

# **The Safe System Approach in Action**

The New Car Assessment  
Program for Southeast Asian  
Countries

Case study

This case study is part of a package of materials accompanying the final report of a joint International Transport Forum–World Bank Working Group, entitled *The Safe System Approach in Action*.

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# Introduction

This case study was prepared by a joint International Transport Forum–World Bank Working Group convened in 2020–2021. The case study forms part of a package of materials accompanying the Working Group’s final report, *The Safe System Approach in Action* (ITF, 2022a).

The Safe System approach to road safety takes as its starting point the ethical position that there is no acceptable level of road deaths and serious injuries. The report proposes a framework for designing, implementing and assessing projects with a Safe System focus. It draws on lessons from real-world case studies to offer guidance on implementing Safe System interventions.

The Working Group analysed 17 case studies in total, paying special attention to their Safe System content. While not every case study was a perfect example of the Safe System approach, all contained valuable lessons. In addition, several common themes emerged. A separate ITF Working Paper (2022b) sets out the thematic analysis.

This case study contains four parts. First, it provides context for the specific intervention and the road-safety problems it aimed to solve. Second, it outlines the interventions implemented to solve these problems and the results. The analysis is structured according to the five key components of the Safe System framework outlined in the main report (ITF, 2022a), namely:

1. **Establish robust institutional governance.** Permanent institutions are required to organise government intervention covering research, funding, legislation, regulation and licencing and to maintain a focus on delivering improved road safety as a matter of national priority.
2. **Share responsibility.** Those who design, build, manage and use roads and vehicles and provide post-crash care have a shared responsibility to prevent crashes resulting in serious injury or death.
3. **Strengthen all pillars.** When all road-safety pillars are stronger, their effects are multiplied; if one part of the system fails, road users are still protected.
4. **Prevent exposure to large forces.** The human body has a limited physical ability to tolerate crash forces before harm occurs; the system should prevent those limits from being exceeded.
5. **Support safe road-user behaviour.** While road-user errors can lead to serious harm, the Safe System focuses on roads and vehicles designed for safe interaction with road users. It supports humans not to make mistakes and tune their tasks as much as possible to their competencies.

Third, the case study identifies lessons from the project, again structured according to the five key components of the Safe System framework. Fourth, it offers conclusions.

Access the full set of case studies on the ITF website: <https://www.itf-oecd.org/safe-system-in-action>.

## Context

The New Car Assessment Program for South East Asian Countries (ASEAN NCAP) aims to improve motor vehicle safety standards, build a market for safer vehicles and raise consumer awareness. Several popular car manufacturers have worked with ASEAN NCAP to ensure they meet all requirements by including important and improved vehicle-safety features in their soon-to-be-released models.

*Road-safety themes: Fleet safety, Safety performance indicators*

The Southeast Asia region comprises countries with varying population numbers, road safety conditions, socio-economic levels, vehicle safety regulations and vehicle fleet mixes. With a combined population of over 630 million, the 10 member countries of the Association of Southeast Asian Nations (ASEAN) have seen passenger vehicle sales soar in recent years.

Despite several ASEAN member countries emerging as the largest automobile manufacturers in the region, vehicle safety regulations in these countries are neither on par with those in high-income nations nor meet the minimum United Nations Economic Commission for Europe (UNECE) safety requirements (see Table 1). The ASEAN New Car Assessment Programmes aims to achieve improvements in the safety ratings of vehicles through market demand (which also drives improved safety regulations).<sup>1</sup>

**Table 1. Vehicle standards by country in South East Asia**

Country	Seat-belts	Seat-belt anchorages	Frontal impact	Side impact	Electronic stability control	Pedestrian protection	Child seats	Motorcycle anti-lock braking system
Brunei	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cambodia	No	No	No	No	No	No	No	No
Indonesia	No	No	No	No	No	No	No	No
Lao People's Democratic Republic	No	No	No	No	No	No	No	No
Malaysia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Myanmar	No	No	No	No	No	No	No	No
Philippines	No	No	No	No	No	No	Yes	No
Singapore	No	No	No	No	No	No	No	No
Thailand	Yes	Yes	No	No	No*	No	No	Yes
Viet Nam	No	No	No	No	No	No	No	No

Notes: \* Thailand launched an ECO CAR program with tax incentives for cars with electric stability control but this is not mandatory for all cars.

Source: WHO (2018) and other sources.

<sup>1</sup> Visit the ASEAN NCAP homepage: <http://aseancap.org>.

The ASEAN NCAP was established in December 2011 through a joint effort by Global New Car Assessment Program (Global NCAP) and Malaysia's Institute of Road Safety Research (MIROS). Its primary objectives are to improve motor vehicle safety standards, build a market for safer vehicles and raise consumer awareness. Since its launch, ASEAN NCAP has carried out a number of crash tests on new cars entering the Southeast Asian region to ensure safe design standards in crashworthiness and crash compatibility for various brands and models before awarding them with the appropriate safety star rating. In the past 10 years, ASEAN NCAP has tested cars which cover almost 90% of the passenger cars sold in the Southeast Asian market. More than 100 ratings have been produced, and three road maps have been introduced since ASEAN NCAP was first launched (Khairil Anwar et al., 2019).

The first roadmap from 2012–2016 included two domains of assessment for vehicle occupants: the Adult Occupant Protection (AOP) and Child Occupant Protection (COP) domains. The second roadmap for 2017–2020 saw the addition of a third domain, Safety Assist Technologies (SATs). In doing so, it sought to ensure a car would be able to avoid a collision with other vehicles, especially motorcycles. This is because motorcyclists or motorized two-three wheelers represented 43% of deaths on Southeast Asian roads (WHO, 2018). Therefore, ASEAN NCAP was determined to reduce the number of deaths involving motorcyclists by rewarding significant points to vehicle models featuring technologies to avoid collision with other road users.

ASEAN NCAP has continued this assessment in its third and current roadmap for 2021–2025, with the addition of a fourth domain of assessment: Motorcyclist Safety (MS). This domain concerns the provision of protection to vehicle occupants through technologies that could mitigate injuries and avoid collisions with motorcyclists and other vulnerable road users.

Due to ASEAN NCAP's efforts, the safety aspects of passenger vehicles in Southeast Asia have seen tremendous improvements compared to the past decades. For instance, in 2008, a certain passenger car model was fitted with a single airbag. Today, the same model is sold in ASEAN countries with seven airbags and electronic stability control (Khairil Anwar, 2018). In addition to passenger car occupants, ASEAN NCAP is concerned with the safety of vulnerable road users, especially motorcyclists. Therefore, most new models offered to potential car buyers in Southeast Asia are now equipped with blind-spot technology (BST) to reduce the risk of collision with motorcyclists (ASEAN NCAP, 2018).

Once ASEAN NCAP had successfully performed and released the results of the first three phases (Phases I–III) of assessment, it managed to bring more vehicle manufacturers or original equipment manufacturers (OEMs) on board to voluntarily participate in the vehicle assessment programme and provide consumers with pertinent knowledge in their decision-making when purchasing a vehicle.

As of August 2021, close to 90% of vehicles that ASEAN NCAP assessed had achieved a rating of 4-Stars or above. To date, ASEAN NCAP had tested 28 brands, including all Japanese brands and 18 of the top 20 ASEAN brands (with the exception of Mercedes and Hino). ASEAN NCAP has successfully demonstrated the effectiveness of a consumer information programme in encouraging the acceleration of vehicle safety in a region.

## **Funding, actors and leadership**

Through the Global NCAP, MIROS and ASEAN NCAP were able to receive funding from international organisations including the FIA Foundation, the Global Road Safety Fund, Bloomberg Philanthropies, the

Towards Zero Foundation and many others. ASEAN NCAP also engaged with the stakeholders and partners represented in its steering and technical committees.

For the Steering Committee, ASEAN NCAP partnered with automobile associations including the Automobile Association of Malaysia (AAM), Automobile Association of Singapore (AAS), Automobile Association Philippines (AAP), Automobile Association of Cambodia (AAC) and the Royal Automobile Association of Thailand (RAAT).

For the Technical Committee members, ASEAN NCAP sought collaboration with vehicle safety experts from the Sirindhorn International Thai-German Graduate School of Engineering (TGGS), Bandung Institute of Technology (ITB), Ho Chi Minh City University of Technology (HCMUT), Universiti Teknologi Malaysia (UTM) and Universiti Kebangsaan Malaysia (UKM).

## Interventions and results

### Establish robust institutional governance

ASEAN NCAP was formed as part of Activity 2 of the Safer Vehicle Pillar under the UN Decade of Action for Road Safety 2011-2020. The formation of MIROS in 2007 as an agency under the Malaysian Ministry of Transport (MOT) enabled it to push for improved safety performance of vehicles, and obtain support from the government to fund its initial effort to build a crash laboratory — the first in Southeast Asia.

The MOT has been strongly supportive of ASEAN NCAP's work, particularly in promoting events such as "Stop the Crash ASEAN" in 2016, where the Malaysian Government announced the mandatory installation of electronic stability control (ESC) in new cars in Malaysia, beginning in June 2018. The Government also supported ASEAN NCAP through the launch of the ASEAN NCAP Labelling Guideline in February 2019. The guideline is currently in the process of being legislated under the *Trade Description Act* of the Ministry of Domestic Trade and Consumer Affairs. The label will provide information to consumers about the safety performance of a vehicle so that they can make informed decisions on the best model in terms of its safety. In addition, vehicle manufacturers cannot easily claim that the cars they are selling have achieved a certain star rating from another NCAP programme.

In addition, the MOT developed the National Transport Policy 2019-2030, which included a strategy (Strategy 3.2, under Policy Thrust 3) to adopt a Safe System approach towards safer road users, infrastructure and vehicles. Under this strategy, two of the main actions were to: (a) improve safety and security features of vehicles to enhance driver experience; and (b) introduce a safety star rating system for commercial vehicles, as well as new and used vehicles.

### Share responsibility

Being a consumer-driven initiative, ASEAN NCAP shares its responsibility to avoid blaming road users as the cause of road crashes with other key stakeholders in the field including OEMs, national governments and the media.

Through its programme, ASEAN NCAP has been able to build a positive relationship with OEMs in the automotive industry. Thus far, the OEMs have been very positive in ensuring their vehicle models adhere to the ASEAN NCAP assessment protocol. Other than targeting to achieve the best star rating, OEMs have also been keen to offer the best safety protection to consumers without increasing vehicle prices.

In addition to the introduction of the labelling programme, the ASEAN NCAP safety ratings convinced the Malaysian Government to introduce a regulation regarding suitable car models to be used as e-hailing vehicles or taxis. The government announced that e-hailing cars must reach a minimum 3-Star ASEAN NCAP rating as one of the requirements for operators to renew their e-hailing or taxi licenses. This has acted as a push factor for OEMs to have their car models assessed by ASEAN NCAP.

## **Strengthen all parts**

The safety of a vehicle can be a function of the vehicle safety regulations implemented by a country. While the UN World Forum for Harmonisation of Vehicle Regulations provides a legal framework for a range of vehicle safety standards for UN member states to adopt voluntarily, many countries do not. In Southeast Asia, some examples of legislation that has been implemented include regulations on the protection of occupants in the event of frontal collision, and regulations for seat belts and child seats (see Table 1). The most anticipated development was the implementation of Regulation No. 140 for ESC in passenger cars by the Malaysian Government in 2018.

Due to the low adoption of vehicle safety regulations in Southeast Asia (see Table 1), it is important to increase consumer information and demand for safer vehicles, in parallel to regulatory action.

ASEAN NCAP assists vehicle buyers to make safer purchasing decisions by providing them with independent safety advice. This, in turn, creates demand and encourages manufacturers to produce safer vehicles and plays a vital role in encouraging manufacturers to voluntarily fit safety technologies in advance of any regulatory mandate and thereby produce safer vehicles.

With this regulatory push and demand pull strategy, close to 90% of vehicles that ASEAN NCAP assessed have achieved a rating of 4-Star and above and greatly increased the safety of vehicles in the region.

## **Prevent exposure to large forces**

In a safe road system, vehicles should either be able to effectively prevent a crash from occurring (crash avoidance) or be able to protect the occupants and other road users from serious harm if a crash was to occur (crash protection). The ASEAN NCAP assessment protocol focuses on both aspects.

With more vehicle safety technologies available on the market, ASEAN NCAP has revamped its latest assessment protocol for 2021-2025 to include four assessment domains: AOP, COP, SAT and MS. Under this new protocol, ASEAN NCAP has weighted SAT under a specific domain that assesses the effectiveness of such technologies to avoid collision with other vehicles. A new assessment domain is created under this new protocol dedicated to assess the safety performance of a vehicle in preventing collisions with motorcyclists or vulnerable road users.

In addition to assessing the effectiveness of BST, ASEAN NCAP gives bonus points to models that can offer advanced motorcyclist safety technology that helps reduce the possibility of a collision between the car and motorcycle. Starting in 2021, ASEAN NCAP has raised its assessment level of vehicles by including motorcycle- and pedestrian-related assessments to represent the most vulnerable road user groups in the

Southeast Asia region (Khairil Anwar, 2019). These assessments are included under the Motorcyclist Safety pillar of the new protocol, whereby car models will score points if they are fitted with technologies that could prevent collisions with such road users.

## Lessons

Actions under Malaysia's National Transport Policy showed that the government was serious about ensuring improved vehicle safety in Malaysia. One such action was through the star rating programme that MIROS had carried out via ASEAN NCAP.

In having its assessment results disseminated to the masses, ASEAN NCAP received strong support from the media across Southeast Asian countries, particularly in Malaysia, Indonesia, Thailand and the Philippines. With the publicity provided by the media, information regarding ASEAN NCAP safety ratings was more easily conveyed to consumers.

It was recognized by ASEAN NCAP that English, the language in which the results were published, was not easily understood by the general ASEAN population, meaning that information did not reach a larger audience. To address this limitation, a compilation of ASEAN NCAP results in the mother-tongue languages of some of the ASEAN countries was developed. Thus far, ASEAN NCAP has published the compilation in three languages: Thai, Indonesian and Vietnamese. Various parties including government and non-government agencies will be able to share the information provided by ASEAN NCAP in their respective languages through the use of traditional and new media technologies.

## Conclusions

Vehicles are a vital element of the Safe System, providing passive safety technologies which reduce crash forces and active safety technologies which can avoid a crash.

Even in the absence of strong regulation of vehicle safety standards, the ASEAN NCAP has been able to use consumer information by publishing safety ratings, promoting these to the community (in multiple languages) and advocating to governments, vehicle and equipment manufacturers. As a consequence, rated vehicle safety has improved, and government regulation is being improved. This has been made possible through the efforts of Global NCAP and MIROS with funding support from many sources.

Addressing data-driven local issues adds clear value. In ASEAN countries, motorcyclists and other vulnerable road users comprise the majority of deaths, and thus ASEAN NCAP has increased its focus on these road user groups.



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## The New Car Assessment Program for Southeast Asian Countries

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The case study is part of a package of materials accompanying the final report of a joint International Transport Forum–World Bank Working Group, entitled The Safe System Approach in Action.

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