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ASEAN NCAP ROADMAP 2021-2025

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Taman Kajang Sentral
43000 Kajang, Selangor, MALAYSIA

EDITORS

Ir. Dr. Khairil Anwar Abu Kassim *Malaysian Institute of Road Safety Research*
Yahaya Ahmad *Malaysian Institute of Road Safety Research*
Salina Mustaffa *Malaysian Institute of Road Safety Research*
Dr. Mohd Radzi Abu Mansor *Universiti Kebangsaan Malaysia*

CONTRIBUTORS

Zulhaidi Mohd Jawi
Mohd Hafiz Johari
Azhar Hamzah
Malaysian Institute of Road Safety Research

Jessica Truong
Global NCAP

Ahmed Ismail
Automobile Association of Malaysia

AP Dr. Saiprasit Koetniyom
Thai-German Graduate School of Engineering

AP Dr. Julaluk Carmai
Thai-German Graduate School of Engineering

Dr. Ir. Sigit P. Santosa
Institut Teknologi Bandung

Dr. Annisa Jusuf
Institut Teknologi Bandung

AP Dr. Ly Hung Anh
Ho Chi Minh City University of Technology

Adrianto Sugiarto Wiyono
Politeknik APP

AP Dr. Wira Jazair Yahya
Universiti Teknologi Malaysia

Dr. Atsuhiro Konosu
Japan Automobile Research Institute

Dr. Sadayuki Ujihashi
Japan NCAP

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Ir. Dr. KHAIRIL ANWAR ABU KASSIM
Secretary-General, ASEAN NCAP

The New Car Assessment Programme for Southeast Asian Countries (ASEAN NCAP) had a humble beginning starting with a development of a crash lab costing about MYR 5 million. With only basic equipment needed to operate the lab, ASEAN NCAP was privileged to have valuable staff who are high spirited and motivated to work regardless of the condition in order to achieve the objective of being the first crash lab in South East Asia. To date, ASEAN NCAP has developed two protocols. The first was implemented during Phase I of ASEAN NCAP tests until 2016 and the second protocol is currently running starting from 2017 until 2020.

Both of these protocols have different objectives to achieve. The objectives were based on the automotive and road safety scenario at that particular time. Hence, for this upcoming roadmap 2021-2030, priority is given according to the high number of motorcyclist fatalities in the ASEAN region. According to WHO's Global Status Report on Road Safety 2015, motorized two-three wheelers accounts 34% of the total number road traffic death in the South East Asia region. Therefore, the roadmap that ASEAN NCAP has developed for 2021-2030 is more catered to reduce the number of motorcyclist fatalities in relation to passenger car.

From the roadmap, any available technologies are greatly encouraged in order to help prevent collision between two and three-wheelers and passenger vehicles. In addition, other improvements were also made to the overall 2017-2020 protocol such as overcoming issues that can be prevented from happening. One example is children being accidentally left in cars and resulted in death due to vehicular heat stroke.

The current ASEAN NCAP protocol has definitely increased the vehicle safety level for the ASEAN region. Nevertheless, enhancements made to the new protocol will indeed make significant impact to the automotive scenario especially targeted at the emerging market like countries in South East Asia. Thus, I would like to congratulate all parties for taking this positive initiative of improving the requirements of the current protocol. The development of this new roadmap will produce encouraging results for the betterment of road safety in the ASEAN region.

Thank you.

FOREWORD FROM
DAVID WARD
Secretary-General, Global NCAP

The United Nations Decade of Action for Road Safety launched in 2011 has been the catalyst for very successful collaboration between Global NCAP and the Malaysian Institute of Road Safety Research (MIROS). Global NCAP's primary objective is to promote the encouragement of NCAPs around the world and so we were delighted when in 2011 MIROS proposed to set up a New Car Assessment Programme (NCAP) in the South East Asian countries. NCAPs have proven to be highly effective in building a market for safety, providing consumers with the information they need to buy the safest car they can afford. This is so important in South East Asia where many countries have not yet applied mandatory vehicle standards.

According to the WHO's Global Road Safety Status Report, only 40 out of 193 UN member states fully apply the minimum safety regulations developed by the World Forum for Harmonization of Vehicle Regulations. A majority of these are high-income countries which also benefit from the availability of consumer information provided by NCAPs. This model of regulatory "push" and demand "pull" has proven to be the successful formula for improved vehicle safety.

Today Malaysia is a leader in South East Asia of this approach both applying UN safety regulations and promoting the ASEAN New Car Assessment Programme (ASEAN NCAP).

Since 2012 ASEAN NCAP has been providing safety ratings for the South East Asian automotive market and, in parallel, the Malaysian Government has taken a lead in applying the most important UN vehicle safety standards. For example, Malaysia is the first country to declare that Electronic Stability Control (ESC) will be mandatory in all new cars from June 2018. This is a great step forward as ESC is a proven life saver.

The development of the new ASEAN roadmap for 2021-2030 is very timely and is in line with Global NCAP's own Road Map 2020. In addition to our original four recommended regulations (frontal impact and side impact, seatbelt and anchorages, electronic stability control, pedestrian protection), Global NCAP now also recommends the implementation of autonomous emergency braking systems (AEBs) and anti-lock brakes (ABS) for motorcycles. It is very welcome to see ASEAN NCAP's 2021-2030 roadmap features these crash avoidance technologies and the important emphasis they are giving to improve motorcycle safety.

ASEAN NCAP has been an extraordinary champion of improved vehicle safety across South East Asia. Global NCAP is very proud of its progress since 2012 and very impressed by this newly developed roadmap. I would like to wish them all the best for its implementation from 2021 to 2030. I am sure the new roadmap will further encourage innovation and development in South East Asia's automobile industry and, most important of all, help to halve road fatalities and serious injuries by 2030.

Thank you.

FOREWORD FROM

Dr. SITI ZAHARAH BINTI ISHAK

Director-General, MIROS

Road traffic fatalities is a global epidemic. According to a publication by International Transport Forum, the total number of death from road traffic fatalities exceeded the number of death due to malaria or tuberculosis (ITF, 2016). Figures taken from WHO's Global Status Report on Road Safety 2015 cited that road traffic fatality index rate in the Southeast Asian Region accounts for 17 over 100,000 population. This is relatively high if compared to the European Region, which has a fatality rate of 9.3 and the rate is also close to the world fatality rate of 17.4 per 100,000. Due to this fact, road safety has now been included in the United Nations' framework of Sustainable Development Goals with the target of halving the number of road death by 2020. These goals are in support of the United Nations Decade of Action for Road Safety that was approved during the Moscow Ministerial Meeting held in 2009 and the UN General Assembly in 2010.

In order to meet this target, MIROS was appointed as the ASEAN Road Safety Centre during the 20th ASEAN Transport Ministers Meeting (ATM) in 2014. Thus, as a centre that will guide ASEAN member countries to achieve excellent road safety performance, some of MIROS' main role is to design and implement road safety programmes for the region, provide technical guidance to member countries, and harmonize the standards, guidelines and methods of road safety activities in the region. This is where ASEAN NCAP's assessment play significant role with regards to

vehicle safety. In the assessment, ASEAN NCAP has ensured that the assessed items meet the safety requirements of what are already determined in the UNECE WP.29 standard. Hence, manufacturers who undergo the ASEAN NCAP collision test by meeting the specified assessment items would have been able to meet the vehicle safety standards set by the UNECE.

This is certainly a positive value-added measure for every vehicle manufacturer because the assessment items in the ASEAN NCAP collision test is beyond the UNECE resolution that was adopted by the UN member countries in the ASEAN region. Indirectly, ASEAN countries that encourage vehicle manufacturers to undergo the ASEAN NCAP collision test would have succeeded in raising the vehicle safety level sold in their respective countries.

In addition, MIROS as the patron of the MIROS Provisional CRASE Centre (PC3) collision test laboratory will continue to improve our testing capability as one of the ASEAN NCAP official crash lab partners. Besides the regular offset frontal crash test and side impact test, MIROS PC3 will also be conducting assessment on vehicle safety technologies that could help prevent collision with motorcycles. Other than fulfilling the new ASEAN NCAP roadmap test requirement under the Motorcycle Safety Pillar, the assessment will also increase our research capacity and capability to reduce the number of motorcyclist fatality, which make up the highest number of road user fatality in the ASEAN region.

I would like to thank ASEAN NCAP for their unwavering efforts towards the progress of vehicle safety. This is apparent based on the number of important enhancements that have been incorporated into the new roadmap for 2021-2030. Some of the enhancements were the inclusion of child presence detection as a preventive measure for infants being accidentally left in cars, the placement of Autonomous Emergency Breaking (AEB) as the main safety assist technology together with Electronic Stability Control (ESC), and incentives to manufacturers for fitting advanced Seatbelt Reminder System (SBR) on all seats. Another important enhancement is the formation of a new Motorcyclist Safety Pillar in which points are given to cars that are fitted with any kind of technology that will be able to detect the presence of motorcyclists. I truly believe the vehicle safety scenario will see many positive developments in these coming years. Congratulations to the ASEAN NCAP team for this remarkable achievement.

Thank you.

GLOBAL FOR SAFER CARS NCAP

The Global New Car Assessment Programme (Global NCAP) is a United Kingdom (UK) registered charity concerned with the promotion of public safety and health for the protection and preservation of human life. Global NAP advocates for safer vehicles worldwide via:

- Promoting and conducting independent research and testing programmes to assess the safety of vehicles and disseminating the results to the public
- Promoting the development of new car assessment programmes (NCAPs) by providing financial support and technical assistance and facilitating international co-operation with and between NCAPs.

These two objectives are to ensure everyone has access to the ownership of vehicles that meet minimum vehicle safety regulations.

In order to ensure day-to-day operation and to ensure continuous promotional work on vehicle assessment, Global NCAP is pleased to acknowledge funding support from Bloomberg Philanthropies and the FIA Foundation. Through this funding, Global NCAP is able to support ASEAN NCAP activities such as crash testing vehicles that are sold in the ASEAN region. Apart from the support given to ASEAN NCAP, Global NCAP also conducts its own crash test programmes in regions that have yet to develop their own independent consumer programmes.

Safer Cars for India is one such project under Global NCAP's first vehicle assessment programme. The project is a collaboration with the Institute of Road Traffic Education (IRTE), which began in 2014. To date, the project has completed 28 ratings. The outcome from these tests saw 19 Zero-Star rated results for Adult Occupant Protection (AOP), one car was rated as 1-Star, three assessed cars obtained 3-Stars, and five cars received 4-Star rated results. The latest results released under this programme were for the Maruti Suzuki Vitara Brezza, which received an encouraging 4-Star rating for AOP and for the Renault Lodgy which received a very disappointing Zero-Star rating for AOP. The Vitara Brezza's 4-Star rating demonstrates a significant improvement of cars produced for the Indian market.

Based on the successful collaboration with IRTE, Global NCAP subsequently moved to another region to widen the vehicle assessment programme. This time Global NCAP focused on the African region in which they collaborated with the Automobile Association of South Africa (AA Africa). The Safer Cars for Africa programme began in November 2017. Under the programme Global NCAP and AA Africa have tested five models with ratings comprising one 4-Star AOP rated model, two 3-Star results, and one 1-Star and one Zero-Star results.

Apart from conducting car assessment activities, Global NCAP is also actively participating in programmes that promote car safety technologies at the policy level. One of the programmes is called the Stop the Crash Partnership. The programme is a multi-stakeholder partnership, which brings together the expertise, experience and resources of its public, private and civil society membership. Under this programme, Global NCAP's civil society partners are Consumers International and the Towards Zero Foundation. As for its corporate partners, they consist of Bosch, Continental, Denso, ITT, Veoneer and ZF. The partnership also

involves technical partners comprising ADAC and Thatcham Research. In addition to all these programmes, Global NCAP is responsible in drafting several guides that recommend individual buyers or organizations on what to look for when considering to purchase vehicles of their choice. Safety is one aspect that Global NCAP stresses in their guides and since it acknowledges that NCAP ratings are not available worldwide, hence it encourages buyers to favour selecting vehicles that meet the most important UN safety regulations. Therefore, Global NCAP has developed several recommendations as a way forward in vehicle safety. The published guidelines that have made significant impact are Global NCAP Fleet Safety Guide and Safer Car Purchasing Policy and Democratising Car Safety: Road Map for Safer Cars 2020.

The programmes and activities that Global NCAP have had a significant impact on vehicle safety. Their work was acknowledged by United Nations (UN) Secretary General, Antonio Guterres in his report to the 72nd General Assembly on 'Improving Global Road Safety'. Furthermore, Global NCAP's recommendations have also been raised in the WHO's SaveLives publication to ensure vehicle safety features are prioritized. The UN regulations proposed in the Global NCAP road map for safer vehicles 2020 were also used in the SaveLives' technical package. While many of the work carried out by Global NCAP were recognized, there are still more programmes and work that need to be done in order to meet the Sustainable Development Goal target by 2020, particularly in the vehicle safety pillar. Therefore, Global NCAP will continue to dedicate itself towards achieving the target of halving the world's fatalities due to road crashes.

Text provided by
Ms. Jessica Truong,
Programmes Director and Asia Pacific Coordinator,
Global NCAP.

MIROS
MALAYSIAN INSTITUTE OF ROAD SAFETY RESEARCH
ASEAN ROAD SAFETY CENTRE

AS ASEAN ROAD SAFETY CENTRE

MIROS presence in the regional platform has gained more prominence since its inception several years ago. In 2014, MIROS was endorsed as the ASEAN Road Safety Centre (ARSC) at the 20th ASEAN Transport Ministers' meeting. The endorsement generally aims for the centre to gather, share and promote road safety knowledge and information among ASEAN Member States and regional road safety stakeholders.

Prior initiatives concerning regional programmes such as New Car Assessment Program for Southeast Asian Countries (ASEAN NCAP) and International Road Assessment Program (iRAP) are strategically aligned to regional role in order to enhance outreach and provide effective implementation. Furthermore, as time progresses, MIROS plans to have a regional cooperation and collaboration in coordinating and managing road safety data and harmonization of relevant standards and guidelines, proposed to be called as ASEAN Road Safety Observatory (ARSO). Subsequently, it anticipates to further involve in road safety initiatives, intervention programs and capacity building. Hopefully, this will gradually contribute in aligning scientific studies with local and regional needs.

ARSO is certainly an ambitious mission but since ASEAN is integrating into one through ASEAN Economic Community (AEC) and other regional agenda, the centre wishes to work together in alignment with the ASEAN strategies. The recent supportive comments received during the presentation by MIROS representative in Singapore during the 25th ASEAN Land Transport

MIROS AS ASEAN ROAD SAFETY CENTRE

Working Group (25th LTWG, 24-26 August 2016) and 7th Multi-Sectoral Road Safety Special Working Group (7th MRSSWG 22-23 August 2016) meeting acknowledged that this initiative is increasingly becoming a necessity for ASEAN.

In brief, MIROS-ARSC is very keen to pursue the ARSO agenda, in addition to other tasks assigned by the MRSSWG and LTWG, with respect to UN Decade of Action pillars. MIROS has initiated a few rounds of discussion with international bodies such as the FIA High Level Panel (HLP) for Road Safety which was held on 20 September 2016 at the United Nations Plaza, New York. It was proposed that OISEVI project in Latin America should be a good example for ASEAN to replicate. By following the OISEVI model, the HLP is supporting the establishment of Road Safety Observatories in different regions with consideration the regional organization should take the leading roles, provided it has the right technical expertise and most importantly the financial sustainability. In addition, the World Bank in Washington was also supportive of the idea of establishing regional observatories in which they would like to assist in the early stages of this initiative. Currently, it helps to fund the Pacific region and the lower-middle income countries in ASEAN for a number of developmental projects, especially in Cambodia, Myanmar, Laos and Vietnam. Other ASEAN countries, which are no longer qualify to receive financial assistance, would seek their own funding for developmental projects. Nevertheless, World Bank is eager and keen to provide assistance and guidance in the process of establishing road safety observatory in ASEAN.

Text provided by
Mr. Azhar Hamzah,
ASEAN Road Safety Centre.

1 INTRODUCTION

In essence, all New Car Assessment Programs (NCAPs) carry out their operations with one supreme intention, i.e., to improve road safety in a certain country or locality through safer cars. In view of this, ASEAN NCAP is also driven toward reducing the number of road traffic fatalities and realizing a safer road environment across Southeast Asian countries.

Since its establishment in 2011, ASEAN NCAP has emerged as a beacon for significant improvements and sustained advancements in automotive safety, especially in the ASEAN region. Our non-partisan crash tests and continuously evolving assessment protocols have provided potential car buyers the much needed ability to determine the most appropriate car safety aspects and as a consequence, have emphatically reduced the number of road deaths in ASEAN countries.

To reiterate our dedication to further elevate road safety in the region, ASEAN NCAP is proud to unveil its 2021-2025 roadmap by underlining the program's focus on sustainable mobility and technological revolution, which the automotive industry has begun to experience. Our objective is to provide clarity to the consumers by highlighting new driving technologies and raising awareness of their benefits while at the same time, ensuring maximum car occupant protection is fully achieved.

This document shall, therefore, present ASEAN NCAP Roadmap 2021-2025 for the purpose of further establishing our motivation toward Safer Cars in Southeast Asia. Our efforts to produce the 2021-2025 roadmap began in September 2017 through a series of internal and international meetings, conferences, seminars, workshops as well as various means of discussions initiated by ASEAN NCAP to gather and deliberate over the important elements to be included. In addition, the roadmap has also been established

through fusing all the views offered by OEMs, vendors, academics, NGOs and harmonizing it with ASEAN NCAP's future direction.

Thus, by taking into account all the road safety issues faced in the ASEAN region whilst scrutinizing the latest breakthroughs in vehicle technology, ASEAN NCAP is proud to present this roadmap to the ASEAN general population.

2 HISTORY OF ASEAN NCAP

The setting up of ASEAN NCAP is part of a wider effort which falls under the United Nations (UN) Decade of Action for Road Safety 2011-2020 targeted at reducing road fatalities by 50 percent by 2020. The history of the establishment of the ASEAN NCAP or the New Car Assessment Program for Southeast Asian Countries began with the agreement termed between Malaysian Institute of Road Safety Research (MIROS) who was represented by its former Director-General, Prof. Dr. Wong Shaw Voon and Global New Car Assessment Programme (Global NCAP), represented by its Secretary General, Mr. David Ward. The agreement was initiated during the FIA Foundation Annual General Assembly held in New Delhi on 7 December 2011.

The move is in line with the United Nations' aspiration to ensure new vehicles marketed worldwide are equipped with safety features including airbags, safety belt and so on. Thus, the Memorandum of Understanding (MoU) gave MIROS a clear mandate to oversee NCAP operations for ASEAN countries. For that purpose, ASEAN NCAP has obtained MIROS approval to use its crash laboratory, MIROS Provisional CRASE Crash Centre (PC3) located in Ayer Keroh, Melaka. For the record, MIROS PC3 was inaugurated in May 2012 in which ASEAN NCAP has made its first official crash test involving the Toyota Vios on the same day. The test result showed the Toyota Vios was awarded with 4-Star AOP rating. To date, ASEAN NCAP has conducted more than 79 collision tests with 100 safety ratings.

In the First and Second Phases of ASEAN NCAP test, they were based on two aspects, namely Adult Occupant Protection (AOP) and Child Occupant Protection (COP). During these phases, the AOP category was in a star rating form while the COP category was in percentage form. Results for AOP were solely based on the frontal offset crash test. For the Third Phase, which began in 2013, ASEAN NCAP maintained AOP and COP as the main thrust. However, this time safety fitment namely Electronic Stability Control (ESC) and Seatbelt Reminder System (SBR) for both driver and passenger were set as a pre-requisite. Hence, only vehicles fitted with ESC or similar systems but using different names, and also fitted with SBR will be considered for 5-Star rating. This is with the condition that the tested vehicle achieved a total score within the 5-Star range. The purpose of this pre-requisite is to promote the installation of active safety technologies on new models that can prevent a collision from occurring as well as reduce the severity of injury in the event of an accident.

The pre-requisite will basically affect cars that have scored 5-Star range for AOP but will have to be demoted to 4-Star due to the absence of these two technologies. Nevertheless, there are models that have variants fitted with both of these technologies as well as variants with no such fitment. Therefore, for models that successfully obtained a 5-Star rating, ASEAN NCAP produced two ratings to differentiate variants that do not have both of these fitments as well as variants complemented by these two technologies. This means ASEAN NCAP will award 5-Star rating to variants equipped with ESC and SBR while a 4-Star rating for variants that were not equipped with either one or any of the fitment.

In addition, during the Third Phase of September 2013, ASEAN NCAP introduced the side impact (UN R95) as a pre-requisite for 4-Star rating and above. The additional pre-requisite means a model needs to pass the side impact test if it wants to achieve 4-Star rating and above. Subsequently, from 2015 this pre-requisite was

revised to 3-Star and above. Another improvement that was made during the Third Phase is the COP category. During this time, the rating for COP was displayed in the form of star rating in the rating plate in addition to the results in percentage.

With the rapid growth of world automotive technology, development of safety technologies that could prevent a collision from happening has also increased. Accordingly, in line with the United Nations Decade of Action for Road Safety and Sustainable Development Goals targets, ASEAN NCAP has developed a single rating system for 2017-2020 by combining three safety domains inclusive of the safety assist technology, which previously only act as a pre-requisite to obtain a 5-Star AOP rating. The objective of the single rating system is also to eradicate confusion among the consumers about the awarded rating as some manufacturers only use the highest rating of one particular domain for their marketing purposes. For the new 2017-2020 rating system, ASEAN NCAP has allocated 50 percent for AOP domain, 25 percent for COP and 25 percent for Safety Assist Technology (SAT). A large portion of the percentage score lies with AOP, which shows it still plays the leading role in the ASEAN NCAP crash test programme. The COP and SAT are equally divided to show the equal importance of both domains. Although the COP percentage is 25 percent, the total score remains the same at 49 points. The SAT domain in this new rating system serves as a platform to further strengthen the safety assist technologies for new vehicles.

3 BACKGROUND OF ASEAN NCAP ROADMAPS

A strategic roadmap is a time-based plan underscoring where an organization is, where it plans to go, and how it aims to get there. It is a visual representation that organizes and presents important information related to future plans. Roadmapping, therefore, acts as a significant tool that synchronize efforts toward achieving important goals. In this regard, ASEAN NCAP Roadmap 2021-2030 has been split into two phases; with the first phase being a short-term plan from 2021 to 2025 and the second phase is to be carried out from 2026 to 2030. Additionally, this roadmap shall also include the latest data which are available in ASEAN NCAP research.

In this document, we shall explain in detail our goals for the first phase or the ASEAN NCAP 2021-2025 plan, before elucidating our way forward in the 2026-2030 protocol. It is hoped that our roadmap shall also help car manufacturers to envision their future in the Southeast Asia region. By understanding ASEAN NCAP rating protocols, car manufacturers will hopefully be able to calibrate their short- and long-term goals for the ASEAN market.

Although implementation of the first phase will span from 2021 to 2025, this does not mean ASEAN NCAP will stop introducing new elements along the way. In the near future, ASEAN NCAP also wishes to carry out high impact research related to newly-invented vehicle technologies in order to gauge their effectiveness in the ASEAN context.

4 LIMITATIONS OF THE PREVIOUS ROADMAPS

ASEAN NCAP began in 2011 following the suggestion by Global NCAP and technical assistance from other previously established NCAPs, such as the Australasian NCAP and Euro NCAP. Prior to that, the Malaysian Institute of Road Safety Research (MIROS) had originally wanted to develop a New Car Assessment Program (NCAP) exclusively for Malaysia based on its Malaysian Vehicle Assessment Program (MyVAP). Regardless, Global NCAP later persuaded MIROS to launch a program to oversee the safety of new cars marketed in the whole of ASEAN region. Since its formation, ASEAN NCAP has been financially and technically aided by Global NCAP which is headquartered in the UK.

In our discussion for the ASEAN NCAP inaugural crash test, we found that the frontal crash test ODB 64 must be given priority. This was also the case for the Latin NCAP and other previously established NCAPs. Therefore, at ASEAN NCAP, we also chose ODB 64 for our first official crash test protocol. Nevertheless, ASEAN NCAP needed the cooperation from car manufacturers for them to be awarded 5-Star rating. In ASEAN NCAP early assessment, we required a pass in the Lateral Impact test UN R95 in order for a car to score 3-Star and above. Further, the Seatbelt Reminder for both driver and front passenger, along with the fitment of ESC are a requirement for 5-Stars. Also during the early stages, ASEAN NCAP allowed dual ratings to provide a leeway to car manufacturers, while at the same time offering the motoring consumers with more choices.

Unfortunately, some of these dual-rating conditions that did not entirely fit into ASEAN NCAP safety aspiration. For instance, certain manufacturers should be lauded for producing cars with dual rating with the same performance in terms of passive safety; and the option of having ESC for active safety. Yet, there were manufacturers which insisted on merely offering products in the region of 0-Star to 4-Stars. Therefore, such a flexibility was clearly

not helping car safety in the long run, leading ASEAN NCAP to cease the dual rating system in 2017.

Subsequently, in ASEAN NCAP Roadmap 2017-2020, we decided to introduce three main pillars which were known as Adult Occupant Protection (AOP), Child Occupant Protection (COP) and Safety Assist (SAT). Also, Head Protection Technology (HPT) evaluation was adopted in the AOP. HPT refers to a technology or safety equipment to protect the driver and/or passenger during a roll over or side impact event. As for the COP, ASEAN NCAP included several Child Restraint Systems (CRS) available in the ASEAN region and introduced the use of Q1.5 and Q3 dummies. The most glaring difference between our roadmap and that of other NCAPs was the inclusion of Safety Assist (SA), whereby ASEAN NCAP emphasized the use of Blind Spot Detection (BSD) Technology as a solution to issues pertaining to motorcyclist safety. In addition, the weightage of SA technology was also significant, whereby it contributed 25 percent to the overall rating. In the roadmap, we were also proud to announce the Fitment Rating System (FRS) as the basis for any technology applied to the ASEAN region. In essence, FRS contained weightage point for each Southeast Asian country as decided by the ASEAN NCAP Steering and Technical Committees. FRS was also divided according to the financial standing of each country, with ASEAN NCAP further categorizing these countries into four sectors. FRS, therefore, enabled car manufacturers to introduce safety technology in line with their sales priority and marketing strategy.

In hindsight, ASEAN NCAP's second roadmap for 2017 to 2020 was far superior and comprehensive compared to the previous rating system. A lot of thinking went into developing ASEAN NCAP Roadmap 2017-2020 but because ASEAN NCAP was still relatively new in 2015 when the roadmap was conceived, many people were unaware of our work. This in turn led to certain information pertaining to the latest vehicle technologies not being shared with ASEAN NCAP. Nevertheless, right from that moment, ASEAN NCAP

felt the need to encourage car manufacturers to produce more safer cars with local issues to look into especially in regard to motorcyclist safety. Yet, as ASEAN NCAP was still in the midst of being truly recognized by the automotive fraternity, we realized it would not be realistic for us to press for a sudden change while simultaneously, it would be better for car manufacturers to be given ample time to improve their cars and adapt to the ASEAN NCAP assessment protocols.

5 PHILOSOPHY BEHIND THE NEW ROADMAP

It is our main objective to produce the ASEAN NCAP Roadmap 2021-2025 which is exhaustive and resilient than both its predecessors. Such a shift will also signal ASEAN NCAP's coming-of-age or maturity. Furthermore, this new roadmap must also be viewed as more inclusive compared with our previous rating systems. For the purpose of developing ASEAN NCAP Roadmap 2021-2025, we adopted the theme "Building Our Roadmap" as we went to the ground to gather feedback from our stakeholders, particularly from car manufacturers. After seven years of striving toward Safer Cars, I personally believe that our new roadmap has successfully encapsulated the gist of our work. It is without doubt that motorcyclist safety shall be the new frontier given greater attention by ASEAN NCAP, which in turn sets us apart from other NCAPs. Ultimately, the new roadmap shall present a major difference in terms of its criteria although ASEAN NCAP will continue to harmonize the test methods so as to optimize the latest technology available for vehicle safety.

6 OVERVIEW OF ASEAN NCAP ROADMAP 2021-2025

In summary, the first phase of ASEAN NCAP Roadmap 2021-2030 shall feature four pillars, namely AOP, COP, SA and Motorcyclist Safety (MS). For each of these pillars, there shall be additional elements and improvements to the previous rating systems as we strive toward an increased car safety standard to suit the ASEAN context.

6.1 Adult Occupant Protection

AOP will maintain two crash assessments, namely the frontal and side impact tests. There shall be no changes as regards the use of the dummy. However, ASEAN NCAP has amended the score for side impact; in the sense that it will be reduced by 50 percent whereas additional points will be rewarded for HPT. Such a change will encourage fitment of more curtain airbags in the ASEAN region. Beginning in 2023, ASEAN NCAP will also include UN R135 as a prerequisite for HPT.

6.2 Child Occupant Protection

ASEAN NCAP shall introduce more local CRS in its vehicle based assessment compared with the previous rating system. This is to ensure that new cars sold in the region will follow the Southeast Asia CRS criteria. Another highlight of COP is the introduction of Child Presence Detection technology for a child left unattended in the car. Therefore, ASEAN NCAP shall be among the first NCAPs to encourage the use of such a technology aside from Euro NCAP which has already included it in their testing protocol.

6.3 Safety Assist

In the new roadmap, ASEAN NCAP shall also focus on Auto Emergency Braking (AEB) Technology; which is a feature to alert drivers to an imminent crash and help them use the maximum braking capacity of the car. ASEAN NCAP believes that AEB is an important technology, which has been well-received by most car manufacturers. In North America, 22 automakers have agreed to voluntarily fit their cars with standard AEB starting in 2022. ASEAN NCAP shall, in addition, place greater attention on AEB City and Inter Urban. As for AEB Pedestrian, ASEAN NCAP plans to delay its introduction until sufficient data is available from various studies. Based on initial results, it is believed that AEB Pedestrian might not be able to reduce the number of pedestrian fatalities especially in lower-income countries such as Myanmar, Laos and Cambodia. Nevertheless, points will not be deducted if car manufacturers are to install this technology in their cars.

Also in Safety Assist, ASEAN NCAP shall pay close attention to the rear occupant detection. Hence in the new roadmap, a total of 50 percent shall be rewarded for Seatbelt Reminder (SBR) Rear Occupant Detection. Such a decision also provides evidence that ASEAN NCAP will be focusing on the use of seatbelts as the primary protection for car occupants.

Finally, ASEAN NCAP shall be rewarding another 3 points under Safety Assist for Advance SAT with OEMs being able to select any technology that is suitable to reduce road casualties. In this area, car manufacturers are encouraged to introduce a technology that will benefit road users and help prevent a road crash.

AEB Inter Urban technology in action during Stop the Crash in Kuala Lumpur, Malaysia (Photo courtesy of Global NCAP)

6.4 Motorcyclist Safety

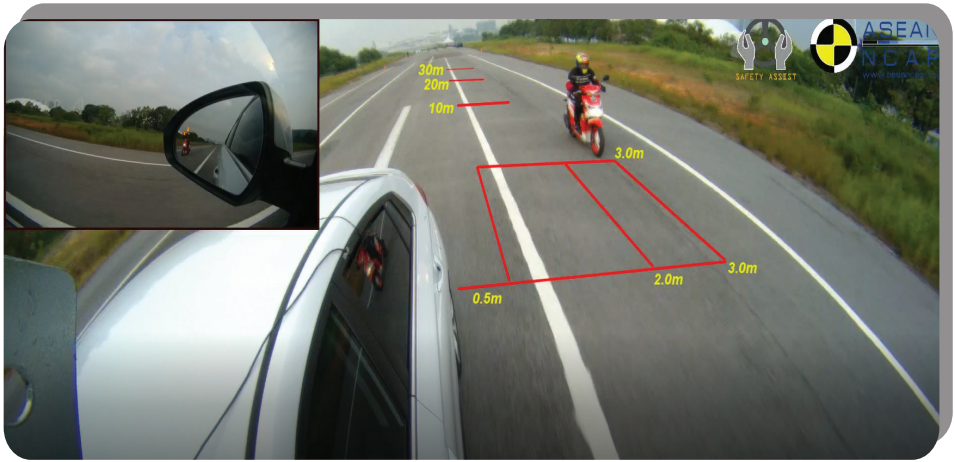
ASEAN NCAP remains totally committed to ensure the safety of motorcyclists in Southeast Asia. It is a known fact that motorcyclists make up the biggest group and represent 80 percent of the total number of road users in ASEAN countries. Unfortunately, the region has also witnessed a tremendous increment in terms of motorcyclist fatalities, hence the issue of powered two-wheelers safety must not be overlooked. Thailand has already taken the lead in championing this cause and at the same time, ASEAN NCAP will follow suit by putting motorcyclist safety at the forefront of its road safety agenda.

6.4.1 Blind Spot Detection and Blind Spot Visualization

Among the main technology in this pillar is Blind Spot Detection and Blind Spot Visualization. Both BSD and BSV will help in providing early detection/image to avoid collision with motorcycle. It is expected that 37 percent of collision can be avoided if all cars are equipped with such a technology. Although BSD technology was first launched in the 1980s, its capability to detect small vehicle is yet to be fully optimized. In view of this situation, ASEAN NCAP plans to take the lead by implementing the use of BSD to increase car safety. Admittedly, BSD and BSV may have their strong and weak points. For instance, BSD will not able to detect the presence of another vehicle at certain speed but this is where BSV comes into play. Yet, the use of BSV shall require the driver to assume a more active role.

6.4.2 Advanced Rear View Mirror

ASEAN NCAP is also of the opinion that collision with motorcyclists can be avoided if a car driver is more alert of his surroundings within a 30-meter radius. Hence, Advanced Rear View Mirror will come in handy for the purpose of determining the presence of motorcycles



One of the Blind Spot Technology development tests that ASEAN NCAP conducted

and other small vehicles. Currently, with the increasing popularity of MPVs and SUVs in ASEAN countries, it has become a norm to see large families travelling together in a car with their luggage packed to the brim. In such a situation, use of the rear view mirror will not be helpful as the driver's view is blocked by the rear passengers. Such as scenario can be avoided with the use of Advanced Rear View Mirror which will aid and improve the driver's view, as a tiny camera is placed at the rear end (on top of the rear mirror) of the car.

6.4.3 Auto High Beam

Moreover, widespread popularity of the motorcycle presents a totally different problem compared to the car. It is found that in certain areas, the condition of motorcycles on the road is not up to the mark whereby some of their equipment are not in working order. For example, the headlight or the tail light might not work. Such an issue pertaining to conspicuousness of motorcyclists will definitely result in a dangerous situation; which could eventually lead to road crashes. This stems from the difficulty faced by car drivers to notice the presence of nearby motorcyclists. Regardless, with the Auto High Beam function in a new car, this problem may reach a solution and in turn may result in a reduction of motorcyclist fatality in the ASEAN region.

6.4.4 Pedestrian Protection

The issue of pedestrian safety may not be too worrying in ASEAN countries. Regardless, ASEAN NCAP believes it is still important to lend support to the existing initiatives introduced by several car manufacturers pertaining to pedestrian protection. Of late, new cars have been designed with the concept of protecting pedestrians. Taking a cue from this, ASEAN NCAP wishes to also include Pedestrian Protection in this new roadmap. Because pedestrian safety falls under the Vulnerable Road User category, ASEAN NCAP feels that Pedestrian Protection must be regarded as part of the Motorcyclist Safety segment.

6.4.5 Advanced Motorcyclist Safety Technology

All in all, current technologies fitted in a car that could increase motorcyclist safety have been few and far between. Thus, as a means to further encourage the use of such inventions, ASEAN NCAP wishes to reward an additional 2 points for any two technologies that could help reduce the possibility of a collision between the car and motorcycle. Regardless, the 2 points will not be added to the main pillar but rather acts as a bonus point, whereby it will not exceed the full score under Motorcyclist Safety.

ASEAN NCAP
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2021-2025

	AOP		COP	
	Item	**Max**	**Item**	**Max**
	Frontal	16	Frontal	16
	Side	8	Side	8
	HPT Evaluation	8	CRS Installation	12
			Vehicle Based Assessment	13
			Child Presence Detection	2
Score		32		51
Weighting		40%		20%

Slanting = Fitment Rating System

	AOP (%)	COP (%)
5 ★	80	75
4 ★	70	60
3 ★	60	30
2 ★	50	25
1 ★	40	15

The final calculation in the
ASEAN NCAP Roadmap 2021 -2025
is as follows:

Safety Assist		Motorcyclist Safety	
Item	**Max**	**Item**	**Max**
EBA	6	*BSD / BSV*	8
SBR(Fr.)	3	*Rear View Technology*	4
SBR(Rr.)	1.5	*AHB*	2
SBR(Rr.) Advanced	1.5	Pedestrian Protection	2
AEB City	2.5		
AEB Inter Urban	3.5	*[Advanced MST]**	2*
Advanced SAT	3	**BONUS POINT*	
	21		16
	20%		20%

** To add 2 points MAX to total MS point*

Safety Assist (%)	Motorcyclist Safety (%)
70	50
50	40
40	30
30	20
20	10

7 EXPECTATION AFTER THE ROADMAP RELEASE

Of course, similar to other NCAPs across the globe, ASEAN NCAP hopes that all the cars we have handpicked for crash testing will be rewarded with a 5-Star rating. Nevertheless, at ASEAN NCAP, we also hold to the belief that there must be a consensus that only the best cars are worthy of a 5-Star.

At the same time, it must be said that our Star Rating is not the be-all and end-all. Ever since ASEAN NCAP came to the fore, we have always maintained our utmost commitment toward elevating the safety standards of all cars plying the roads in ASEAN countries. Such a dream may sound too lofty to be achieved, but we have worked tirelessly to make it come true nonetheless. So far, ASEAN NCAP is proud to announce that we have exceeded the target set by the United Nations in its road safety regulations. Therefore, we can now lay claim that the new cars we see on our roads have reached a certain safety standard as stipulated in the UN Decade of Action for Road Safety; although we are not putting a stop to our efforts just yet. In other words, at ASEAN NCAP, we are constantly thinking of ways to raise the bar!

Further, whilst it is true to some of the more affordable cars have managed to achieve our 5-Star rating, certain expensive car models seem to lack the drive or hunger to offer top-notch safety features to the motoring consumers. Perhaps they are under the impression that ASEAN NCAP star rating is nothing to shout about. Hence, through the introduction of our latest roadmap, ASEAN NCAP is driving home the message that there is a place for 5-Star cars in the ASEAN market. In addition to this, OEMs can still produce 4-Star rated cars for the consumers to choose. Yet, at the same time, ASEAN NCAP feels it is high time that luxury car manufacturers must lead the way by producing car models of unmatched safety standards whereas the more affordable cars can attempt to

achieve our 4-Star rating; although they must not stop introducing the latest safety technology in their products because of this.

In a way, you could say that in general, ASEAN NCAP has managed to bring about a sea change pertaining to the minimum car safety standard in the ASEAN region. What we need to do now is to encourage car manufacturers to produce even Safer Cars for the future and this has been our true calling at ASEAN NCAP from the very beginning.

After seven years of existence, I am proud to say that ASEAN NCAP has also successfully reduced the number of road traffic casualties in Southeast Asia. Such a feat is a testament to the increase in automotive safety across the region. Nevertheless, from time to time, members of ASEAN NCAP shall continue to revise and make changes to our assessment protocol through the introduction of newer automotive safety technologies. Such technologies to be included by ASEAN NCAP will hopefully contribute toward the prevention and further decrement of fatal road accidents in the region.

8 FUTURE ASEAN NCAP ROADMAP 2026-2030

ASEAN NCAP believes that by 2026, its roadmap should be strategized in accordance with the trends of NCAPs in other regions or continents, while at the same time provide a true picture of the vehicle safety policies of each ASEAN member country, the upcoming trend in technological development and the last but never the least, be based on real world traffic accident analyses. In addition, such accident analyses should also reflect the genuine scenario of all road crashes involving motorcyclists, pedestrians and car occupants at that point in time.

8.1 Adult Occupant Protection

ASEAN NCAP is of the opinion that by 2026, the new car assessment program for Southeast Asian countries may be able to reignite the interest in various passive safety tests including the Advanced European Mobile Deformable Barrier (AE-MDB) for Side Impact Crashworthiness Evaluation. The use of a new dummy such as WORLD SID shall also be a priority although this mainly depends on the readiness of MIROS PC3, which has been the main crash laboratory used by ASEAN NCAP since the very beginning. At the same time, ASEAN NCAP does not foresee the potential of THOR dummy being used in future crash tests. Also, as SUVs and MPVs are becoming more popular among Southeast Asian car buyers, ASEAN NCAP predicts that the roll over test may be given more importance in future crash evaluations. But more importantly, ASEAN NCAP hopes that there shall be a new crash laboratory in the region with the capability to conduct similar crash testing as being carried out by Euro NCAP.

8.2 Child Occupant Protection

ASEAN NCAP predicts that there shall be a significant surge in CRS usage throughout the Southeast Asian region. It is also likely that various ASEAN countries will produce their own CRS, which is

specifically tailored to the requirements of the ASEAN population. Depending on the situations and problems that shall emerge in future, larger dummies such as Q6 or Q10 will possibly feature in ASEAN NCAP future crash tests.

8.3 Safety Assist

Come 2026, there is a high possibility that autonomous cars shall begin to populate the roads in Southeast Asia. Singapore, for example, has been making headway for the advent of autonomous driving. Such an interesting development will also mark the arrival of several other devices including the Advanced Driving Assist (ADAS) technology, which by the way is already introduced by several automakers. In addition, ASEAN NCAP anticipates that various technologies such as ESC and AEB will likely become a standard fit in cars. Thus, evaluations as regards these inventions such as AEB for Motorcycle etc., shall possibly be included. Further, the effectiveness of AEB Pedestrian and AEB in poorly lighted areas shall also be put under the microscope to determine whether their application might be considered in our future roadmap, particularly if pedestrian safety emerged as a cause for concern in the ASEAN region.

Hence, the next decade will present an opportunity for ASEAN NCAP to encourage the use of various technologies to curb road crashes. ASEAN NCAP shall actively inspect and evaluate these technologies for passenger cars and if proven to be effective, will not hesitate to push for their inclusion in an attempt to elevate road safety in the region. Further, the Rescue, Extraction and Safety might also be recommended depending on EV usage rate among the ASEAN motoring consumers. The Car to Car communication shall also be regarded as an advantage to provide early warning in respect to inclement weather, flood or landslide. In general, utilization of the ever expanding technologies for automotive safety shall offer endless possibilities for car safety; beyond the traditional emphasis on infrastructure, legislation and enforcement.

8.4 Motorcyclist Safety

ASEAN NCAP places high importance on Motorcyclist Safety and this shall distinguish us from the other NCAPs. In 2026, ASEAN NCAP aims to execute all the assessments pertaining to the Motorcyclist Safety technology. In addition, ASEAN NCAP anticipates that pedestrian protection technology as being witnessed today shall be further enhanced to include motorcyclist protection technology. In view of this, we believe that more research must be carried out and if proven effective, such a technology must be promoted in our quest to prevent and reduce motorcycle accidents and rider fatalities on Southeast Asian roads.

9 CHALLENGES

In terms of promoting car safety standards in Southeast Asia, it is without doubt that the establishment of ASEAN NCAP has brought a paradigm shift in the motoring community, be it among industry players or consumers. Since 2011, ASEAN NCAP has revolutionized the ways we evaluate car safety, especially the ones which have entered the ASEAN market. Ever since our first crash test was performed in MIROS PC3, we have witnessed steady improvements to the cars being offered to potential car buyers in ASEAN. In other words, more safer cars are being produced since ASEAN NCAP came to the fore.

However, the continuous existence of previous car models sans proper safety features is a bane and has caused great distress and annoyance to ASEAN NCAP. Rightly so, these cars are regarded as our *"musuh dalam selimut"* or "worst enemy" and have impeded our dream of realizing a pristine automotive ecosystem. Hence, at ASEAN NCAP, we are strongly in favour of the End of Life (ELV) Directive as implemented in the European Union whereby motor vehicles which have reached the end of their useful lives are

deemed as junk. Such a move will also clear the path for cars produced starting from 2011 to populate our roads.

At the same time, other vehicle safety regulations should also be revised. For instance, implementation of new technologies in commercial vehicle has to be made compulsory. Until today, we at ASEAN NCAP are baffled as to why certain types of vehicle are not subjected to strict vehicle safety requirements. For example, the small lorry i.e. Chery Transcab is not required to undergo any frontal collision test for it to be registered in a certain ASEAN country. Furthermore, I personally feel that large commercial vehicles must be compelled to install better braking technology in order to prepare for an emergency situation.

As for e-hailing service, the Malaysian Government has announced the requirement for a passenger car to achieve a minimum 3-Star ASEAN NCAP rating and that cars over three years old must be inspected at a computerized vehicle inspection company. I applaud this decision and believe the rest of ASEAN should emulate such a move.

In short, all of these changes must be put in place to pave the way for the autonomous car to be introduced to our environment. Without such improvements, it is impossible to envision a future for autonomous cars in ASEAN countries, except maybe in several dedicated areas.

ASEAN NCAP

Ground Floor, Lot 127,
Jalan TKS 1,
Taman Kajang Sentral,
43000 Kajang,
Selangor, Malaysia.

+603-8924 9200 (ext. 424)

+603-8733 2005

enquiries@aseancap.org

www.aseancap.org

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