THE AUTOMOBILE AND TECHNICAL REGULATIONS

1 Introduction

As environmental and energy conservation and traffic-accident prevention become global trends, regulations are being strengthened in Japan, the U.S., and Europe that demand further improvements in vehicle safety and environmental performance. In Asia, Australia, and Central and South America legislation based primarily on UN regulations is being prepared. Work on the international harmonization of standards, including the uniform worldwide Global Technical Regulations (GTRs) standards, is also advancing.

2 Overall Trends

2. 1. Japan

To move forward with a mutual recognition of a whole vehicle type approval system based on the UN Agreement concerning mutual recognition of type approval for vehicles and parts that recognizes certification at the level of parts and components, Japan has added provisions for the certification of common structural parts to its legislation governing vehicles.

In terms of safety, it was decided to introduce of requirements regarding internal projections, vehicle fire hazard prevention, pole side impacts, license plate lamps, as well as tire noise, friction force on wet road surfaces, and rolling resistance.

For emissions, the main issues addressed were the strengthening of NOx emission limit and the change of test cycle (from the JE05 to the Worldwide harmonized Heavy Duty Certification (WHDC)) for heavy-duty diesel vehicles. As the study of the introduction of the Worldwide harmonized Light vehicles Test Procedure (WLTP) is intensifying, the diesel vehicle emissions scandal has prompted the extending of regulations prohibiting illegal devices (defeat strategy) to also cover passenger vehicles. At the same time, public-private investigations and research on real driving emissions (RDE) is being pursued more actively.

2. 2. The U.S.

On the safety front, there was a lot of activity surrounding the introduction of advanced technologies, including the signing of a memorandum of understanding (MOU) by automakers on equipping vehicles with automatic emergency braking and the establishment of the Automotive Information Sharing and Analysis Center (Auto-ISAC) to work on cybersecurity measures. In addition, concerns that outdated U.S. safety standards (FMVSS) could impede the introduction of advanced technologies, the NHTSA has been endorsing the further introduction of such technologies by encouraging petitions from automakers.

The Environmental Protection Agency will be strengthening the current Tier 2 emissions regulations for light-duty vehicles in the U.S. and start applying Tier 3 regulations, which are equivalent to the California LEV III, with the 2017 model year. The California Air Resources Board (CARB) is planning to issue amended legislation for the OBD rules applying to the LEV III that came into effect with the 2015 model year. At the same time, the EPA, the CARB, and Canada have begun actual road emissions tests using the portable emission measurement system (PEMS).

The application of the GHG phase 2 fuel economy regulations for heavy-duty vehicles starting with the 2010 model year has been proposed.

In terms of recycling and substances of environmental concern (SOCs), the EPA has issued a regulation to ban the use of the current air conditioner refrigerant (R134a) in light-duty vehicles sold in the U.S. starting with the 2021 model year.

2. 3. Europe

It was decided to make the installation of the system that automatically notifies emergency services in the event of a traffic accident (eCall) mandatory, a decision that will apply from the end of March 2018. The rules

concerning the specific technical requirements and certification procedures are currently being deliberated.

There are ongoing discussions on the definition of automated driving according to the degree of driver intervention with regard to driving support technologies such as lane departure and collision avoidance.

The introduction of the WLTP and of the Real Driving Emissions (RDE) regulation, as well as a revision of the evaporative emissions test method, are being examined with the goal of synchronizing them with the coming into effect of Euro 6c in September 2017. For the RDE, a monitoring phase preceding the regulation started in April 2016. In addition, a proposed regulations package that covers elements such as the measurement of CH_4 (converted to CO_2) and attendant relaxed THC emission limit, the adoption of NO_2 regulations, and stricter low temperature regulations (stricter CO and THC emission limit and adoption of NOx and NO_2 emission limit) is being debated by the European Commission, the European Parliament, and the Council of the EU.

The phase-in of CO_2 regulations for light-duty passenger vehicles started in 2012, and the phasing-in of these same regulations for light commercial vehicles started in 2014. In addition, a proposed CO_2 regulation for the year 2020 was adopted at the plenary session of the European Parliament in February 2014. Emission targets have been set to a stricter 95 g/km for light-duty passenger vehicles and 147 g/km for light-duty commercial vehicles, with a credit based on the number of vehicles sold applied to vehicles with emissions of less than 50 g/km (counted as multiple vehicles).

Changes to the vehicle exterior noise test method and stricter regulations have been set to come into effect in July 2016, while the application of Acoustic Vehicle Alerting System (AVAS) requirement for EVs and HEVs is scheduled to start in 2019.

2. 4. Other regions

In China, the nationwide China 5 (equivalent to Euro 5) regulations for light-duty gasoline vehicles will come into effect in January 2017. Similarly, Beijing will introduce the Beijing 6 (equivalent to the U.S. LEV III) regulations for light-duty gasoline vehicles at the end of 2017, ahead of the rest of the country, and the nationwide introduction of China 6 (equivalent to Euro 6) is under consideration. Fourth-stage fuel economy (corporate average fuel economy) standards have been in force since January 2016 for light-duty passenger vehicles, and third-stage individual vehicle fuel economy standards with strengthened target values are also in effect.

The Gulf Cooperation Council (GCC) has revised its general safety requirements to make systems such as ABS, ESC, TPMS, and brake override mandatory starting with the 2017 model year. Similarly, the light-duty vehicle fuel economy labels already adopted by Saudi Arabia will also be applied in other GCC countries. Corporate average fuel economy regulations for light-duty vehicles have been in effect in Saudi Arabia since 2016.

In Taiwan, regulations on corporate average CO_2 emissions for light-duty vehicles came into effect in 2015, and corporate average fuel economy regulations will follow in 2017.

2. 5. The United Nations

2. 5. 1. Harmonization of standards

The World Forum for Harmonization of Vehicle Regulations of the United Nations Economic Commission for Europe (WP29) was established as the body to promote international harmonization of automotive technical standards. WP29 has been meeting regularly to discuss the 1958 Agreement (mutual recognition agreement) and the 1998 Agreement (global agreement). The aim of the 1958 agreement, currently signed by 50 European and other countries as well as 1 region, is to use UN regulations to establish uniform technical standards for vehicles and obtain mutual recognition of those standards. There are currently (as of the end of 2015) 136 such UN regulations, with new regulations for additional items currently being formulated. The 1998 Agreement went into effect in August 2000 as a means of establishing and realizing GTRs, and includes 34 participating countries and 1 participating region as of the end of 2015. The addition of WLTP and tires in 2014 has brought the number of items covered by established GTRs to 16. Furthermore, additional GTRs on items such as light-duty vehicle emissions, fuel economy testing methods, hydrogen and fuel cell vehicles (phase II), pedestrian protection (phase II), tires (phase II), and quiet vehicles (proximity warning sounds), are also being revised or formulated.

2. 5. 2. System for mutual recognition of international whole vehicle type approval

WP 29 is actively discussing and pursuing the establishment of a system for the mutual recognition of International Whole Vehicle Type Approval (IWVTA). This initiative was proposed by the Japanese government with the aim of extending the current 1958 Agreement-

based mutual recognition of approval for devices, parts and systems to cover the whole vehicle. The following three items were accomplished: (1) amending the 1958 Agreement, (2) establishing vehicle type approval regulations (IWVTA), and (3) preparing the necessary technical requirements for the IWVTA regulation.

3 Japan

3. 1. Vehicle safety

3. 1. 1. Progress of safety measures

In November 2015, the 16th Automobile Safety Symposium was jointly hosted by the Ministry of Land, Infrastructure Transport and Tourism (MLIT) and the Society of Automotive Engineers of Japan. Held under the theme of Active Safety Technologies for Traffic Safety, the event featured reports on the expected role and effects of said technologies as part of vehicle safety measures and on developments in automobile active safety technologies, as well as a panel discussion on the future course of such technologies.

3. 1. 2. Strengthening of safety regulations and harmonization of criteria

Based on the 1958 Agreement, the MLIT is revising Japanese technical standards in line with revisions to UN standards. In 2015, the standards concerning internal projections, vehicle fire hazard prevention, pole side impacts, license plate lamps, as well as vehicle exterior noise, friction force on wet road surfaces, and rolling resistance were amended.

In addition, preparations to introduce the UN regulation on test methods for external noise (UN-R51) were completed, with the official announcement scheduled for April 2016.

3. 2. Emissions

3. 2. 1. Promotion of measures on emissions

In February 2015, the Central Environmental Council of Japan compiled and submitted its 12th report to the Minister of the Environment in response to the inquiry on the Future Policy for Vehicle Emission Reduction.

For test cycles suited to Japanese traffic conditions, that report recommends changing from the current JC08 to the Worldwide Light-duty Test Cycle specified by UN-ECE/WP29 for passenger and other vehicles. It further recommended relaxing the requirement concerning the mandatory installation of a blow-by gas reduction device in supercharger-equipped diesel heavy-duty vehicles that meet regulatory requirements. It was decided to have the recommendation on diesel heavy-duty vehicle blow-by gas come into effect in 2016.

3. 2. 2. Strengthening of regulations for diesel heavy-duty vehicles

Starting in October 2016 (2018 for OBD), the strengthening of nitrogen oxides (NOx) emission limit, the change of test cycles (from the JE05 to the WHDC), the introduction of a test methodology and emission limits for off-cycle emissions (Off-cycle Emissions (OCE) Global Technical Regulation), mandatory advanced on-board diagnostics devices and relaxed mandatory installation requirements for blow-by gas reduction devices on supercharger-equipped vehicles that meet regulatory requirements, will be applied gradually.

3. 2. 3. Impact of the diesel vehicle emissions scandal

The topic of inspection methods, particularly for diesel passenger vehicles, is stirring controversy on a broad scale. In addition to the established policy of introducing the WLTP, regulators are now being urged to consider RDE testing, which simulates driving on the road.

3. 3. Fuel Economy

Fuel economy standards setting targets to be met by 2020 for passenger vehicles, and the 2022 fuel economy standards compiled in February 2015 for light-duty trucks are in effect, and automakers are working to achieve compliance with each of those standards.

In contrast, work to examine test methods for aerodynamic drag and rolling resistance is currently underway for the next series of fuel economy standards for trucks and buses.

3. 4. Green tax to promote the spread of low-emissions & fuel efficient vehicles

A tax system (the so-called green tax system or fuel-efficient car tax reduction) that reduces conventional vehicle-related taxes, such as the vehicle excise tax, motor vehicle weight tax, and vehicle acquisition tax, was established to help promote the spread and popularization of low-emissions and fuel-efficient vehicles.

Based on the premise that the consumption tax will be raised in April 2017, the FY 2016 Tax Reform (Main Points) stipulates the abolition of the vehicle acquisition tax while also establishing a new environmental performance rebate, but decisions on details such as specific rate reductions and eligibility criteria have been pushed back to the FY 2017 Tax Reform (Main Points).

3. 5. Other

From the point of view of increasing logistics efficiency

and ensuring global competitiveness, length limits for semi-trailer trucks meeting specified requirements have been relaxed (to 13 meters), as have drive axle load limits for tractor units (to 11.5 tons), in the context of measures including revisions to authorization criteria for relevant road users.

With regard to license plate visibility, the use of covers and application of stickers, as well as mounting upside down have been prohibited, and in addition, a range of attachment angles (vertical and horizontal orientation) has been specified. The new regulations went into effect in April 2016 (with a 5-year grace period for the attachment rules).

4 The U.S. and Canada

4. 1. Vehicle safety in the U.S.

4. 1. 1. Automatic emergency braking (AEB) in light-duty vehicles

Almost all vehicle manufacturers have signed a memorandum of understanding on the installation of AEB to reduce or prevent rear-end collisions and committed to equipping 95% or more of vehicles produced for the U.S. market with AEB by 2022.

4. 1. 2. Cybersecurity

Automakers established the Automotive Information Sharing and Analysis Center (Auto-ISAC) and started to examine best practices to counteract cyber threats.

4. 1. 3. Vehicle proximity notification sound

A draft proposal (newly established FMVSS 141) to make the installation of a sound generating device in EVs and HEVs has been issued. The final regulation is scheduled for release in June 2016.

4. 1. 4. Vehicle-to-vehicle (V2V) communication for light-duty vehicles

A draft proposal to for the mandatory installation of dedicated short-range communication (DSRC) systems allowing V2V communication is scheduled to be issued in April 2016.

4. 1. 5. Event data recorders (EDR) in light-duty vehicles

A draft proposal for the mandatory installation of EDRs, which make it possible to confirm records such driver accelerator and brake operation or airbag deployment status, has been issued. The final regulation is scheduled for release in August 2016.

4. 1. 6. Distracted driving

The NHTSA is issuing guidelines on limiting the operation of vehicle-mounted devices, such as navigation systems, as phase 1 of measures to reduce the number of collision accidents caused by driver distraction. The phase 2 guidelines for portable electronic devices have been submitted to the White House. There are also plans to create guidelines for voice-operated devices in phase 3.

4. 2. Emissions in the U.S.

4. 2. 1. Federal regulations

In March 2014, the Environmental Protection Agency (EPA) decided to adopt the Tier 3 regulations, which are tougher than the current federal Tier 2 regulations, for light-duty vehicles. Tighter regulations for 2017 to 2025 MY vehicles include significant changes, such as changes for test gasoline, the addition of leak check tests to EPA OBD requirements and clearer test methods for 4WD chassis dynamometers. Efforts were made to harmonize those changes with the LEV III regulations wherever possible. Moreover, both the CARB and Canada have started applying PEMS on-road emissions measurement conventionally applied to heavy-duty vehicles to the certification, surveillance and confirmatory testing of light-duty vehicles.

4. 2. 2. California

4. 2. 2. 1. ZEV 2.0 regulations

With the strengthening of the regulations starting with the 2018 model year, the negative credit that had to be cleared by the end of the next model year can now be cleared over three model years if manufacturers produce ZEVs or TZEVs, deliver the vehicles for sale in the state of California, and submit a plan to the CARB. The conditions when transitioning from an intermediate to a large volume manufacturer have also been revised.

4. 2. 2. 2. Emissions regulations

Like the EPA, the CARB has also started PEMS-based confirmatory testing.

4. 2. 2. 3. OBD regulations

A revision stipulating monitoring requirements for LEV III compliant vehicles will be conducted. It will include the addition of new data collection requirements focusing on performance evaluations of in-use vehicles.

4. 3. Fuel economy and GHG regulations in the U.S.

4. 3. 1. CAFE and GHG regulations

Along with the NHTSA and CARB, the EPA will look at the cost and extent of the propagation of fuel-efficient technologies incorporated in vehicles already on sale, and research fuel prices as to inform its (mid-term evaluation) review of regulations for 2018 and subsequent model

year light-duty vehicles, and prepare a report. The final determination (whether the standards will be strengthened, relaxed or left unchanged) is anticipated in 2018 or later.

The EPA and NHTSA released proposed phase 2 regulations concerning GHG and fuel economy for heavy-duty vehicles. The proposal calls for enacting these regulations starting with the 2021 model year, and strengthening them for the 2024 and 2027 model years.

4. 3. 2. EPA fuel economy labels

Explaining the disparity between fuel economy labels and actual fuel economy has long been a problem. As a result of procuring the in-use vehicles and carrying out its own running resistance tests, the EPA has issued new guidelines with stricter monitoring requirements for running resistance. In addition, it has revised the coefficient used in the 5-cycle fuel economy formula. Both changes will come into effect from the 2017 model year.

4. 4. Recycling and SOCs in the U.S.

While the current administration's policy is to strengthen regulations on chemical substances, revisions are stalled because the federal TSCA has not been approved by Congress. To make up for this, the EPA has applied SNURs to start imposing restrictions on several hundred chemical substances. A proposal extending regulation to substances within products for brominated flame retardants such as decaBDE and HBCD has also been put forth. Moreover, the EPA has issued a regulation to ban the use of the current refrigerant (R134a) in light-duty vehicles sold in the U.S. starting with the 2021 model year.

The Safer Consumer Products (SCP) regulations have come into force in California, and deliberations on the products and substances to restrict have begun.

4. 5. Canada

4. 5. 1. Vehicle safety

A draft proposal to align the Side Impact Protection Regulations (CMVSS 214) with the U.S. FMVSS 214 has been issued, as has a draft CMVSS 226 proposal harmonizing that standard with the U.S. one on ejection mitigation for light-duty vehicle occupants (FMVSS 226). Similarly, a draft revision has been issued for the Lighting System and Reflective Devices standard (CMVSS 108). The Location and Identification of Controls and Displays (CMVSS 101), which is based on the U.S. FMVSS 101, has been revised and will come into effect in September 2019.

4. 5. 2. Fuel economy and GHG regulations

Harmonizing with the U.S., Canada has decided to apply new fuel consumption labels based on the 5-cycle test methodology. At the same time, the labels will be redesigned, with interim labels used for the 2015 MY and official application beginning with the 2016 model year. As in the U.S., GHG regulations will be strengthened starting with the 2017 model year, but the multiplier for advanced technology vehicles will differ.

4. 5. 3. Environmental protection

The Prohibition of Certain Toxic Substances Regulations, 2012 annex to the Canadian Environmental Protection Act, 1999 were issued, marking the beginning of restrictions in stages on BNST, an amine-series antioxidant.

Regulations mandating reporting and labeling for headlamps and other products containing mercury have been enacted.

5 Europe

5. 1. Whole vehicle type approval (WVTA)

In the context of the framework for the type approval of motor vehicles in the EU established by European Directive 2007/46/EC, an amendment to make eCall mandatory was issued as a WVTA amendment in May 2015, and the details of the certification procedure and technical requirements are currently under deliberation. Moreover, work on other WVTA amendments, including the strengthening of current market monitoring requirements, the implementation of type approval procedures, the streamlining of multi-stage approval, mandatory certification of aftermarket parts, and requirements on repair and maintenance is progressing, the details of the amendments expected to be decided in 2016.

5. 2. Vehicle safety

5. 2. 1. eCall

The regulation on the mandatory installation of a system that automatically or manually contacts an emergency call center to transmit the vehicle and location data in the event of a traffic accident was originally scheduled to come into effect on October 1, 2015 for new M1 and N1 category vehicles. However, due to circumstances in various countries, such as difficulties in setting up the necessary infrastructure on time, the European Parliament, Council of the EU, and the European Commission reached a consensus and announced in May 2015 that the regulation will apply to new models as of March 31, 2018. The detailed technical regulations are currently being studied

by the European Commission. Those same technical regulations are also currently being evaluated as new regulation proposals by the UN.

5. 2. 2. GSR

A GSR ((EC) No. 661/2009) was issued for the purpose of improving the safety and environmental performance of vehicles and also to simplify the legal code. This GSR abolished roughly 50 EU Directives that concerned safety and instead mandated UN regulations equivalent to these EU directives. In addition, any EU directives that did not exist in UN regulations were revamped as new EC regulations. In December 2012, the Commission Regulation ((EU) No. 1230/2012) that concerns the mass and dimensions of motor vehicles was issued. At the same time, an amended draft of the heretofore delayed regulations concerning GSR approval procedures was adopted in 2014 and finally issued as (EU) 2015/166. The date when cab strength requirements come into effect is clearly stipulated in those regulations.

The GSRs contain provisions that make advanced safety systems (TPMS, AEBS, LDWS, (GSI), and ESC) mandatory and also stipulate tire rolling resistance requirements, grip requirements, road noise requirements, and cab strength requirements.

5. 3. Emissions and OBD

5. 3. 1. Light-duty vehicles

Euro 6 emissions regulations have been effect since September 2014. As part of a further strengthening of regulations, a proposed regulations package that covers elements such as the measurement of CH_4 (converted to CO_2), relaxed THC regulation values, the adoption of NO_2 regulations, and stricter low temperature regulations (stricter CO and THC emission limit and adoption of NOx and NO_2 emission limit) is being debated by the European Commission, the European Parliament, and the Council of the EU. Many European countries continue to have difficulty meeting the NO_2 environmental standards, and it was decided to apply RDE regulations as a way to overcome this situation. Tests using PEMS will be conducted on vehicles subject to the Euro 6 standards. The regulations have two stages, with the first involving only monitoring without emission limit, and the second enacting emission limit. First-stage monitoring applies to new models starting in April 2016.

5. 3. 2. Heavy-duty vehicles

The Euro VI regulations came into effect, and revisions to the PEMS test methodology and OBD requirements are being studied. Requirements that skip the measurement of particle mass (PM) and measure particle number (PN) of particulate matter in PEMS tests are planned.

5. 4. CO_2 (fuel economy)

The phase-in started in 2012 for regulations establishing an average 130 g/km of CO_2 in the M1 category was completed in 2015, and now apply to 100% of vehicles. In the N1 category, an average of 175 g/km is being phased-in between 2014 and 2017, and applies to 75% of vehicles as of 2015.

In July 2012, a draft of CO_2 regulations for the year 2020 was proposed by the European Commission, and CO_2 regulations for light-duty commercial vehicles (147 g/km) and light-duty passenger vehicles (95 g/km) were adopted in January and February 2014, respectively.

The European Commission has been developing VECTO, a simulation tool for the certification of CO_2 emissions and fuel economy requirements. There are plans to first apply it to long distance trucks starting in 2018.

5. 5. Recycling and SOCs

The end-of-life vehicles (ELV) Directive (2000/53/EC) restricted and reduced the use of four types of heavy metals (lead, mercury, cadmium, and hexavalent chromium). In February 2010, the exemptions for the use of lead solder in circuit boards were subdivided into multiple specific applications (2010/115/EU). Subsequently, other revisions to reduce the lead content in other parts were made, and the 7th revision is currently awaiting publication as an Official Journal of the European Union. In addition, initial audit requirements that will be applicable from 2012 (2009/1/EC) were added to the Directive that concerns the recyclability certification of WVTA (2005/64/EC). REACH, the European Community Regulation on chemicals and safe use that entered into force in June 2007, has made the registration and reporting of chemical use to government authorities, as well as the disclosing information to users of chemicals, mandatory ((EC) No. 1907/2006). Any usage restrictions on substances that are related to automotive products will generally be handled under this regulation. The classifying, labeling, and packaging (CLP) regulation, which stipulates the requirements for the classification, labeling, and packaging of hazardous substances, is currently in force and applies to items such as puncture repair sealants for maintenance, adhesives, oils, and window washer fluid ((EC) No. 1272/2008). The existing Biocides Directive (98/8/EC)

was revised as a biocidal products regulation and any chemical substances applied to vehicle parts as a biocide are subject to the usage restrictions and information disclosure requirements ((EU) No. 528/2012).

5. 6. Vehicle external noise

In May 2014, an Official Journal of the European Union on vehicle external noise regulations was issued. Three main revisions were proposed: (1) Setting emission limit in accordance with the UN test methods, (2) the addition of additional sound emission provisions (ASEP), and (3) the addition of requirements for approaching vehicle alerting devices (AVAS) for EVs and HEVs. Phase 1 emission limit will apply to new model starting in July 2016.

5. 7. Russia

5. 7. 1. Vehicle safety

New standards have come into effect in 2015, with various UN regulations, including those on pedestrian protection, ESC and TPMS systems gradually being made mandatory. Russian standards will continue to apply to elements such as vehicle interior noise, vehicle interior ventilation, and heaters.

5. 7. 2. Emissions

Euro 5/V regulations for emissions came into force for new model in January 2014, and their application to new model came into effect as scheduled in January 2016 for passenger vehicles, but was postponed to January 2018 for other types of vehicles.

5. 7. 3. Eurasian Customs Union

In the Eurasian Customs Union (EACU), whose member states include the Russian Federation, Kazakhstan, and Belarus, the Technical Regulation of the Customs Union (TR CU), a common approval system based on Russian regulations, came into effect for new model starting in January 2015. This regulation applies to new model starting in July 2016. It was decided to make it mandatory for vehicles to be equipped with the Russian version of the European eCall system (ERA GLONASS) ahead of Europe, a requirement that applies to new model starting in January 2015.

6 Central and South America

6. 1. Mexico

6. 1. 1. Vehicle safety

The introduction of safety regulations for light-duty vehicles is under consideration, with regulations from major areas (U.S., EU, UN and others) on basic safety systems (head restraints, seats, seatbelts, controls and indicators, speedometers, mirrors, hood latches, defrosters and defoggers, wipers and washer fluid, lamps, tires, brakes, and safety glass) starting to come into effect with the 2017 model year. Regulations of frontal and side collision, ABS, and seatbelt reminder regulations are expected to be added from the 2019 model year (for new model) and the 2020 model year (for new model).

6. 1. 2. Emissions

Emissions regulations contained in U.S. and European laws (equivalent to Tier 2-Bin 7 and Euro 4) have been fully introduced. Emissions regulations for heavy-duty diesel vehicles equivalent to U.S. 2004 or Euro IV regulations have been introduced and are scheduled to be strengthened to US 2010/Euro VI equivalent regulations as of 2018.

6. 1. 3. Fuel Economy

As of 2014, fuel economy regulations modeled on the US CAFE were introduced.

6. 2. Brazil

6. 2. 1. Vehicle safety

Regulations to make it mandatory for vehicles to be equipped with a stolen vehicle tracking device have effectively been postponed indefinitely. Installation requirements for three-point seatbelts and head restraints will be made stricter from January 2018, and CRS anchorage system will become mandatory at the same time. The mandatory installation of ESC will start with new model from January 2020.

6. 2. 2. Emissions

The L6 regulation is in effect, and there are calls to add a catalyst removal monitor to OBD systems in diesel vehicles starting in 2017.

6. 2. 3. Fuel economy

From October 2016 to December 2020, corporate average fuel economy regulations will be a condition to be eligible for industrial tax exemptions. In addition, credits for environmentally friendly technology and tax breaks for fuel-efficient vehicles have also been established. Starting in 2016, the fuel economy labels applied to gasoline vehicles will also become mandatory for diesel vehicles.

6. 3. Chile

6. 3. 1. Vehicle safety

Regulations concerning the installation of safety parts were revised to make airbags mandatory in lighter passenger vehicles (by vehicle category, with all vehicles to

comply by December 2016). In addition, the safety systems such as seatbelt, safety glass, and head restraints already mandatory on light-duty vehicles, were extended to apply to mid-size vehicles. Only safety glass is currently mandatory for heavy-duty vehicles, but regulations for parts such as brakes, seatbelts, seats and fuel tanks are under consideration.

6. 3. 2. Emissions

Emissions regulations equivalent to Tier 2-Bin 5 or Euro 5 are currently in effect for light-duty diesel and gasoline vehicles. Euro V regulations are in effect for heavy-duty vehicles, and moving up to Euro VI regulations as of 2019 is under consideration.

6. 3. 3. Noise

Noise regulations equivalent to UN R51 in light-duty vehicles have been issued, and will come into effect 24 months after the attendant test procedures are issued. Regulations for heavy-duty vehicles are under consideration.

6. 4. Argentina

6. 4. 1. Vehicle safety

In addition to the mandatory installation of front airbags and rear outermost seat head restraints in light-duty passenger and commercial vehicles, ESC will be made mandatory on new model starting in 2018.

6. 4. 2. Emissions

Regulations equivalent to Euro 5 were applied to new model light-duty passenger from January 2015 and will apply to new model staring in January 2017. For light-duty commercial vehicles, they came into effect for new model in January 2016, and will apply to new model from January 2018. The Euro V regulations apply to new model starting in 2015, and will also apply to existing vehicle from 2017.

6. 5. Colombia

6. 5. 1. Vehicle safety

The installation of ABS, airbags and head restraints for light-duty vehicles, and ABS for heavy-duty vehicles, will become mandatory as of January 2017.

6. 5. 2. Emissions

Regulations equivalent to the U.S. Tier 1 or Euro 2 are currently in effect for light-duty gasoline vehicles.

The regulations in effect since January 2015 are equivalent to the U.S. 2010 or Euro IV for heavy-duty diesel vehicles.

6. 6. Ecuador

6. 6. 1. Vehicle safety

The regulations making safety systems mandatory (RTE INEN 034) has been revised and was enacted in 2015. It mainly introduces UN regulations, but retains some Ecuador-specific requirements. Starting in October 2016, a certification system requiring the submission of documents proving compliance with the various requirements to obtain certificates will be implemented.

6. 7. Uruguay

6. 7. 1. Vehicle safety

Starting in April 2018, the installation of an anchorage system (ISOFIX or LATCH) allowing a child restraint system to be set on the right side of the rear row of seats will become mandatory.

6. 7. 2. Emissions

The establishment of emissions regulations equivalent to Euro 4 starting in 2018 is under consideration. The application of mandatory fuel economy labels from January 2018 for passenger vehicles is under consideration.

6. 8. Peru

6. 8. 1. Emissions

The current regulations for light-duty vehicles are Euro 3 or U.S. Tier 1, but the application of Euro 4 or U.S. Tier 2 for new model is scheduled to start from January 1, 2017. On the same date, Euro IV will apply to heavy-duty vehicles.

7 Middle East and Africa

7. 1. Gulf Cooperation Council (GCC)

7. 1. 1. Vehicle safety

The GSO 42 general safety requirements have undergone a major revision and will come into effect from the 2017 model year. The main point of the revision is the addition of systems including on-board diagnostics (OBD) for the emissions system, ABS, ESC, tire pressure monitoring system (TPMS), rear fog lamps, brake override, and providing displays in Arabic. In addition, the Saudi Arabian requirements for tire rolling resistance and wet grip performance will also apply in other GCC countries from the 2017 model year.

7. 1. 2. Emissions

Although stricter regulations on the sulfur content of market fuels have been continuously postponed due to lack of progress in that area, the GSO 42 states that emissions regulations will be raised to the Euro 4 level starting with the 2018 model year.

7. 1. 3. Fuel economy

In Saudi Arabia, the display of fuel economy labels in showrooms for light-duty passenger vehicles and light-duty trucks has been mandatory since August 2014, and the affixing of fuel economy labels on vehicles has become mandatory as of January 2015. Corporate average fuel economy regulations modeled on the U.S. CAFE regulations came into effect in January 2016. Other GCC countries will make fuel economy labels on vehicles mandatory starting with the 2017 model year.

7. 2. South Africa

7. 2. 1. Vehicle safety

Speed governors have been made mandatory, and electrical safety standards have been adopted. Updates to safety regulations, based on those of the UN and Europe, are being considered for 2017.

7. 2. 2. Emissions

Specifications for the properties of commercial fuels used in gasoline and diesel engines were revised (to take effect on July 1, 2019). After that date, the current emissions regulations (Euro 2) are scheduled to be strengthened and become equivalent to the Euro 5 regulations.

7. 3. Egypt

Adoption of UN regulations began in 2010, but their implementation has been suspended by political turmoil. As part of efforts to start applying them again starting in 2014, the examination of the next phase of safety item adoption has begun.

7. 4. Morocco

WVTA items or equivalent UN regulations have been adopted since 2010 and applied to all vehicles starting in 2015.

7. 5. Algeria

In April 2015, many regulations requiring the installation of safety systems were issued, and a UN regulation-based examination containing approximately 30 items was initiated.

8 Asia

8. 1. China

8. 1. 1. Vehicle safety

The GB 7258-2012 Safety specifications for power-driven vehicles operating on roads standard is being revised (e.g., mandatory installation of event data recorders or radio frequency ldentidication).

8. 1. 2. Emissions

The nationwide China 5 (equivalent to Euro 5) regulations for light-duty gasoline vehicles will be introduced in January 2017, one year ahead of schedule, and remains scheduled for January 2018 for light-duty diesel vehicles. It was decided to apply the China 5 (equivalent to Euro V) regulations to heavy-duty diesel vehicles in January 2017 for public use vehicles, and July 2017 for other vehicles.

For light-duty vehicles, the introduction of China 6 (equivalent to Euro 6) regulations nationwide, and of Beijing 6 (equivalent to the U.S. LEV III) in Beijing is being examined, with the China 6 to be promulgated in 2016 and scheduled to come into effect in 2018 in important regions, and nationwide in 2020. Similarly, the Beijing 6 are scheduled to be promulgated in 2016 and come into effect at the end of 2017, but no decision has been made on how the Beijing 6 regulations will be handled after the China 6 regulations are established.

8. 1. 3. Fuel economy

Since January 2016, both fourth-stage fuel economy (corporate average fuel economy) standards and third-stage individual vehicle fuel economy standards with strengthened target values have been in force for light-duty passenger vehicles. A call for public comments has been issued for the law on the calculation of passenger vehicle corporate average fuel economy, which stipulates items such as fuel consumption calculation methods, reporting procedures, penalties and credits for new energy vehicles in the fourth-stage fuel economy standards. In addition, the study of fifth-stage fuel economy standards for 2021 to 2025 has begun.

Second-stage regulations have been in effect for heavy-duty vehicles since July 2014. A draft proposal for third-stage fuel economy standards is currently under consideration.

8. 1. 4. New energy vehicles

Promotion of the spread of new energy vehicles is leading to rapid progress in the drafting of new energy-related national standards, and work on drafting and amending standards concerning safety requirements for items such as electric vehicle batteries, motors, charging, and EMC is underway. There is currently a call for public comments on technical requirements for plug-in hybrid electric passenger vehicles.

8. 2. Hong Kong

8. 2. 1. Vehicle safety

The adoption of resolutions based on those of the UN regulation for parts such as door latches and hinges,

lamps and brakes is an ongoing issue on which little progress is being made.

8. 2. 2. Emissions

Adoption of the stricter Euro 6/VI regulations is planned to start gradually from September 2016 for light-duty vehicles, and from January 2017 for heavy-duty vehicles, with the primary objective of reducing NOx.

8. 3. Taiwan

8. 3. 1. Vehicle safety

Safety standards are updated annually based on UN regulations. Future projected updates include the mandatory installation of daytime running lamps, ESC, and brake assist systems from 2018.

8. 3. 2. Emissions

The Euro 5 or U.S. Tier 2-Bin 5 regulations came into effect in January 2012 for light-duty diesel vehicles, and in October 2012 for light-duty gasoline vehicles. For heavy-duty vehicles, the Euro V or U.S. 2007 regulations came into force in January 2012. The adoption of the Euro 6 for light-duty vehicles and Euro VI for heavy-duty vehicles as the next regulations is under consideration.

8. 3. 3. Fuel economy

Corporate average CO_2 regulations for light-duty vehicles were introduced in 2015. Corporate average fuel economy regulations for light-duty vehicles will be introduced in 2017.

8. 4. Thailand

8. 4. 1. Vehicle safety

The Thai Industrial Standard Institute (TISI) and Department of Land Transport (DLT) are sharing the work of harmonizing standards with UN regulations and applying new regulations.

The DLT has decided to adopt UN R43 (safety glass) as of January 2018. There are also plans to gradually introduce other UN regulations, but they are slightly behind schedule overall.

The TISI is expected to start considering the introduction of tire-related UN regulations (UN R30, UN R54, and UN R117).

8. 4. 2. Emissions

Euro 4 regulations have been in effect for light-duty vehicles since December 2012, while Euro III regulations have been in force for heavy-duty diesel vehicles since March 2013. The strengthening of emissions regulations for both light-duty and heavy-duty vehicles is under consideration.

8. 5. Malaysia

Since joining the 1958 Agreement in 2006, Malaysia has been actively making the application of UN regulations mandatory, with approximately 30 UN regulations for items such as seatbelts, brakes, and collisions becoming mandatory as of January 2012. Preparations are underway for almost all UN regulations, including the latest standards such as pedestrian protection for light-duty vehicles and emergency braking systems in heavy-duty vehicles, as well as cab strength requirements, to become mandatory by 2020.

8. 6. Indonesia

Phase 1 of the ASEAN Mutual Recognition Arrangement (MRA), which involves integrating UN regulations in the national standards, is being studied. There are plans to introduce Euro 4/IV regulations, but the prerequisite of making fuel compliant with those regulations available nationwide makes the timing of that introduction unclear.

8. 7. Singapore

The Euro 4 emissions regulations have been in effect since April 2014 for gasoline vehicles (excluding the Type 6 low-temperature test), and the Euro 5/V regulations were introduced in January 2014 for diesel vehicles. The introduction of Euro 6/VI regulations starting in September 2017 for gasoline vehicles and January 2018 for diesel vehicles as the next regulations has been announced.

8. 8. India

8. 8. 1. Vehicle safety

The Automotive Industry Standards (AIS) and Indian Standards (IS) are gradually being harmonized with UN regulations. Work on building the infrastructure for certification tests such as collision safety testing, pedestrian protection, and electromagnetic interference is moving forward. In conjunction with the completion of those facilities, new model will be subject to the standards on the protection of occupants in an offset frontal collision (AIS 098) and a lateral collision (AIS 099) starting in October 2017, and to the standard for the protection of pedestrians (AIS 100) in October 2018.

8. 8. 2. Emissions

The application of the Bharat Stage (BS) IV (equivalent to Euro 4/IV) regulations in urban areas started in April 2010 and is scheduled to expand to all cities in 2017. In February 2016, the Indian government announced that for the next regulations, it would skip over the BS V

(equivalent to Euro 5/V) and introduce BS VI (equivalent to Euro 6/VI) starting in April 2020.

8. 8. 3. Fuel economy

The Indian government has decided to postpone the introduction of the corporate average fuel economy regulations applying to light-duty passenger vehicles by one year, until April 1, 2017. Also, the previously optional fuel economy labels became mandatory in January 2016.

8. 9. Vietnam

8. 9. 1. Vehicle safety

Starting mainly with standards for parts such as safety glass, mirrors, tires, lighting devices and aluminum wheels, the gradual application of UN regulations is moving forward.

8. 9. 2. Environmental protection

The Euro 4/IV emissions regulations will be introduced for in January 2017. A recycling law aimed at the recovery of end-of-life products (Decision No. 16/2015/QD-TTg) was enacted, with its scope extending to parts such as batteries, tires and air conditioners as of July 2016 and scheduled to apply to the entire vehicle as of January 2018.

8. 10. The Philippines

The Euro 4/IV emissions regulations (excluding OBD requirements) came into force for all vehicles in January 2016.

8. 11. Brunei

The three-point seatbelt, airbag (driver and passenger seats), head restraint (outer seat) and ABS safety systems were made mandatory as of March 31, 2016.

9 Oceania

9. 1. Australia

9. 1. 1. Vehicle safety

A review of the individual Australian Design Rules (ADR), which includes original requirements, is being promoted in conjunction with a policy of adopting UN regulations. It was decided to apply the newly adopted UN R135 (Pole Side Impact) regulation ahead of Europe (ADR 85/00), making it effective for new model starting in November 2017 and subsequently also gradually effective for new commercial vehicle models, and existing vehicel.

9. 1. 2. Emissions

ADR 79/03 stipulated that the Euro 5 emissions regulations would be applied to new models light-duty gasoline vehicles starting in November 2013, while ADR 79/04 stipulates that these same regulations will apply to all vehicles starting in November 2016. In addition, the introduction of Euro 6 is currently being reexamined. The Euro V regulations already applied to all heavy-duty vehicles since January 2011, and both the U.S. 2007 regulations and Japanese 2005 regulations (new long-term regulations) are recognized as alternative standards. The Euro VI are being considered as the next regulations.

9. 2. New Zealand

Vehicles that are manufactured in Japan (using Japanese technical standards and the like), Europe (EC/UN regulations), the U.S. (FMVSS), and Australia (ADR) are accepted. Electronic stability control (ESC) became mandatory on light-duty vehicles in July 2015.

10 Motorcycles

10. 1. Japan

10. 1. 1. Vehicle safety

Electromagnetic compatibility (UN R10) applies to both new and existing vehicel vehicles from August 2016. Lighting devices, (UN R50) and Headlamps emitting a symmetrical passing beam (UN R113), were adopted in June 2015, but the period for Installation of lighting devices (UN R53) has not been determined. Control/telltales (UN R60) will apply to both new and existing vehicel vehicles from July 1, 2017. In addition, making ABS/CBS mandatory as of October 2018 for new model, and October 2021 for existing vehicel is under consideration.

10. 1. 2. Emissions

The application of third phase of emissions regulations equivalent to Euro 4 to new model in October 2016, and to existing vehicle in October 2017, is under consideration, with evaporative emissions and OBD regulations scheduled to come into effect at the same time.

10. 1. 3. Noise

Revised motorcycle noise emissions regulations (UN R41.04) were applied to new model from January 2014, and will be applied existing vehicle from January 2017. The steady running noise stipulations were abolished, while the close proximity exhaust noise stipulations were left in.

10. 2. The U.S.

10. 2. 1. Vehicle safety

The contents of the global technical regulation for motorcycle brake systems (GTR3) were incorporated in the brake regulations (FMVSS 122) and were applied to all motorcycles manufactured from September 1, 2014 as a

part of measures to harmonize standards.

10. 2. 2. Emissions

The emissions regulations of the EPA were strengthened in the past to establish a Class III HC+NOx emission limit of 0.8 g/km from the 2010 MY. After this there have been no other moves to further strengthen the regulations. For greenhouse gases, coefficients can be reported up to the 2017 model year, but reporting actual measured values will become mandatory starting with the 2018 model year. The new CARB evaporative emission limit and test method for off-road motorcycles and ATVs starting with the 2018 model year, and to all existing vehicle up to the 2021 model year.

10. 3. Canada

There were no significant changes in laws and regulations concerning either safety or emissions.

10. 4. Europe

On October 4, 2010 the EC announced a draft regulation that concerned L category vehicle type approval and market surveillance. This was published on March 2, 2013 as a new EU type approval system (EU Regulation (EU) Joint Resolution No. 168/2013). It started applying to motorcycles on January 1, 2016, and will apply to mopeds on January 1, 2017. The three delegated acts concerning the environment, functional safety, and vehicle structure were published in official journal by August 2014, completing the system for the new EU uniform type approval regulations. The amendment included a further subdivision of categories, and a new Powered cycle subcategory covering motor assist up to 25 km/h and maximum power of 1,000 W was established for mopeds.

10. 4. 1. Vehicle safety

It was made mandatory for vehicles in the L3e category (two-wheeled motorcycles) to be equipped with an ABS and have either an automatic daytime running light system, or automatically activated headlamps when the ignition is switched on. In addition, L3e-A1 category vehicles (low-performance motorcycles below 125 cc) must be equipped with ABS, CBS, or both. Detailed technical requirements on aspects such as the electrical safety of electric powered vehicles are also applied as a deterrent to modifying such vehicles. New requirements on steerability, cornering properties and turn-ability were added.

10. 4. 2. Emissions

Euro 4 regulations will apply to new models in starting 2016, and to existing vehicle in 2017. Crankcase emissions, evaporative emissions, durability, and compliance requirements for the OBD system have been incorporated into the regulations in addition to test cycle emissions regulations. Euro 4 for the L1e category (mopeds), which is exempted from OBD and evaporative emissions, will apply to new models in starting 2017, and to existing vehicle in 2018.

The European Commission will finish examining the period and details of Euro 5 and preparing the regulations by the end of 2016, and these are currently planned to apply to new vehicles in 2020 and to existing vehicle in 2021.

10. 4. 3. Noise

For L3e category vehicles, UN R41.04 will apply to new models in starting 2016, and to existing vehicle in 2017. Starting in 2017 for new models, and in 2018 for existing vehicle, UN R63 will apply in to L1e category vehicles, and UN R9 will apply to L2e category vehicles (three-wheeled mopeds).

10. 4. 4. Technical information for repair and maintenance

It was stipulated that automakers must maintain websites through which information on OBD as well as vehicle repair and maintenance can be obtained.

10. 5. Central and South America

10. 5. 1. Brazil

The date for the legislation making it mandatory for vehicles to be equipped with anti-theft devices to go into effect was postponed indefinitely. The gradual application of advanced ABS/CBS systems started in 2016, and will reach 100% in 2019.

The Second-stage PROMOT4 emissions regulations (which add stricter regulation values and evaporative emissions requirements) will apply to both new model and existing vehicle as of January 2016. Authorities are examining whether to strengthen the current noise regulations, which are equivalent to those of UN R41.03, to make them equivalent to UN R41.04.

10. 5. 2. Chile

Safety regulations came into effect in July for occupant protection systems, rear mirrors and brakes, and in January 2016 for controls/tell-tales, and there is a need to bring the various items in line with the European directives or the U.S., UN, or Chinese regulations.

Emissions regulations (Euro 3 or EPA 2010) are in effect, but only in the capital and major cities.

10. 5. 3. Ecuador

Since April 28, 2015, vehicle regulations have applied

not only to motorcycles, but also to off-road competition models and ATVs. Emission regulations are equivalent to Euro 3 or EPA, while noise regulations use the measurement method stipulated in 78/1015/EEC with emission limit specific to Ecuador.

10. 6. Middle-East

The Gulf Cooperation Council (GCC: Saudi Arabia, Bahrain, Qatar, Oman, Kuwait, the UAE and Yemen) decided to introduce a certification system for motorcycles, which came into effect as of July 2014. Certification must be obtained separately for each model year.

10. 7. Asia

10. 7. 1. Taiwan

The sixth-generation emissions regulations were publicly announced, with Euro 4 equivalent regulations scheduled to apply to new models from January 2017, and to existing vehicle from January 2018. Fifth term regulations were introduced in January 2016.

The installation of ABS or CBS will become mandatory in January 2019 for new models and January 2021 for existing vehicle. The installation of automatically activated headlamps or daytime running lamps is also going to become mandatory in January 2017 for new models and January 2019 for existing vehicle.

10. 7. 2. Indonesia

In conjunction with amendments to the VIN standard (SNI 09-1411-2000), a revision of the wheel standards (SNI 4658-2008) is being examined.

For trade, marking standards for motorcycle parts and their packaging have been put into effect.

Emissions regulations equivalent to Euro 3 and alternative regulations that use the WMTC test cycle were added. These were applied to new models from August 1, 2013, and to existing vehicle from August 1, 2015.

Step 2 noise regulations equivalent to UN R41.03 apply to new models, but their actual implementation has been delayed.

10. 7. 3. Malaysia

Safety regulations concerning the installation of lighting devices (UN R53), headlamps (UN R112/113), other lighting devices and reflectors (UN R3) became mandatory in January 2014 for new models and January 2016 for existing vehicle. Similarly, regulations concerning electromagnetic compatibility (UN R10), filament lamps (UN R37), and controls/tell-tales (UN R60) became mandatory on January 1, 2015 for new models, and will apply to existing vehicle starting in January 2017.

Euro 3 emissions regulations came into effect in January 2016 for new vehicles and will apply to existing vehicle starting in January 2017.

UN R41.03 noise regulations come into force at the same time as the Euro 3 emissions regulations.

10. 7. 4. The Philippines

Examinations and discussions are underway to harmonize ASEAN standards and to apply UN regulations. The incorporation of safety-related UN regulations for horns, tires, speedometers, and other parts is being planned. Emissions regulations equivalent to Euro 3 came into force for new models in September 2015.

10. 7. 5. India

EMC regulations were revised to the equivalent of UN R10.03 and applied to new models vehicles from October 2013. They will also apply to existing vehicle from October 2015.

The mandatory installation of ABS or CBS will come into effect in April 2018 for new models and April 2019 for existing vehicle. The installation of automatically activated headlamps or daytime running lamps is also going to become mandatory in April 2017. The enactment of the controls/tell-tales regulations (AIS 126) in or after 2016 is under consideration.

BS 4, the next level of emissions regulations which is based on Euro 3 regulation values, is scheduled to apply starting in April 2016. Evaporative emissions regulations will also be applied. The examination of emissions regulations for BS 4 and later has also begun.

10. 7. 6. Vietnam

Emissions regulations equivalent to Euro 2 and evaporative emissions regulations are in effect. The next step will be to apply regulations equivalent to Euro 3 to all vehicles from January 1, 2017. Fuel economy regulations are currently being examined.

Legislation issued on recycling makes recovery and disposal mandatory for manufacturers and distributors in Vietnam as of July 2016 for certain parts, and starting in January 2018 for completed vehicles.

10. 7. 7. Thailand

A safety regulation on mirrors (equivalent to UN R81.00) will come into effect in January 2016 for new models and January 2018 for existing vehicle. Similarly, a regulation on horns (equivalent to UN R28.00) is being considered for enactment in January 2017 for both new models and existing vehicle. The application of a tire regulation (equivalent to UN R75.00) starting at the end

of 2016 is under consideration.

The introduction of seventh-generation Euro 4 equivalent emissions regulations from 2018 is being examined. Noise regulations equivalent to UN R41.03 are in effect.

10. 7. 8. China

Revisions of the emissions regulations (China IV), noise regulations (equivalent to UN R41.04) and fuel economy regulations are planned to apply in 2018 for new models and in 2019 for existing vehicle.

In terms of safety, the mandatory installation of ABS/CBS is under consideration.

10. 7. 9. Hong Kong

Revising the emissions regulations to the equivalent of Euro 4 is being examined.

10. 7. 10. Singapore

Revising the emissions regulations to the equivalent of Euro 4 is being examined.