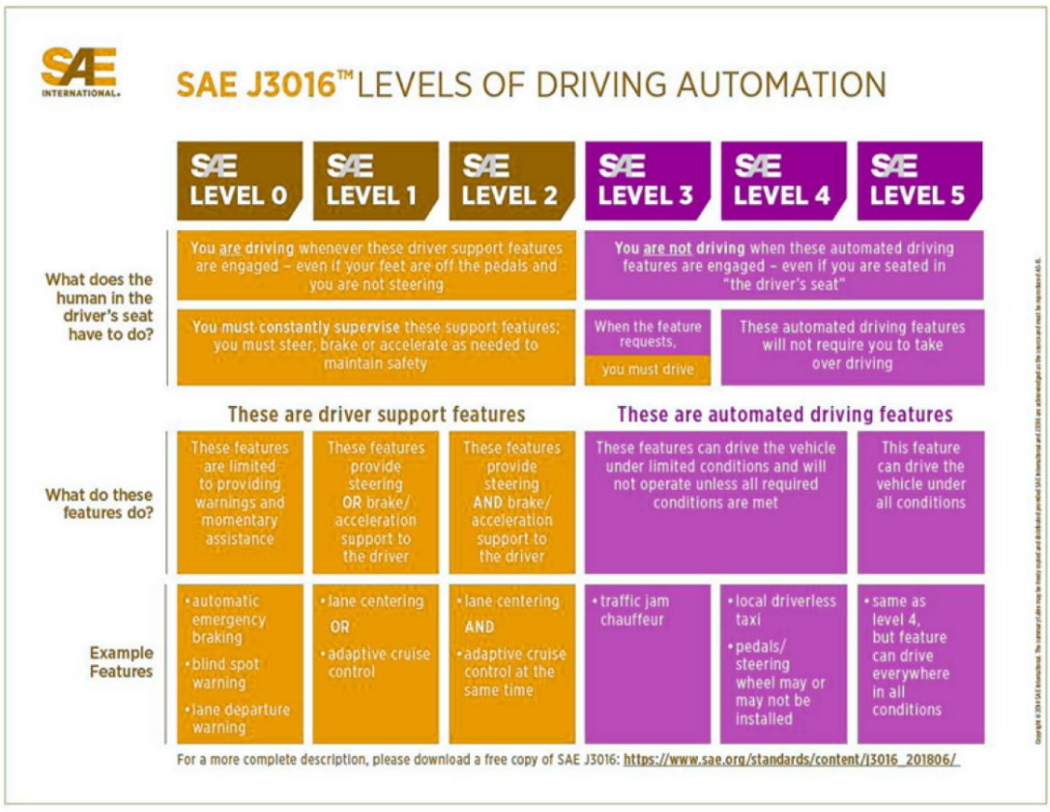
capabilities, with practical operational experience already accumulated in specific closed or semi-enclosed environments such as campus shuttle services and industrial park applications, showing a certain Level 4 technological potential. However, overall development remains constrained by structural challenges, including limited regulatory openness, inconsistent smart traffic signal standards and dependence on imported key components in the supply chain, making it difficult to fully enter open-road commercial operations at this stage.

2.2 Self-Driving Taxi Applications

Companies such as Tesla and Google's autonomous driving subsidiary Waymo are actively advancing the commercialization of autonomous mobility, aiming to transform future transportation through technological innovation. Waymo has already launched self-driving taxi services in cities such as Phoenix and San Francisco in the United States. Tesla announced in 2025 the launch of a self-driving taxi ride-hailing platform in Texas, integrating its in-house Full Self-Driving (FSD) system with a fleet management platform.

However, the United States operates under a federal system in which regulatory authority is divided between federal and state governments. As a result, regulations, testing standards and operational permits for autonomous vehicles vary across states, creating challenges for interstate operations. If the current federal administration were to establish a unified federal regulatory framework, it could streamline procedures, reduce regulatory barriers and accelerate the economy-wide deployment of autonomous driving technologies.

Over the past decade, China has actively promoted self-driving taxi development through policy support, financial investment and local government-backed regulatory sandbox mechanisms, accelerating both technological maturity and commercialization. Baidu's "Apollo Go" (Luobo Kuaipao) has reached Level 4 autonomous driving (as illustrated in Figure 6) and has launched operations in multiple cities, accumulating extensive real-world driving data. Didi Chuxing is collaborating with GAC Group to develop autonomous driving systems and plans to conduct commercial pilot operations with its fleet by the end of the year. Pony.ai is expanding its fleet to thousands of vehicles and is actively deploying in major metropolitan cities.



Source: SAE International (2021). *SAE Levels of Driving Automation™ Refined for Clarity and International Audience*. https://www.sae.org/news/blog/sae-levels-driving-automation-clarity-refinements

Figure 6. Levels of Automated Driving

China promotes smart transportation development through the “New Infrastructure” policy, including the development of vehicle-to-everything (V2X) infrastructure and the integration of high-precision mapping platforms, providing a more stable operational environment for autonomous vehicles. In terms of autonomous vehicle regulations, China adopts a gradual regulatory approach and aims to incorporate autonomous vehicle development into Beijing’s development planning, thereby strengthening the innovation ecosystem for autonomous vehicles.

Japan, facing an aging population and labor shortages in transportation, is actively promoting autonomous taxi technology as a solution. Nissan is conducting autonomous driving system trials in Yokohama and plans to begin commercial operations in 2029, while also collaborating with local governments on community-based transportation service tests. Toyota is partnering with NVIDIA to develop an autonomous driving platform and has invested in Pony.ai, demonstrating its global strategy and transformation in autonomous driving technology.

The invited speaker from Peru shared at the seminar that the Peruvian startup Artificio adopts a research and development model that integrates multiple partners, including technology providers, fleet operators and equipment suppliers, forming a stable collaborative framework. The company cooperates with the taxi operator Director and the imaging hardware company BlackVue, using 200 taxis equipped with dashcams to collect extensive driving data.

The autonomous taxi market in Chinese Taipei is still at an early stage. Although technology has reached a certain level of maturity, its development is constrained by regulatory constraints and testing is currently restricted to closed environments. The “Act for Promoting Experimentation of Innovative Applications of Autonomous Vehicles” provides some flexibility, allowing enterprises to conduct technological validation in designated areas. At present,

companies such as Yulon Group and Foxconn are investing in autonomous driving R&D and collaborating with local governments on smart transportation demonstration projects, with the aim of gradually advancing toward commercialization through regulatory easing and policy amendments.

In terms of autonomous taxi applications, international data indicates that China currently leads the development, not only with a complete industrial supply chain but also with diversified service providers operating across multiple cities. In contrast, governments in Europe and the United States primarily focus on regulation and ensuring the safety of AI applications as key policy objectives. As a result, they lag China in aspects such as deployment scenarios, company scale, service models and regulatory frameworks.

From a technological perspective, both groups possess different leading technologies and solutions. Chinese industry clearly holds an advantage in large-scale commercialization, while European and American companies demonstrate stronger competitiveness in operational safety. Based on current levels of commercialization and operational scale, companies in China currently maintain a leading position in the autonomous taxi sector. A summary of regional developments in self-driving taxi applications is shown in Table 3.

Table 3. Autonomous Taxi Applications by Region

Region	Key Companies	Current Progress	Regulation / Challenges
China	● Apollo Go ● Didi Chuxing ● Pony.ai	Level 4 operations and pilot deployments across multiple cities; expanding fleet scale.	Supported by “New Infrastructure” policies including V2X and HD maps; regulatory sandbox framework.
Japan	● Nissan ● Toyota	Trials in Yokohama with target commercialization by 2029; expanding investment and partnerships.	Addressing aging population and labor shortages in transportation.
Chinese Taipei	● Yulon Group ● Foxconn	Testing and pilot demonstration projects in closed environments.	Restricted by the “Act for Promoting Experimentation of Innovative Applications of Autonomous Vehicles”.
United States	● Waymo ● Tesla	Waymo has launched operations in Phoenix and San Francisco; Tesla is deploying ride-hailing platforms in Texas.	Inconsistent state-level regulations; a unified federal framework could reduce barriers.

Source: Compiled by the authors.

The development of autonomous taxis is not only future technological challenge for economies, but also raises broader debates related to social structure and workforce displacement. The taxi industry in most economies is a highly regulated sector, involving complex social considerations such as the difficulty of obtaining operating permits, driver qualification requirements and capital investment structures between individuals and companies. With the rise of ride-

hailing platforms, social factors have further deepened divisions in public attitudes toward technological innovation. If autonomous taxi services were to significantly replace existing human drivers in the future, it could easily trigger social anxiety over technological job displacement, thereby hindering the adoption and application of innovation. This becomes a potential development concern for the large-scale diffusion of autonomous taxi systems.

3. Results and Analysis of Smart Vehicle Solutions in Road Safety Surveys

3.1 Purpose and Objectives

Road safety is an urgent issue facing the Asia-Pacific region. According to data from relevant sources (including the Asian Development Bank), approximately 747,500 lives were tragically lost to road traffic accidents in the Asia-Pacific region each year. This figure accounted for 55% of the global total and results in an annual GDP loss of 3–5% for developing economies. As APEC member economies actively developed intelligent transportation systems (ITS), it was imperative to prioritize road safety without delay.

To address this, we organized the "APEC International Workshop on Smart Vehicle Technology" in April 2026, inviting industry experts from the vehicle and transportation sectors across the APEC region to collectively explore smart vehicle solutions. A survey was conducted to assess participants' views and ensure that the symposium agenda precisely addressed the needs of each economy and effectively facilitated dialogue between technology and policy. The results informed the agenda of the international forum, where experts discussed best practices and policy recommendations.

3.2 Scope and Methodology

The objective of this survey was to gather insights from key stakeholders, including industry experts in the vehicle and transportation sectors across the APEC region, to collectively explore smart vehicle solutions. Invitations were distributed through the APEC Secretariat to all APEC economies, primarily targeting individuals from the following three categories:

(1) Policy makers and regulators in the field of vehicle industry.

(2) Researchers with expertise in vehicle industry.

(3) Representatives from industries regulated in vehicle.

Based on the responses received, most participants were representatives from enterprises, industry associations and academia. To ensure a more comprehensive perspective, the organizing team enhanced engagement with industry representatives during the APEC symposium held in April 2026 in Chinese Taipei and incorporated their feedback into the discussions.

The survey was conducted using an online Google Form, with most questions being multiple-choice (Appendix A). The survey was open for responses from December 2025 to January 2026.

3.3 Result Analysis

3.3.1 Demographic Information

A total of 21 responses were received for this survey. Below are an overview of the respondents' APEC economies and their personal background information.

3.3.1.1 Economies Represented in the Survey Responses

The survey responses covered eight APEC economies, including Japan; Mexico; Peru; the Philippines; Chinese Taipei; Thailand; United States; Viet Nam. The respondents represented a mix of advanced economies and emerging market and developing economies, based on the economic development classifications provided by the IMF (April 2023 Update). This classification highlighted the diverse perspectives captured in the survey, representing economies at varying levels of development across the APEC region (Table 4).

Table 4. List of participating APEC economies

Economic Development Classification	APEC Economies
Advanced Economies	Japan
	Chinese Taipei
	United States
Emerging Market and Developing Economies	Mexico
	Peru
	The Philippines
	Thailand
	Viet Nam

Source: International Monetary Fund (IMF, 2023). *International Monetary Fund: Groups and Aggregates Information.* https://www.imf.org/en/publications/weo/weo-database/2023/april/groups-and-aggregates

3.3.1.2 Background of Survey Respondents

The survey respondents primarily came from enterprises or industry associations (61.9%), government agencies (19%) and academic and research institutions (14.3%), with the remaining 4.8% representing societies of automotive engineers. In terms of their specific areas of work, respondents focused on several key areas, including research and development (57.1%) and marketing (14.3%). Production, secretariat services for international symposiums and related events, international cooperation or public/government service, investment attraction, specialization in technological innovation projects and quality assurance each accounted for 4.8%. In addition to researchers, who represented more than half of the respondents, a considerable proportion of participants from diverse professional backgrounds also expressed concern about this issue.

Moving forward, we aimed to further enhance the diversity of perspectives by engaging more with the private sector through the APEC forum held in 2026 and encouraging greater collaboration and dialogue with industry stakeholders.

3.3.2 Current Status and Policy Framework

The survey examined whether respondents' economies were currently formulating or implementing policies or regulations related to intelligent vehicles. Approximately 95.2% of respondents answered yes, while only 4.8% answered no, indicating that economies at varying stages of development have begun to prioritize this issue.

The objectives of these policies and regulations were primarily focused on road safety (80%), the development of intelligent transportation systems (80%) and industrial upgrading and development (65%) (see Figure 7).

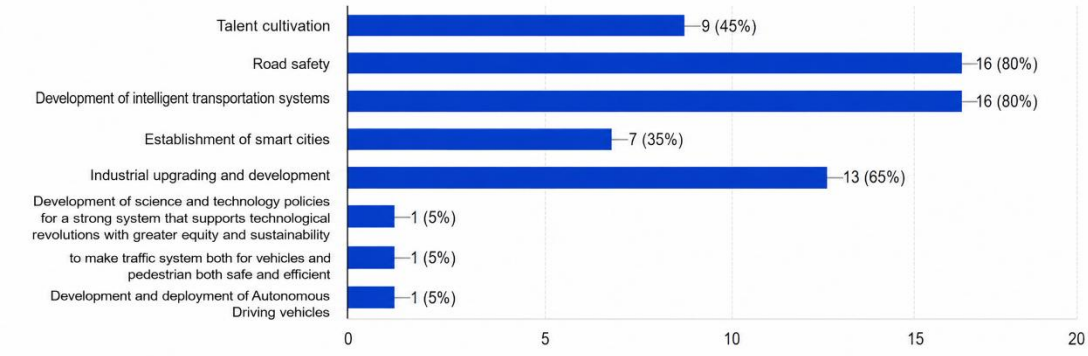


Figure 7. Primary objectives of policies

Most economies provided R&D grants (61.9%), talent support (52.4%) and financial subsidies (52.4%) to promote the research, production, or application of intelligent vehicle technologies (see Figure 8).

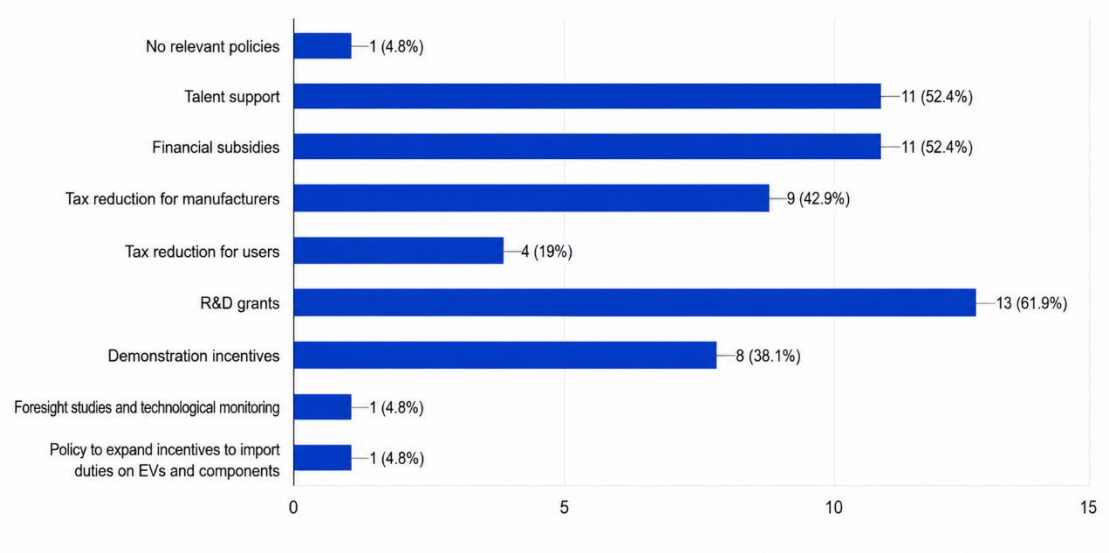


Figure 8. Incentives to promote research, production, or application

Electronic toll collection systems, smart traffic light systems and traffic monitoring systems were the intelligent transportation solutions that economies currently adopted in road traffic management (see Figure 9).

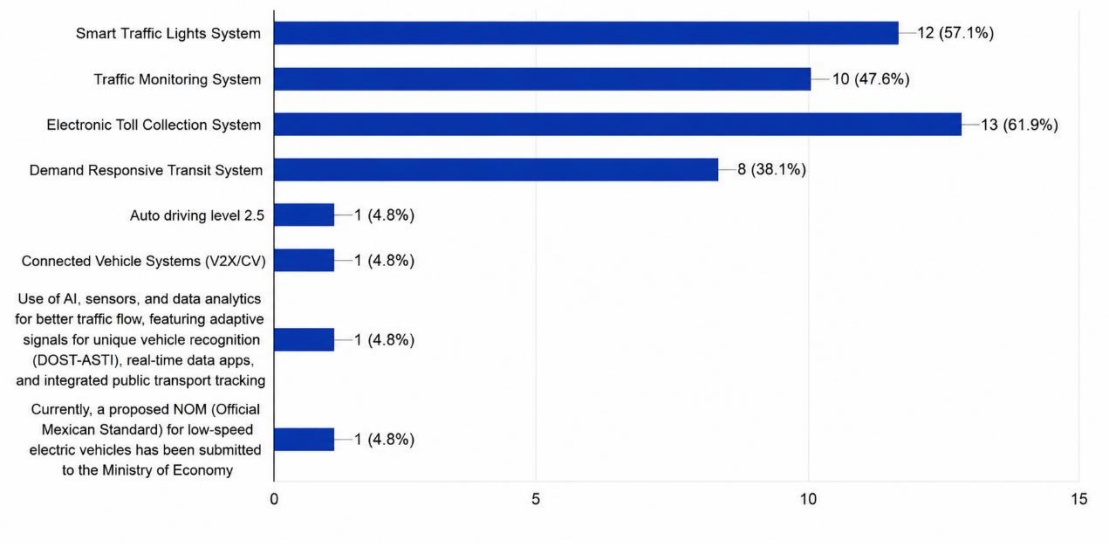


Figure 9. Transportation technologies or solutions in road traffic management

These systems appeared to address issues related to accident rates and traffic congestion levels (see Figure 10). However, they also faced several challenges, such as technological maturity, insufficient infrastructure and high implementation costs (see Figure 11).

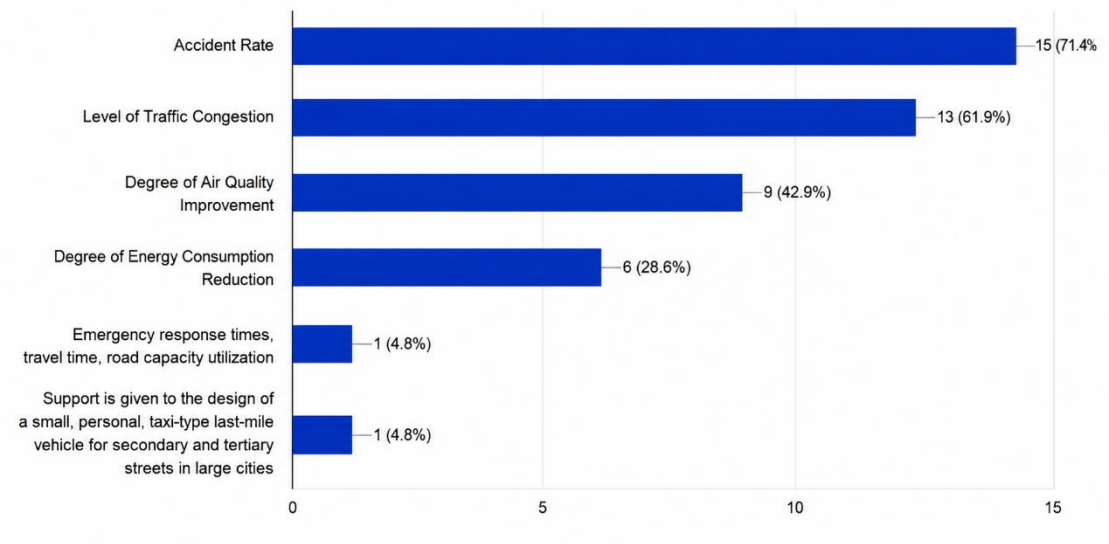


Figure 10. The overall impact of intelligent vehicle solutions on road safety and traffic efficiency

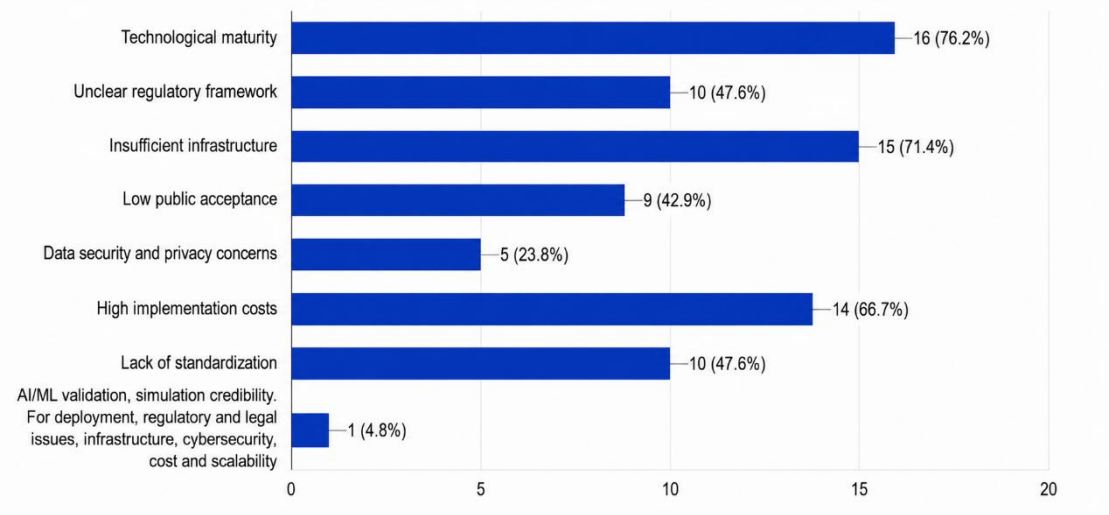


Figure 11. Main challenges of testing, verification and deployment of intelligent vehicle solutions

Most of the respondents believed autonomous driving technologies improve road safety by reducing human operational errors, reducing traffic accidents and enhancing traffic efficiency and reducing traffic congestion (see Figure 12).

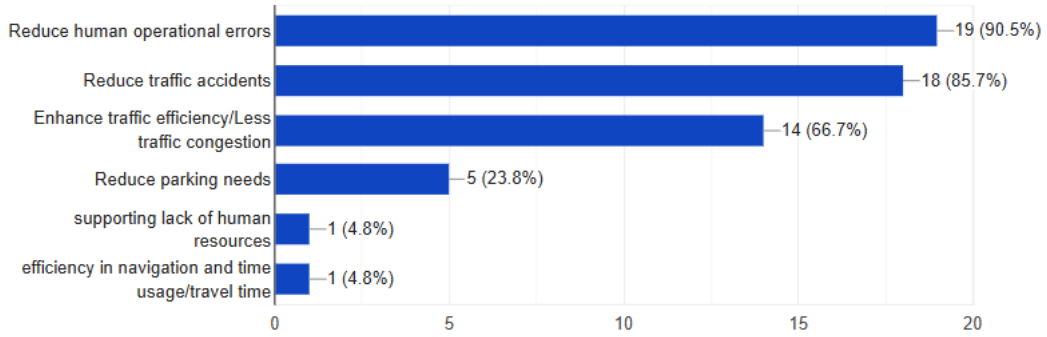


Figure 12. Potential benefits of autonomous driving technologies in improving road safety

But on the other hand, unpredictable technical malfunctions, unclear liability attribution and safety issues may be potential risks of autonomous driving technologies in relation to road safety (see Figure 13).

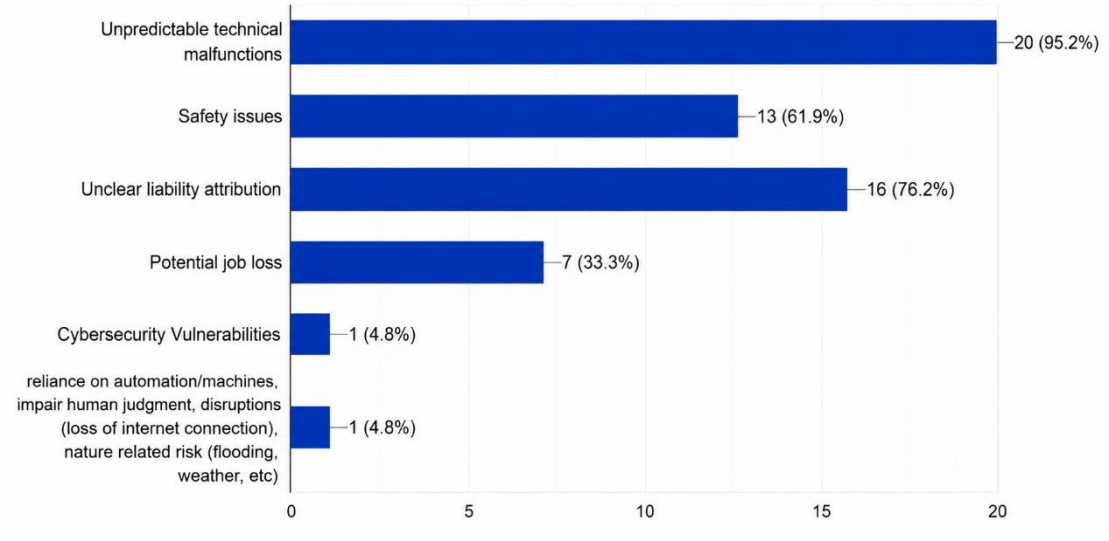


Figure 13. Potential risks that autonomous driving technologies may pose in relation to road safety

3.3.3 Collaboration and Development

In the respondents' view, establishing a comprehensive standardization system (81%), phased introduction of new technologies (76.2%), rigorous safety testing and validation (71.4%) and encouraging industry-academia collaboration (61.9%) are key to balancing intelligent vehicle solutions (see Figure 14).

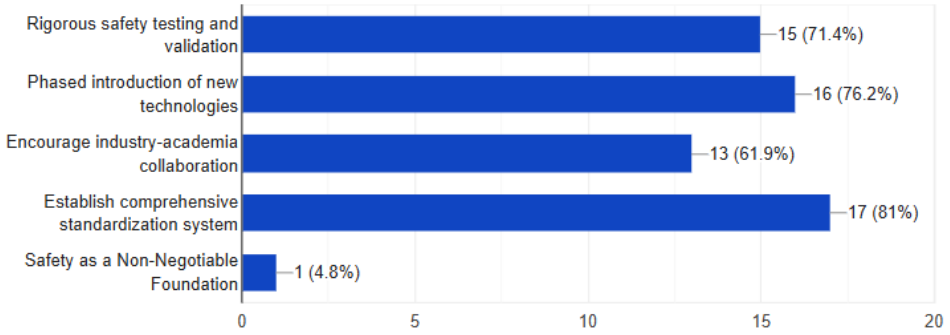


Figure 14. A balanced approach between innovation and safety when developing smart vehicle solutions

If possible, respondents believe APEC should strengthen cooperation by establishing cross-border testing and validation cooperation (76.2%), information and best practice sharing (76.2%) and harmonization of technical standards (71.4%) to advance the development and application of intelligent vehicle solutions in the region (see Figure 15).

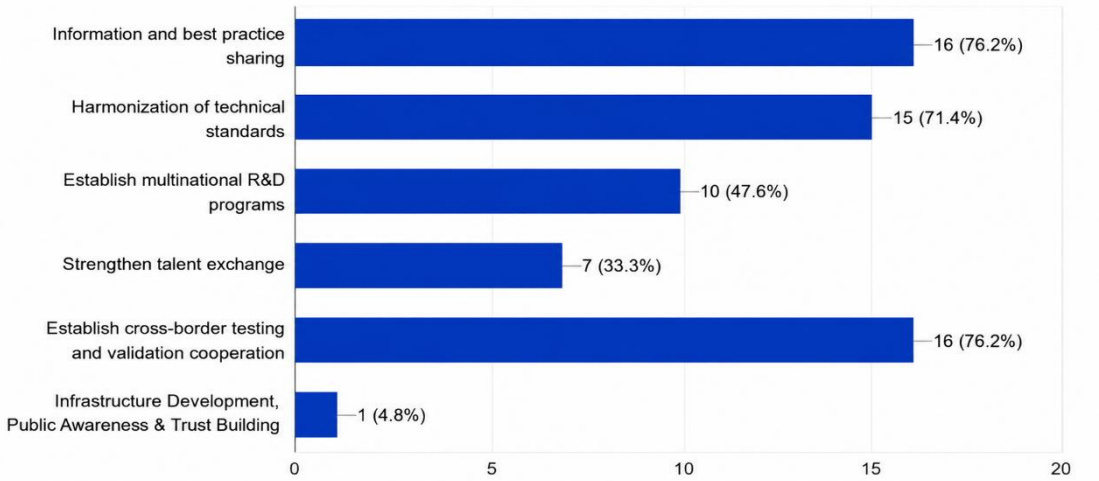


Figure 15. Areas that APEC strengthen cooperation to advance the development and application of intelligent vehicle solutions in the region

Also, all respondents had specific recommendations or expectations that they had for APEC in promoting intelligent vehicle development and smart mobility across the region. They thought it was important to strengthen policy coordination, offer technical support through specialized organizations, organize more technical exchange activities and actively promote regional technical cooperation.

3.3.4 Future Outlook

Over the next five years, respondents anticipated that electric vehicle adoption would increase significantly, autonomous driving technology would become more mature, V2X (Vehicle-to-Everything) technology would be more widely applied and intelligent transportation systems would become more sophisticated. These developments were expected to have the most significant impact on road safety and smart mobility in their economies (see Figure 16).

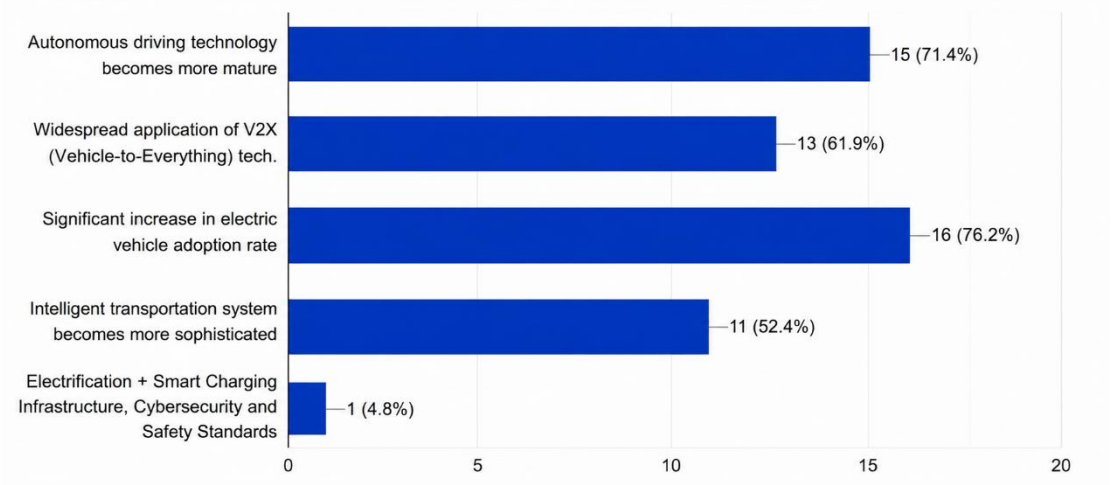


Figure 16. Technologies anticipated to have the most significant impact on road safety and smart mobility over the next five years

Regarding diversity, equity and inclusion (DEI), most respondents agreed that women can play a more prominent leadership role in advancing intelligent vehicle–related fields. For example, women can make important contributions in areas such as education, advocacy and social impact, as well as in technical

research and data analysis, system design and business innovation and industrial development (see Figure 17).

Concurrently, respondents indicated that their economies supported women in providing professional technical training courses or development programs, enhancing their skills in intelligent vehicle–related fields and providing reskilling or upskilling programs. But some respondents indicated that most programs are suitable for both men and women. They believed the topic was not gender-specific and may unintentionally reinforce gender stereotypes (see Figure 18).

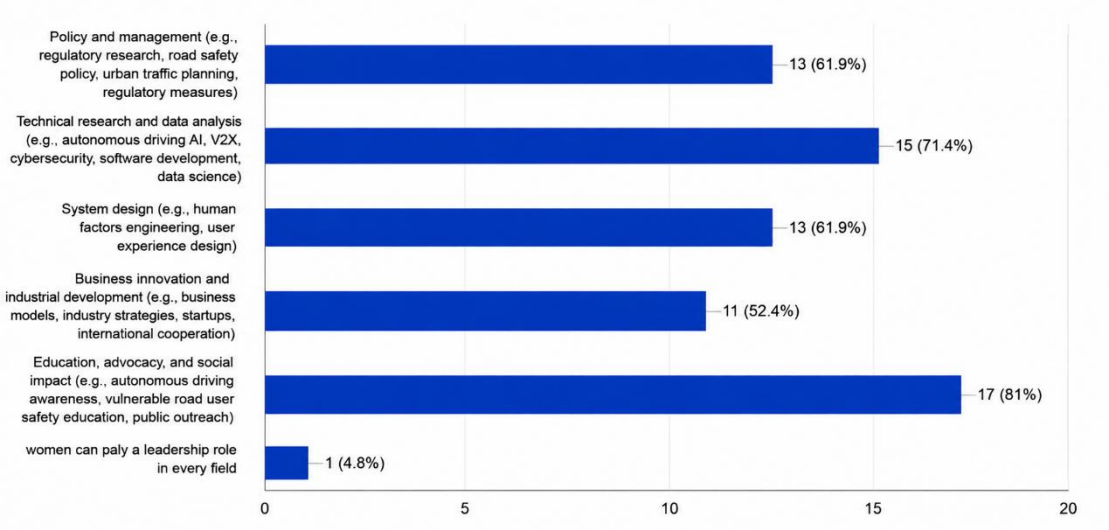


Figure 17. The areas that women can play a more prominent leadership role in advancing intelligent vehicle–related fields

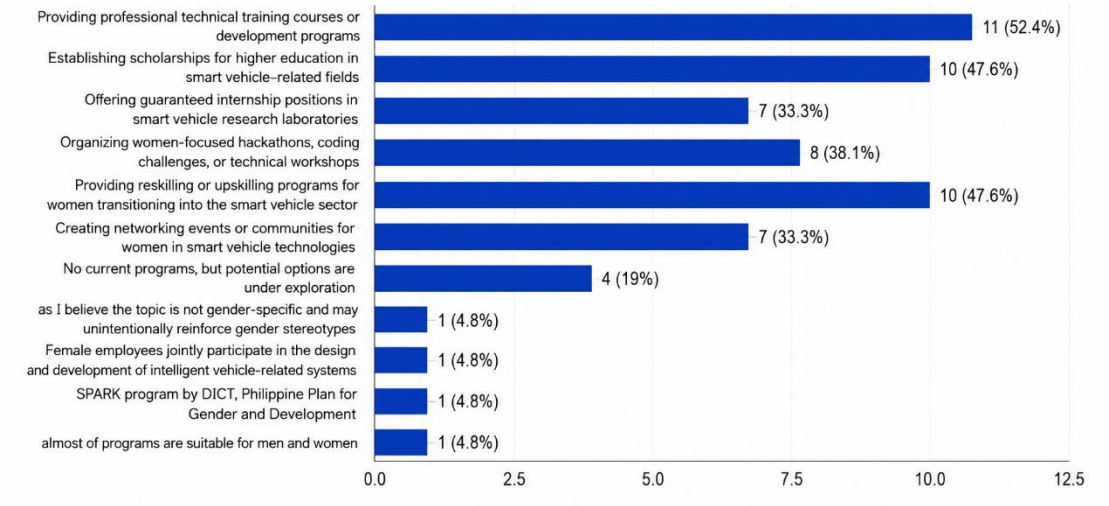


Figure 18. Programs or initiatives is currently implementing to support women in enhancing their skills in intelligent vehicle–related fields

Some responses shared their cases to contribute to factors contributing to success. We collected and analyzed all the responses regardless of whether they were yes or no and organized them into Table 5 by economy.

Table 5. Factors for success

APEC Economies	Factors contributing to success or not
Advanced Economies	
Japan	● Advanced Driver Assistance Systems (ADAS) ● The automotive sector incorporates driver support systems such as ADAS and braking assist.
Chinese Taipei	● Advanced Driver Assistance Technologies Driver fatigue monitoring and see-through technology enhance driver awareness and reduce human error. ● Industry Standards and Government Policy Support Alignment with regulatory requirements and supportive government policies accelerated adoption and deployment. ● Purchase Subsidy Policy Financial incentives lowered development costs and increased the industry's willingness to invest in ADAS development for electric buses. ● Proven Safety and Operational Benefits Targeted blind-spot detection for large vehicles in intelligent transportation systems significantly reduced accidents and fleet operating costs, supported by verified customer feedback and quantitative data. ● Strategic Investment in Forward-Looking Technologies Continued resource investment in innovative and future-ready technologies ensured long-term competitiveness and safety improvements.

APEC Economies	Factors contributing to success or not
United States	● Clear Objectives and Measurable Outcomes ● Robust Testing and Phased Deployment ● Strong Safety Protocols and Transparency
Emerging Market and Developing Economies	
Mexico	● Policy support, talent training and a mature industry cluster Through public–private collaboration, infrastructure investment and regulatory support strengthened overall industry development.
Peru	● No relevant cases Peru had no documented successful cases in intelligent or autonomous vehicles. Domestic efforts were mainly focused on electric mobility, charging infrastructure and traffic management modernization rather than full intelligent-vehicle deployment. Therefore, there were no directly applicable cases to report at this stage.
The Philippines	● Government support through funding, R&D, infrastructure and governance
Thailand	● Road test
Viet Nam	● No relevant cases

3.3.5 Post-event Survey

The post-event survey was conducted using an online Google Form, with most of the questions designed as multiple-choice items (Appendix B). The survey was distributed after the symposium from 9 to 15 April 2026, to collect participants' feedback on the event outcomes, effectiveness and areas for future improvement.

Participants generally agreed that the overall symposium design was satisfactory and indicated they planned to apply the knowledge and skills gained to developing work plans and strategies (67.5%) and developing new policy initiatives (65%) to support capacity building within their respective economies; they also indicated that APEC should prioritize developing follow-up policy guidelines (67.5%) and strengthening follow-up policy measures (65%) to consolidate the outcomes of the symposium. Furthermore, participants expressed expectations for more researchers to be involved in topics related to the event, the inclusion of technical hands-on workshops to enhance interactive participation and suggested that it would be beneficial to include discussions on how intelligent vehicle technology can be adapted to developing economies—particularly in terms of infrastructure, affordability and sustainability, which was considered a key aspect of future development.

3.4 Key Findings

3.4.1 Current Status of Road Safety Development Across Economies (Summary of Speakers' Insights)

The following summarizes the presentations delivered by speakers from their respective economies at the 8 April 2026, symposium, covering the development status and implementation approaches of road safety solutions across participating economies (see Figures 19–24).

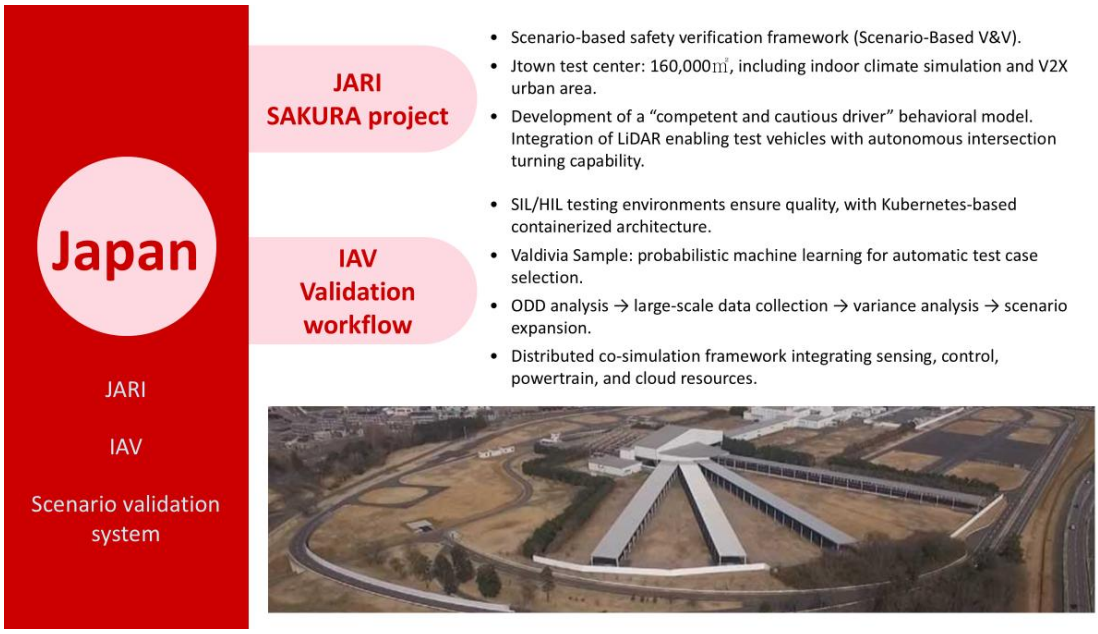


Figure 19. Summary of Speaker Insights – Japan

Figure 20. Summary of Speaker Insights –Korea

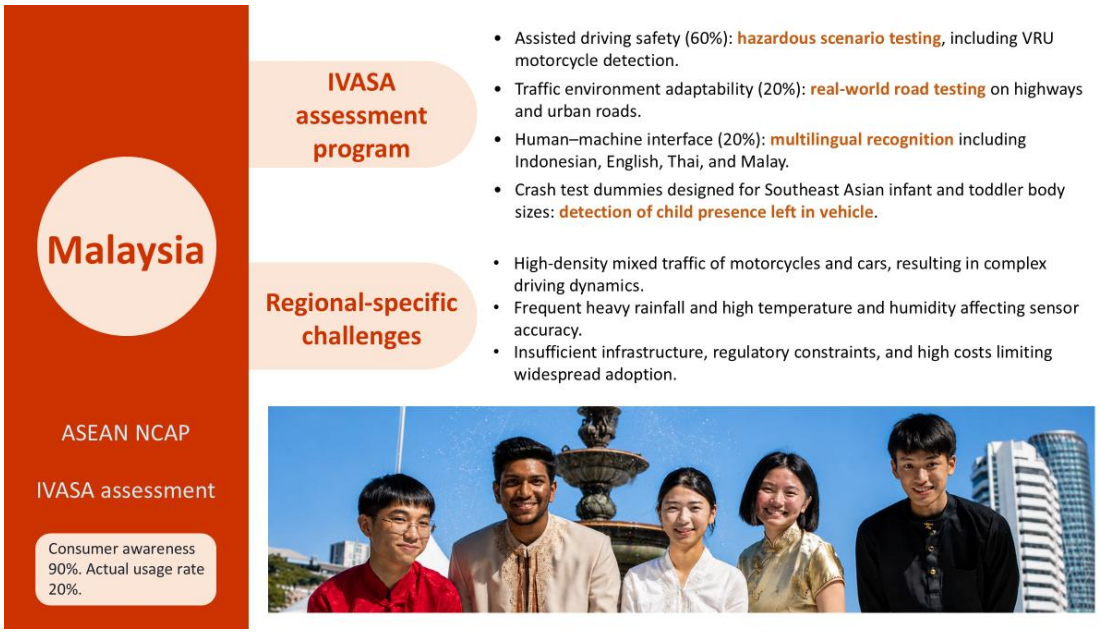


Figure 21. Summary of Speaker Insights –Malaysia

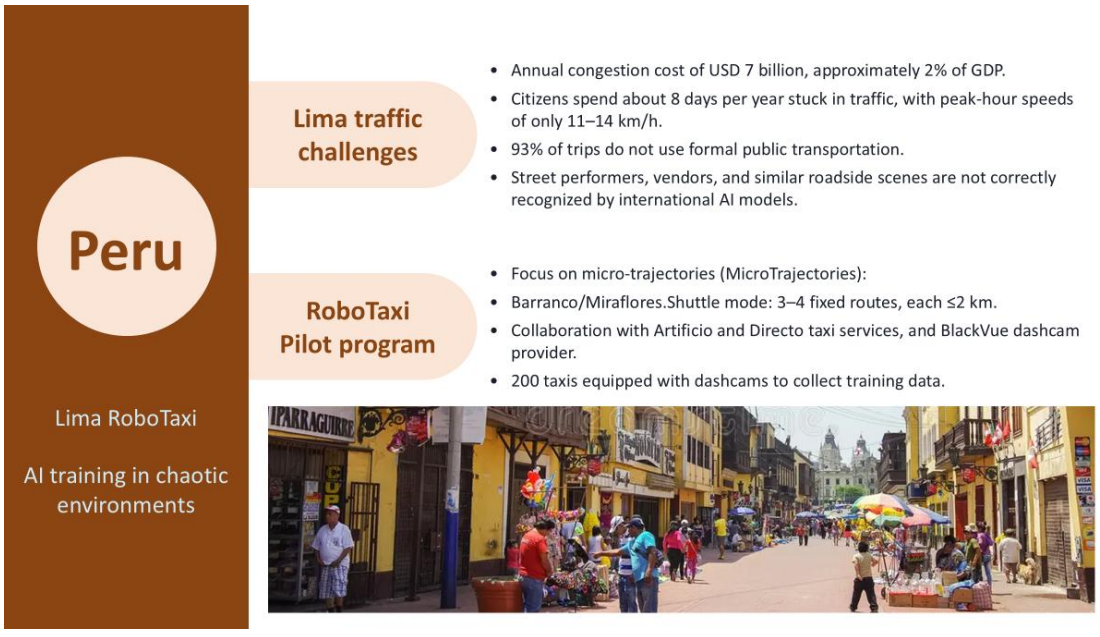


Figure 22. Summary of Speaker Insights – Peru

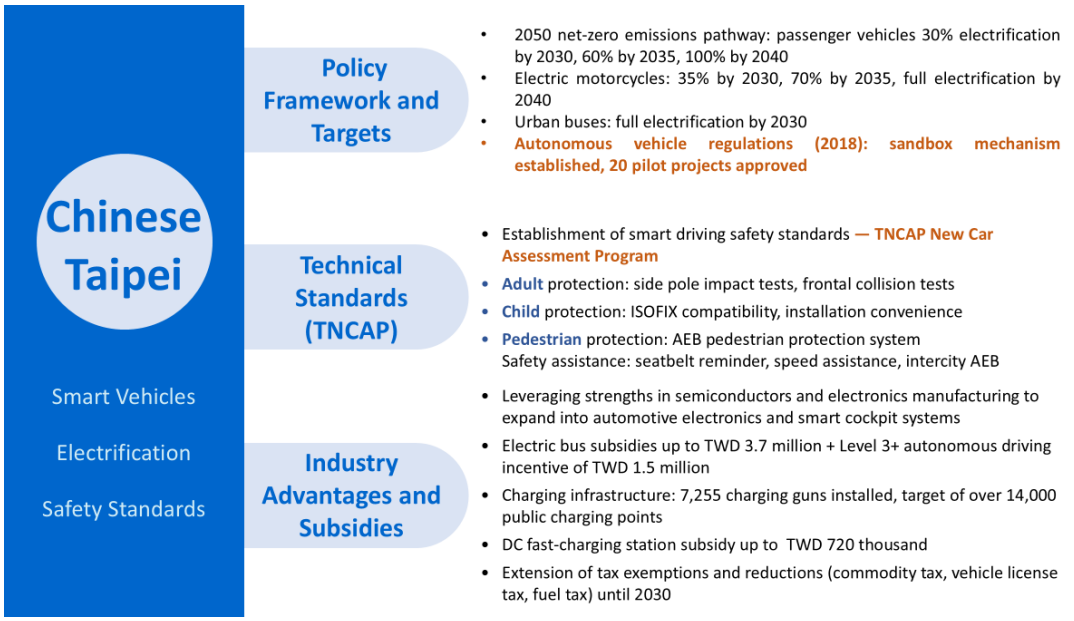


Figure 23. Summary of Speaker Insights – Chinese Taipei

Figure 24. Summary of Speaker Insights –Thailand

3.4.2 Common Policy Objectives and Regional Alignment

The survey shows a strong convergence of policy objectives across APEC economies regarding intelligent vehicles and smart mobility. Road safety and the development of intelligent transportation systems (ITS) are the most consistently cited priorities, followed by industrial upgrading and traffic efficiency. Most respondents (95.2%) reported that their economies have either formulated policies or are in the process of implementing them, reflecting widespread recognition of the role that intelligent vehicle technologies can play in enhancing safety, mobility and industrial competitiveness.

Notably, there are no major differences in strategic intent between advanced economies and emerging market or developing economies. Economies across the region share similar policy framing, drawing on international best practices and responding to comparable transportation challenges. This alignment suggests that intelligent vehicle development has become a globally synchronized policy concern, rather than one shaped by divergent economic or technological paths.

3.4.3 Implementation of Status and Key Challenges

While policy objectives are broadly aligned, economies differ in terms of implementation maturity, institutional capacity and the availability of documented use cases. Advanced economies generally have more mature deployments, including advanced driver assistance systems, clearer regulatory frameworks and comprehensive performance data. Emerging and developing economies tend to focus on pilot projects, infrastructure development, electric mobility initiatives and modernized traffic management systems. These differences reflect varying starting points, resources and institutional readiness rather than divergent strategic priorities.

Policy instruments such as research and development grants, financial subsidies, talent support programs and tax incentives are commonly used across economies. However, their effectiveness depends on local implementation capacity, governance coordination and technical expertise. The main challenges faced by economies include:

- **Technological maturity:** Many systems are still in pilot or experimental stages, limiting large-scale deployment.
- **Insufficient infrastructure:** The physical and digital infrastructure required to support intelligent vehicle deployment is often incomplete.
- **High implementation costs:** investment requirements can be a barrier for developing economies.
- **Lack of standardization:** inconsistent technical standards impede interoperability and cross-border deployment.

Respondents broadly agree that autonomous driving technologies have significant potential to reduce human error, lower accident rates and improve traffic efficiency. At the same time, technical uncertainties, safety risks and unclear liability remain prevalent concerns, underscoring the need for cautious, evidence-based deployment supported by robust regulatory oversight.

3.4.4 The Role of APEC in Advancing Cooperation

APEC is uniquely positioned to support member economies in overcoming these challenges. Respondents emphasized APEC's potential to facilitate information exchange, promote harmonization of technical standards and strengthen cross-border testing and validation efforts. Given the cross-border nature of vehicle manufacturing, technology development and supply chains, regional coordination can reduce regulatory fragmentation, lower entry barriers and accelerate the deployment of intelligent vehicle solutions.

Looking ahead, advancements in autonomous driving, vehicle-to-everything (V2X) communication, electric vehicle adoption and intelligent transportation systems are expected to have the most significant impact on road safety and smart mobility in the next five years. Realizing these benefits will require sustained investment, coherent policy frameworks, workforce development and ongoing public–private collaboration. Technological innovation alone will not suffice without parallel efforts to strengthen governance, infrastructure and human capital.

3.4.5 Diversity, Equity and Inclusion

The survey highlights the importance of fostering inclusive ecosystems for intelligent vehicle development. Respondents recognized the value of women's leadership across technical, policy, educational and business domains. While some economies have introduced reskilling, upskilling and scholarship programs to support women, approaches to gender-specific initiatives vary. Future APEC discussions should focus on creating environments where diverse talent can contribute based on skills, experience and opportunity, enhancing both innovation and sustainability in smart mobility.

3.5 Conclusions

APEC economies share a common vision of leveraging intelligent vehicle technologies to enhance road safety, improve traffic efficiency and support industrial competitiveness. Differences among economies are mainly in implementation stages and institutional capacity rather than strategic intent, with advanced economies having more mature deployments and emerging economies focusing on pilot projects, infrastructure and capacity building. Common challenges include technological immaturity, insufficient infrastructure, high implementation costs, lack of standardization, low public acceptance and unclear regulatory frameworks.

APEC can play a key role in addressing these challenges through knowledge sharing, harmonized technical standards and cross-border testing. Advancements in autonomous driving, V2X communication, electric vehicles and intelligent transportation systems are expected to have the greatest impact over the next five years. Ensuring inclusive development, including greater participation of women in technical, policy and business roles, will strengthen innovation and sustainability. Future APEC collaborative activities on smart vehicle technology provide a timely platform to translate these insights into coordinated policy actions and practical initiatives that will benefit the Asia-Pacific region.

4. Policy Recommendations for Enhancing Road Safety Through Smart Vehicle Solutions

4.1 Policy Observations on Smart Vehicle Development in Major APEC Economies

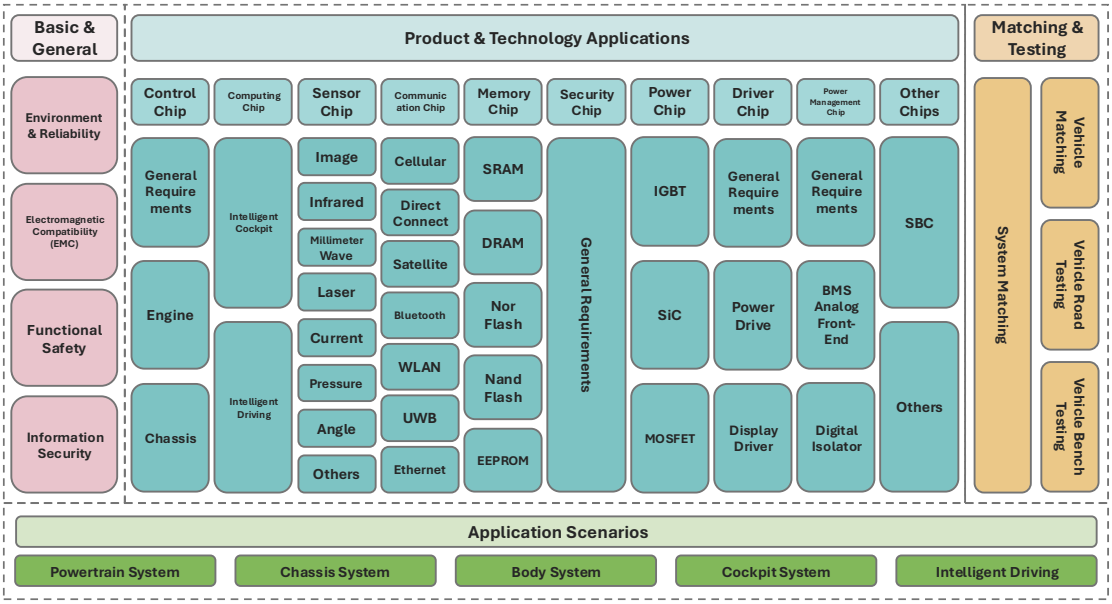
With the rapid advancement of automotive artificial intelligence (AI), issues related to safety, privacy and liability in autonomous driving and smart vehicles have become key concerns for governments and industry stakeholders worldwide. In recent years, major regions—including China and the United States—have introduced policies and regulatory frameworks to balance technological innovation, industrial development and public safety. However, differences in political systems, industrial foundations and regulatory cultures have led to distinct policy approaches and priority areas, shaping diverse regulatory models and development pathways. The following section reviews and compares recent policy developments and regulatory approaches in two major APEC economies, China and the United States.

4.1.1 China

China's policy approach was centered on unified regulations established by the central government, followed by pilot implementation at the provincial and municipal levels. Since 2021, China has introduced a series of regulatory frameworks and technical standards for intelligent connected vehicles, rapidly expanding the scope of automotive AI experimentation through road testing and demonstration applications. In 2021, China issued the Administrative Provisions on Road Testing and Demonstration Application of Intelligent

Connected Vehicles (Trial), allowing AI-enabled vehicles to conduct testing on highways, urban roads and designated testing zones. The regulation also strengthened requirements for cybersecurity and data security to address the large volume of real-time data collection and transmission required for autonomous driving operations.

By 2023, China further introduced the Guidelines for the Construction of the National Internet of Vehicles (IoV) Industry Standard System, covering areas such as functional safety, information security, vehicle-road coordination, testing and evaluation and human–machine interaction, with the aim of establishing a comprehensive standard framework. In the same year, China also strengthened standards related to automotive semiconductors, including environmental and reliability requirements, electromagnetic compatibility (EMC), functional safety and information security. These standards targeted key components such as control chips, computing chips, memory chips, power chips and communication chips. The overall structure of this standard system is illustrated in Figure 25.



Source: FOURIN (2025). *FOURIN China Automotive Survey Monthly Report - 2025.*

Figure 25. Framework of China's Automotive Semiconductor Standard System

During the same period, China’s domestic standards system was aligned with ISO 26262 for functional safety, applying it to the safety lifecycle management of electrical/electronic systems and semiconductor components (GB/T 34590). In addition, standards for vehicle data transmission security (GB/T 44464-2024) had been introduced to ensure that control chips comply with regulatory requirements for data security and privacy.

With a “standards-first” policy approach, combined with automotive-grade reliability, functional safety and cybersecurity consistency assessments, China has steered its supply chain toward greater controllability and large-scale mass production. This reflects China’s “accelerated experimentation” strategy in automotive AI, while aligning with its broader domestic strategies in electric vehicles and communications infrastructure.

In 2024, China further introduced the Regulations on Promoting the Testing and Application of Intelligent Connected Vehicles, which explicitly support the deployment of Level 3 and Level 4 autonomous vehicles. The regulation also strengthens cross-agency approval mechanisms and data governance frameworks, gradually establishing a legal foundation for the on-road deployment of autonomous vehicles.

Overall, China’s regulatory approach was characterized by rapid implementation, broad scope and a top-down governance model. While actively promoting technological experimentation, it places strong emphasis on cybersecurity and data security, reflecting a high level of concern for domestic security and data sovereignty.

4.1.2 Korea

Korea ranked second in the infrastructure category of the Autonomous Vehicles Readiness Index, driven by newly added indicators such as broadband speed and mobile connectivity speed, as well as the economy's leading 4G network

coverage. Korea also performed strongly in consumer acceptance due to the expansion of autonomous vehicle testing sites, the widespread adoption of ride-hailing services, advances in public technology usage and increasing consumer adoption of emerging technologies.

In January 2026, Korea implemented the AI Basic Act, which designates transportation as a “High-impact AI” sector. Under the Act, relevant AI systems are required to undergo safety and risk assessments.

In October 2026, the ITS World Congress 2026 is scheduled to be held in Gangneung over five days under the theme “Beyond Mobility, Connected World.” The city has already established autonomous driving test routes integrated with AI and big data technologies around the Olympic Park area. The testing environment includes 110km of roads equipped with smart intersections, emergency vehicle priority traffic signals, smart pedestrian crossings and parking information systems.

Future development plans include the construction of the Gangneung Integrated Information Center, which will collect and process safety and emergency response data. Gangneung's ongoing smart city transformation is projected to increase average vehicle speeds by 15%, reduce waiting times at traffic signals by 42%, decrease traffic accidents by 31% and lower traffic-related fatalities by 51%.

4.1.3 Malaysia

Malaysia has been relatively advanced in vehicle safety regulations. Since 2018, the government has mandated that all new vehicles be equipped with Electronic Stability Control (ESC), making Malaysia the first economy in Southeast Asia to require ESC installation. This decision was supported by ASEAN NCAP as part of its efforts to enhance active vehicle safety.

Regarding ADAS development, the Malaysian government introduced the vision of “Next Generation Vehicles (NxGV)” in the “National Automotive Policy 2020” (NAP 2020). NxGV is defined as vehicles capable of achieving at least SAE Level 3 automation. The policy also proposed establishing autonomous driving standards by 2021 to facilitate the commercialization of Level 3 vehicles before 2025.

This demonstrates Malaysia’s proactive efforts to prepare a regulatory framework for advanced ADAS and autonomous driving technologies. However, as of 2025, Malaysia has not mandated other ADAS features beyond ESC. Instead, the government has promoted ADAS adoption through incentive policies and collaborative research and development initiatives. For example, the Malaysia Automotive, Robotics and IoT Institute (MARii) has collaborated with Chinese and European manufacturers to develop domestic ADAS technologies. In 2025, the next-generation Proton Saga was reported to be equipped with a Level 2 intelligent driving system supplied by a Chinese technology provider, reflecting policy support for improving ADAS capabilities in Malaysia's domestic automotive industry.

Malaysia’s policies actively encourage ADAS development, with currently mandated measures focusing primarily on foundational safety technologies such as ESC, while legislation for advanced ADAS functions is still under preparation.

4.1.4 Singapore

Singapore has been actively promoting policies and regulations related to autonomous vehicles. In January 2019, Singapore drafted a domestic standard for autonomous vehicles known as “TR88” and introduced an AI governance framework.

Unlike many economies where autonomous vehicle testing is limited to closed environments or designated restricted areas, Singapore opened all public roads in the western part of Singapore for autonomous vehicle testing in October 2019. The open testing routes cover approximately 1,000km (620mi), accounting for one-tenth of the economy's total road network. This advantage has become one of the key drivers supporting Singapore's autonomous vehicle development. According to the World Economic Forum Global Competitiveness Report, Singapore's road infrastructure ranks among the best in the world.

To improve public acceptance of electric vehicles (EVs), Singapore has also introduced incentive measures, allowing consumers who purchased EVs before December 2023 to enjoy discounts equivalent to approximately 89% of the average vehicle sale price. Although the government reduced the annual road tax for EVs, it also introduced a distance-based taxation mechanism to compensate for the reduction in fuel tax revenues. Under this phased approach, drivers of fully electric vehicles will be charged an annual usage tax of SGD 700 (approximately USD 500) to compensate for the reduction in fuel tax revenues.

In May 2026, Singapore's Ministry of Transport launched a public consultation to collect feedback on the proposed legal and regulatory framework for autonomous vehicles (AVs).

The framework aims to establish more comprehensive regulations governing the deployment of autonomous vehicles on Singapore's roads. The proposed legislation will draw on lessons learned from the existing AV regulatory sandbox under the Road Traffic Act, as well as best international practices, focusing on four key areas: AV liability, insurance, data security and levels of automation. In addition, the government is expected to submit a bill titled the "AV Act" to Parliament in 2027 to establish an overarching legal framework for the governance of AI technology applications in Singapore.

4.1.5 Thailand

Thailand has in recent years prioritized the development of the electric vehicle (EV) industry while also incorporating ADAS into its policy incentives. In 2022, the Ministry of Finance announced that, beginning in 2026, electric passenger vehicles seeking to qualify for the preferential 2% excise tax rate must be equipped with at least four designated ADAS features, including AEB, Lane Keeping Assist (LKA) and Forward Collision Warning (FCW). Vehicles that fail to meet these requirements would face a higher tax rate of 10%. Electric pickup trucks are also required to include at least two of these ADAS functions to qualify for tax incentives.

This measure effectively creates a de facto mandate for ADAS installation in new energy vehicles, with the aim of improving vehicle safety standards and represents the first incentive policy in Southeast Asia to directly link tax benefits with ADAS adoption.

Beyond these measures, Thailand has not yet introduced mandatory ADAS regulations for conventional internal combustion engine vehicles. As a result, the inclusion of ADAS features in commercially available vehicles still largely depends on manufacturers' product strategies and the requirements of ASEAN NCAP safety ratings. Nevertheless, Thailand has elevated road safety to the domestic policy agenda, including a target to reduce road fatalities by half by 2027.

Thailand is expected to gradually expand ADAS-related requirements to a broader range of vehicle categories, particularly as the technological capabilities of domestically assembled vehicles continue to improve. The government may eventually consider adopting regulations similar to those in the European Union, which mandate certain ADAS functions as standard equipment in new vehicles after a specified timeline. At present, Thailand's strategy of promoting ADAS through tax incentives reflects its dual objective of

attracting foreign investment in EV projects while ensuring that vehicle safety technologies keep pace with international standards.

4.1.6 The United States

Compared to China's centralized approach, the United States adopts a more decentralized and flexible regulatory framework. Under the federal system, the Department of Transportation (DOT) and the National Highway Traffic Safety Administration (NHTSA) are primarily responsible for establishing general principles and standards, while specific road testing and deployment are largely regulated at the state level. This results in varying levels of development across different states.

In 2022, NHTSA approved regulations allowing vehicles without steering wheels or pedals to be tested on public roads, effectively removing the constraints of traditional human driving interfaces and opening the path toward fully autonomous driving.

In 2024, the United States introduced the Autonomous Vehicle Evaluation, Transparency and Engagement for Safe Testing (AV-STEP) framework, which requires operators of autonomous vehicles to enhance data transparency, enabling regulators to monitor testing processes and vehicle safety performance. The framework also authorizes the sale and commercialization of vehicles without steering wheels or pedals and provides tailored exemption pathways for vehicles equipped with Automated Driving Systems (ADS). However, as participation in this framework is voluntary, it reflects the United States regulatory preference for an industry self-regulation and market-driven approach.

In 2025, the United States advanced an Autonomous Vehicle Exemption Program, allowing companies to apply for the production or import of autonomous vehicles that do not comply with existing safety standards, such

as those without rearview mirrors or steering wheels. This initiative positioned the United States as one of the first economies to legally permit fully driverless vehicles on public roads.

The United States regulatory framework is characterized by relatively lenient policies that encourage innovation and experimentation. However, it also faces challenges related to regulatory fragmentation across states and a lack of policy consistency. While this model provides industry with significant flexibility, it may also result in lower consumer trust and fragmented approaches to safety risk management.

4.2 Recommendations for Smart Vehicle Solutions

A comparative analysis of automotive AI regulatory policies in China and the United States reveals clear differences in their development models and regulatory approaches. China demonstrates a highly centralized and coordinated approach, with the central government leading the rapid implementation of road testing, pilot applications and data security regulations. This enables swift policy execution aligned closely with domestic strategies, allowing China to scale automotive AI applications rapidly while maintaining strong control over data security and regulatory oversight.

In contrast, the United States adopts a market-driven and flexible regulatory approach. While the federal government provides overarching policy frameworks and safety standards, implementation authority largely resides with state governments, resulting in fragmented policies and uneven development progress. This model offers substantial room for innovation, encouraging diverse technological experimentation and commercialization efforts; however, it also leads to a lack of economy-wide consistency, posing challenges in safety management and liability allocation.

Each model presents its own strengths and limitations. China’s approach facilitates rapid industrial scaling and deployment, while the United States’ model effectively fosters technological innovation and business model exploration. For Chinese Taipei, future automotive AI policy development could benefit from integrating the strengths of both approaches. On one hand, it could draw on China's experience in rapid experimentation and infrastructure investment to accelerate technology deployment. On the other hand, it could adopt the United States market-oriented and flexible policy framework to provide greater opportunities for startups and industry growth. Through such a hybrid strategy, Chinese Taipei can not only advance the development of its domestic smart vehicle technologies but also position itself more favorably in the formulation of international standards, while helping local automotive AI industries integrate more rapidly into global markets.

5. Conclusion

Smart vehicle solutions — including ADAS, autonomous driving, automotive AI and vehicle-to-everything (V2X) technologies—are rapidly becoming a central force driving in global road safety and intelligent transportation development. As economies face challenges such as traffic accidents, congestion and industrial transformation, the adoption of intelligent technologies to enhance safety and efficiency has become a shared priority. However, gaps remain between technological advancement and real-world deployment due to regulatory, cost and infrastructure constraints, highlighting the need for cross-sector integration and international collaboration.

As the global market continues to expand, the interaction between regulatory support and consumer demand for safety and convenience is accelerating the adoption of automotive AI technologies. Different regions exhibit distinct development pathways: North America is driven by technological innovation, China emphasizes large-scale deployment and industrial integration, while Southeast Asia relies more on policy guidance and foreign investment. In this context, ADAS is increasingly becoming a standard feature in new vehicles and the Asia-Pacific region is widely regarded as the fastest-growing market.

Autonomous buses and robotaxis are considered among the most promising applications in public transportation, particularly in fixed routes or controlled environments where practical results are already emerging. These technologies not only reduce labor costs but also improve operational efficiency and service quality. However, due to limitations in technological maturity, operational costs and regulatory frameworks, most deployments remain at the pilot or demonstration stage. For instance, China focuses on commercialization, Japan and Korea expand applications through policy support and pilot programs, the United States relies on market-driven mechanisms. In the short

term, autonomous driving is therefore expected to remain concentrated in controlled deployment scenarios.

Survey results collected before and after the APEC International Symposium on Smart Vehicle Technology indicate that most APEC economies have begun to formulate or promote related policies and widely recognize the benefits of smart vehicles in reducing traffic accidents and improving transportation efficiency. However, technological uncertainty, liability issues and insufficient infrastructure remain key barriers. To balance innovation and safety, respondents generally emphasize the importance of establishing comprehensive standardization frameworks, adopting phased implementation strategies and strengthening testing and validation mechanisms to ensure safe and reliable deployment.

The role of policymakers is critical, as they are responsible for regulatory development and oversight as well as guiding industry development through resource allocation and policy incentives. Although economies share similar strategic directions, differences remain in implementation approaches and regulatory intensity. Respondents suggest that enhanced international cooperation—such as harmonizing technical standards, establishing cross-border testing mechanisms and promoting data sharing—would help lower barriers and accelerate industry integration.

Smart vehicle technologies demonstrate clear development trajectories and strong market potential. Their future success will depend on the coordinated advancement of technological maturity, policy support and market demand. By strengthening international collaboration, improving regulatory frameworks and enhancing infrastructure, economies can accelerate the safe deployment and large-scale adoption of smart vehicles, ultimately advancing the Asia-Pacific region toward a safer, more efficient and sustainable intelligent transportation system.

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Appendix A: Questionnaire

Part 1. Current Status and Policy Framework

Policy / Economic Measures

1 Is your economy currently formulating or implementing any policies or regulations related to the promotion of intelligent vehicles?

□Yes □No

1.1 If yes, what are the primary objectives of these policies or regulations? *(Multiple selections allowed)*

□ Talent cultivation □ Road safety

□ Development of intelligent transportation systems

□ Establishment of smart cities □ Industrial upgrading and development

□ Others: _____

2 Does your economy provide any incentives to promote research, production, or application of intelligent vehicle technologies? *(Multiple selections allowed)*

□ No relevant policies □ Talent support □ Financial subsidies

□ Tax reduction for manufacturers □ Tax reduction for users

□ R&D grants □ Demonstration incentives □ Others: _____

3 What intelligent transportation technologies or solutions has your economy currently adopted in road traffic management?

□ Smart Traffic Lights System □ Traffic Monitoring System

□ Electronic Toll Collection System

□ Demand Responsive Transit System □ Others: _____

4 How does your economy evaluate the overall impact of intelligent vehicle solutions on road safety and traffic efficiency? *(Multiple selections allowed)*

□ Accident Rate □ Level of Traffic Congestion

□ Degree of Air Quality Improvement

□ Degree of Energy Consumption Reduction □ Others: _____

5 In terms of testing, verification and deployment of intelligent vehicle solutions, what are the main challenges your economy is currently facing? *(Multiple selections allowed)*

□ Technological maturity □ Unclear regulatory framework

□ Insufficient infrastructure □ Low public acceptance

□ Data security and privacy concerns □ High implementation costs

□ Lack of standardization □ Others: _____

Technology / Self-awareness

6 In your view, which intelligent vehicle technologies have the greatest potential to enhance road safety in your economy? *(Multiple selections allowed)*

□ Autonomous Emergency Braking System (AEBS)

□ Lane-Keeping Assist System (LKAS) □ Blind Spot Detection (BSD)

□ Driver Fatigue Monitoring System

□ Vehicle-to-Vehicle Communication (V2V)

□ Vehicle-to-Infrastructure Communication (V2I) □ Others: _____

7 In your opinion, what are the potential benefits of autonomous driving technologies in improving road safety? *(Multiple selections allowed)*

□ Reduce human operational errors □ Reduce traffic accidents

□ Enhance traffic efficiency/Less traffic congestion

□ Reduce parking needs □ Others: _____

8 In your opinion, what potential risks may autonomous driving technologies pose in relation to road safety? *(Multiple selections allowed)*

□ Unpredictable technical malfunctions □ Safety issues

□ Unclear liability attribution □ Potential job loss □ Others: _____

9 In your view, what factors are most important for the successful adoption of intelligent vehicle solutions? *(Multiple selections allowed)*

□ Government strong support (including subsidies)

□ Active industry participation □ Research contributions from academia

□ Well-developed infrastructure construction

□ Clear legal and regulatory frameworks

□ Public awareness and acceptance □ International cooperation

□ Others: _____

Part 2. Collaboration and Development

1 In your view, when developing intelligent vehicle solutions, how should the relationship between innovation and safety be balanced? *(Multiple selections allowed)*

□ Rigorous safety testing and validation

□ Phased introduction of new technologies

□ Encourage industry-academia collaboration

□ Establish comprehensive standardization system

□ Others: _____

2 In your opinion, in which areas should APEC strengthen cooperation to advance the development and application of intelligent vehicle solutions in the region? *(Multiple selections allowed)*

□ Information and best practice sharing

□ Harmonization of technical standards

□ Establish multinational R&D programs □ Strengthen talent exchange

□ Establish cross-border testing and validation cooperation

□ Others: _____

3 What specific recommendations or expectations does your economy have for APEC in promoting intelligent vehicle development and smart mobility across the region? *(Multiple selections allowed)*

□ Strengthen policy coordination

□ Provide technical support through specific organizations

□ Organize technical exchange activities

□ Promote regional technical cooperation □ Others: _____

Part 3. Future Outlook

1 Over the next five years, which developments do you anticipate will have the most significant impact on road safety and smart mobility in your economy? *(Multiple selections allowed)*

□ Autonomous driving technology becomes more mature

□ Widespread application of V2X (Vehicle-to-Everything) technology

□ Significant increase in electric vehicle adoption rate

□ Intelligent transportation system becomes more sophisticated

□ Others: _____

2 In your economy, in which areas do you believe women can play a more prominent leadership role in advancing intelligent vehicle–related fields? *(Multiple choices allowed)*

□ Policy and management (e.g., regulatory research, road safety policy, urban traffic planning, regulatory measures)

□Technical research and data analysis (e.g., autonomous driving AI, V2X, cybersecurity, software development, data science)

□ System design (e.g., human factors engineering, user experience design)

□Business innovation and industrial development (e.g., business models, industry strategies, startups, international cooperation)

□ Education, advocacy and social impact (e.g., autonomous driving awareness, vulnerable road user safety education, public outreach)

□ Others: _____

3 What programs or initiatives is your economy/organization currently implementing to support women in enhancing their skills in intelligent vehicle–related fields? *(Multiple choices allowed)*

□ Providing professional technical training courses or development programs (e.g., artificial intelligence, data science, embedded systems)

□ Establishing scholarships for higher education in smart vehicle–related fields

□ Offering guaranteed internship positions in smart vehicle research laboratories

□Organizing women-focused hackathons, coding challenges, or technical workshops

□ Providing reskilling or upskilling programs for women transitioning into the smart vehicle sector

□ Creating networking events or communities for women in smart vehicle technologies

□ No current programs, but potential options are under exploration

□ Others: _____

4 Does your economy have successful cases related to intelligent vehicles or smart mobility that you can share? *(Multiple choices allowed)*

□ Yes, achievements in policy objectives

□ Yes, achievements in commercial benefits

□ Yes, achievements in road traffic safety

□ No relevant cases

4.1 Based on the successful case(s) you indicated above, what factors contributed to the success? (Please specify the case name and describe. If none, please write N/A)

Please describe: _____

Part 4. Basic Information and Participation Intent

1 Please indicate the economy you represent:_____

Australia	Brunei Darussalam	Canada	Chile
China	Hong Kong, China	Indonesia	Japan
Korea	Malaysia	Mexico	New Zealand
Papua New Guinea	Peru	The Philippines	The Russian Federation
Singapore	Chinese Taipei	Thailand	United States
Viet Nam			

2 Type of Your Organization/Institution

□ Government Agency □ Academic/Research Institution

□ Enterprise/Industry Association □ International Organization

□ Others: _____

3 Number of employees in your organization/institution:

□ Large enterprise: >200 employees

□ Small or medium-sized enterprise: 5–200 employees

□ Micro-Enterprise: <5 employees

4 Your job position:

□ Senior executive (e.g., Deputy Director General or above, Director General, CEO)

□ Mid-level manager (e.g., Deputy Manager or above, Manager, Division Head)

□ Professional or technical staff (e.g., Engineer, Researcher)

□ Others: _____

5 Your job function:

□ Production (e.g., Production Manager, Procurement Specialist, Warehouse Manager)

□ Marketing (e.g., Marketing Planner, Sales Staff, Brand Manager, Market Analyst)

□ Human Resources (e.g., HR Specialist, Training & Development Specialist)

□Research & Development (e.g., R&D Engineer, Product Designer, Patent Engineer)

□ Finance (e.g., Finance Manager, Accountant, Financial Analyst)

□IT/Information (e.g., IT Systems Engineer, Programmer, Cybersecurity Specialist)

□ Others: _____

6 Total years of work experience in your industry:

□ Less than 10 years □ 11–20 years

□ 21–30 years □ More than 30 years

7 Your Email Address:_____

8 Are you or your organization/institution interested in sending representatives to participate in the "International Conference on Intelligent Mobility and Automotive ADAS Systems"?

□Yes, we are very interested □No, we currently do not have plans to participate

8.1 If yes, please recommend the representative(s) to attend the conference:

(Please specify name, organization, position and email)

_____

Thank you for your participation.

Appendix B: Post-event survey

Overall Conference Design and Participant Satisfaction

1. The objectives of the conference were clearly defined.

   ☐ Strongly agree ☐ Agree ☐Neutral ☐Disagree ☐Strongly Disagree

2. The conference successfully achieved its intended objectives.

   ☐ Strongly agree ☐ Agree ☐Neutral ☐Disagree ☐Strongly Disagree

3. The agenda and topics covered were relevant to the conference theme.

   ☐ Strongly agree ☐ Agree ☐Neutral ☐Disagree ☐Strongly Disagree

4. The conference content was well structured and easy to follow.

   ☐ Strongly agree ☐ Agree ☐Neutral ☐Disagree ☐Strongly Disagree

5. Gender considerations were adequately addressed during the conference implementation.

   ☐ Strongly agree ☐ Agree ☐Neutral ☐Disagree ☐Strongly Disagree

6. The speakers, experts and facilitators were well prepared and demonstrated strong expertise in the subject matter.

   ☐ Strongly agree ☐ Agree ☐Neutral ☐Disagree ☐Strongly Disagree

7. The materials provided during the conference were useful and relevant.

   ☐ Strongly agree ☐ Agree ☐Neutral ☐Disagree ☐Strongly Disagree

8. The time allocated for the conference sessions was appropriate and sufficient.

   ☐ Strongly agree ☐ Agree ☐Neutral ☐Disagree ☐Strongly Disagree

Relevance and Application at the Economy Level

1. Prior to participating in the conference, how would you rate your level of knowledge and skills related to the topic?

   ☐ 20% ☐ 40% ☐ 60% ☐ 80% ☐ 100%

2. After participating in the conference, how would you rate your level of knowledge and skills related to the topic?

   □ 20% □ 40% □ 60% □ 80% □ 100%

3. In which of the following areas do you plan to apply the knowledge and skills gained from this conference to support capacity building in your home economy? (Multiple selections allowed)

   ☐Develop new policy initiatives ☐Organize trainings

   ☐Develop work plans/strategies ☐Draft regulations

   ☐Develop new procedures/tools ☐Others: _____

4. What should be APEC's next priority to build on the outcomes of this conference? (Multiple selections allowed)

   ☐ Develop follow-up policy guidelines ☐ Organize capacity building programs

   ☐Establish cross-economy working groups

   ☐Launch pilot or demonstration projects

   ☐Strengthen monitoring and reporting mechanisms

   ☐Enhance public–private partnerships ☐No further action required

   ☐Others: _____

5. How could this conference be improved? Please provide any suggestions for improvement.

   _____

Basic Information and Participation Intent

1. Name: _____
2. Type of Organization/Institution

   □ Government Agency □ Academic/Research Institution

   □ Enterprise/Industry Association □ International Organization

   □ Others: _____

3. Job position:

   □ Senior executive (e.g., Deputy Director General or above, Director General, CEO)

□ Mid-level manager (e.g., Deputy Manager or above, Manager, Division Head)

□ Professional or technical staff (e.g., Engineer, Researcher)

□ Others: _____

4. Email Address:_____

Thank you for your participation.