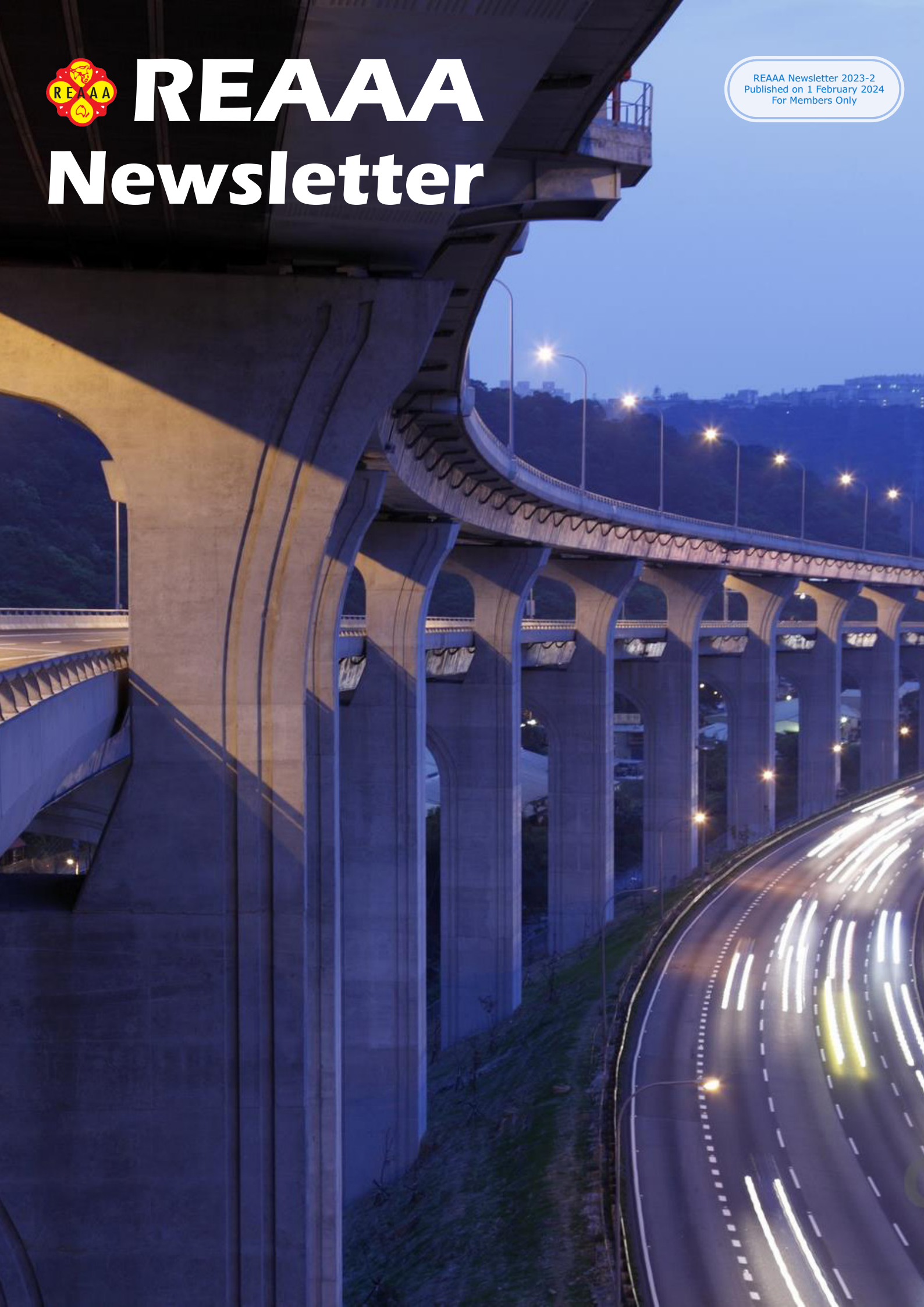




# REAAA Newsletter

REAAA Newsletter 2023-2  
Published on 1 February 2024  
For Members Only





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# Message from the President

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**Dr. Sung-Hwan Kim**  
**President of REAAA**

Dear REAAA members,

As we bid farewell to the year gone by and welcome the promising year ahead, I would like to extend my warmest wishes to each and every one of you. May this New Year bring you joy, success, and prosperity in all your endeavours.

As the President of the Road Engineering Association of Asia and Australasia (REAAA), I am honoured to address you through our esteemed newsletter. This platform serves as a vital means of communication, enabling us to share knowledge, experiences, and insights within our vast network of road engineering professionals.

As we embark on a new year, it is crucial that we take the opportunity to reflect on our achievements over the past 50 years. REAAA has played a pivotal role in advancing road engineering practices, fostering collaboration, and promoting sustainable development in our region. Our collective efforts have contributed to the growth and prosperity of nations, improved connectivity, and enhanced the quality of life for millions. Building upon this rich legacy, it is imperative that we chart a course for the next 50 years. We must review our strategies and plans, ensuring they align with the changing landscape of road engineering,

and address the emerging challenges and opportunities that lie ahead. By leveraging the valuable lessons learned from our successes and failures, we can shape a future that is even more impactful and transformative. I encourage each and every one of you to actively participate in this review process. Your insights and expertise are invaluable in shaping the future direction of our association. Let us collectively explore innovative approaches, embrace new technologies, and foster collaboration across borders to achieve our vision of safe, sustainable, and efficient road networks for the next half-century.

As we embark on this journey, let us remember that our strength lies in our unity. Together, we can overcome any obstacle and achieve remarkable milestones. Let us continue to support and inspire each other by fostering a culture of knowledge-sharing and collaboration that is the hallmark of REAAA.

Once again, I extend my heartfelt best wishes to you and your loved ones for a joyous and prosperous new year. May our collective efforts in the coming year bring us closer to our vision of a better tomorrow.

Warm regards,

Dr. Sung-Hwan KIM  
REAAA President  
November 2023



# Electronic Toll Collection in Taiwan



## Mr. Richard Moh

Chairman, Moh and Associates, Inc.  
Executive Director, China Road Federation (CRF)  
Chair of International Affairs Committee, China Road Federation (CRF)



## Dr. Nan Huei Hwang

Senior Specialist, Moh and Associates, Inc.

The first National Freeway in Taiwan, National Freeway 1, was completed in October 1978. It made a significant contribution to Taiwan's economic boom in the 1980s. Because the costs of freeway construction were enormous, the government began collecting tolls as soon as the first segment of the freeway was completed in July 1974. This was done to raise funds for the construction of the remaining segments. An open system was adopted, with toll plazas located on the freeways and tolls collected manually at toll booths. Some of the toll booths were designated for travellers who had the exact amount of money, while others were designated for travellers who had prepaid tickets only. This was done to reduce delays associated with toll collection. The manual collection of tolls at toll booths took as little as 3.7 seconds, and each toll lane could handle 900 vehicles per hour. Such efficiency is the maximum achievable for manual toll collection. As Taiwan's economy continued to boom and

per capita income increased rapidly, the number of motor vehicles also increased. During the 1990s, the annual growth rate of the number of vehicles was as high as 3.6%. National Freeway 1 became congested shortly after its completion, and frequent complaints arose due to queues at toll plazas. This situation was the worst during holidays and long weekends.

The construction of the second freeway, National Freeway 3, commenced in 1987 and was completed by the end of 2004. Similar to National Freeway 1, the freeway was opened to traffic in segments as construction progressed. By 2003, the annual transactions at toll booths on the two freeways had reached 525 million. Of these transactions, 83.02% were collected from small vehicles, 10.32% from buses and trucks, and 6.66% from trailers. The total toll collected in the year exceeded NT\$21 billion (US\$636 million).



National Freeway used to be long queues waiting to pay toll fees in front of the toll booth



As it was anticipated that manual toll collection would not be able to handle the substantial volume of traffic in the long term, Ministry of Transportation and Communications (MOTC) began exploring the viability of electronic toll collection (ETC) as early as 1996. Pilot tests were conducted at two toll plazas on National Freeway 3 between 23<sup>rd</sup> November 1998, and 8<sup>th</sup> January 2002. These tests aimed to assess the potential difficulties that may arise and gather the necessary data for planning the electronic tolling system. After a brief intermission, the ETC project was launched in November 2002 as a build-operate-transfer (BOT) project, in accordance with the government's policy of promoting public-private partnerships (PPP) in infrastructure projects. The tender for the General Consultant was called, and a consortium led by Moh and Associates, Inc. was awarded the consultancy by the Taiwan Area National Freeway Bureau (TANFB) of MOTC in 2003. The consultancy was for planning the system and preparing the tender to ensure a smooth transition from manual tolling to electronic toll collection. Because of the significant business potential, the tender for the concessionaire drew considerable attention, and seven consortia submitted their proposals. The project was finally awarded to the Far Eastern Consortium in 2004. As a result, a new company called Far Eastern Electronic Toll Collection Co. Ltd. (FETC) was formed for the construction and operation of the ETC system.

The transition from manual tolling to electronic toll collection is carried out in two phases. Phase 1 involved tolling on a flat-rate-per-use basis, while Phase 2 involved distance-based tolling. In Phase 1, sensors were installed on gantries at selected toll booths to establish communication with the On-Board-Unit (OBU) installed in vehicles. This allowed for the identification of vehicles as they passed through the toll booth. Tolls were collected electronically at fixed rates depending on the type of vehicle. In the meantime, manual

tolling was still available at the other toll booths to allow vehicles without OBU to use the freeways. After the system was set up and its performance validated, electronic toll collection commenced in February 2006. The usage of ETC reached 42% in November 2010, but it could not increase further due to many travellers being reluctant to pay for OBU.



Manual Toll Collection and Single Lane Free Flow

In June 2011, Radio Frequency Identification (RFID) eTag replaced OBU to reduce costs for travellers. As a result, the usage of ETC increased rapidly. When the usage of the ETC exceeded the 65% requirement stipulated in the contract, Phase 2 tolling commenced in January 2014. All the toll booths were demolished and 319 gantries were erected with sensors mounted to communicate with the eTag installed on the vehicles in order to collect the vehicle's identity as they pass by. Cameras were also available to capture images of the vehicles for verification purposes, ensuring the accuracy of the information collected by the sensors. All vehicles are now allowed to travel freely on freeways, achieving the so-called Multiple-Lane Free-Flow (MLFF) mode of tolling. Instead of the fixed per-use rates adopted in the past, tolls are now calculated based on the distances travelled to ensure fairness for travellers.



Taiwan MLFF Toll Gantry

receive notifications on their mobile phones, and payments can be made using credit cards or by visiting hundreds of stores that offer collection services.

As of 2022, there were 8.5 million ETC customers, and the eTag usage rate reached 92.71%. The success rate for tolling exceeded 99.97%, the accuracy rate for vehicle detection exceeded 99.98%, and the daily transactions averaged 17 million. The system made Taiwan the first country in the world to transition from flat-rate pay-per-use to distance-based tolling for the entire nationwide freeway network. It also marks a shift from manual tolling to multiple-lane-free-flow electronic toll collections.



FETC has the latest Front Shot and Rear Shot MLFF Solution



FETC offers different types of RFID Tag including license plate type



Manual Toll Booth has become a thing of the past

With electronic tolling, it is possible to adjust the toll rates to address special circumstances, making it an effective measure for regulating traffic. The owners of vehicles with eTag enjoy a 10% discount on tolls, which can be deducted from the ETC accounts. The owners of vehicles without eTag



RFID Tag Performance Testing





Windshield Tag

Taiwan ETC system has gained worldwide recognition and received awards from various organizations, including at ITS World Congress (2015, 2023), Harvard Business Review (2022), The World Innovation, Technology and Services Alliance (2017), International Road Federation (2016), Asia Pacific Council for Trade Facilitation and Electronic Business (2015), and International Bridge, Tunnel and Turnpike Association (2015). Additionally, on 16<sup>th</sup> October 2023, Dr. Yung Chang Chang, FETC’s Managing Director, received the 29<sup>th</sup> ITS World Congress Hall of Fame: Lifetime Achievement Award at ITS World Congress in Suzhou. The system has also attracted attention from many countries and numerous international groups have visited Taiwan to view the system in operation. The FETC has also provided consultancy services to the Philippines, Vietnam, Malaysia, Bosnia and Herzegovina, and India for the planning of their ETC systems.



Harvard Business Review 2022: Digital Transformation Leader Award



IRF Global Road Achievement Awards



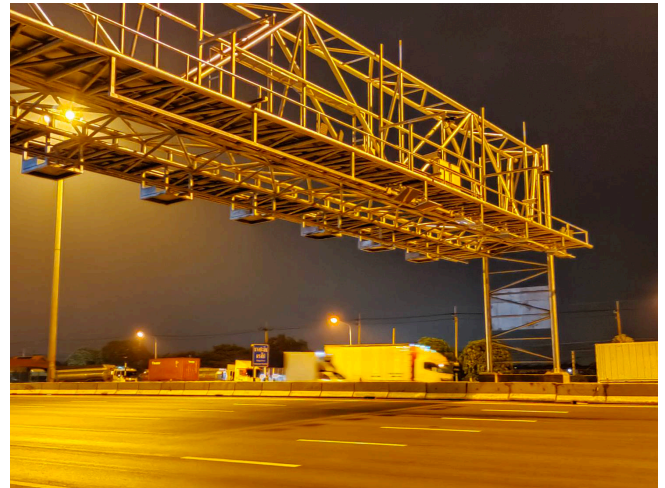
ITS World Congress 2015: Hall of Fame- Industry Award



Dr. YC Chang (right) received Lifetime Achievement Award in the 29<sup>th</sup> ITS World Congress Hall of Fame Ceremony

In 2021, FETC partnered with several local companies to establish a consortium responsible for implementing and operating the ETC system on two newly constructed freeways, M6 and M81, in Bangkok, Thailand. The two highways are called “Smart Highway” because they combine ETC with the traffic control system. The installation of the system is expected to be completed by 2026. This marks momentum for FETC as the entire ETC system will be migrated to a foreign country in order to provide a total solution. Apart from M6 and M81, FETC also helped to install the roadside system and cloud-based roadside equipment monitoring and management platform on M9. It is very hopeful that there will be more similar opportunities in the future.

Freeway Bureau, MOTC and FETC for their collaboration and provision of essential data that enriched the content of this article.



FETC Implemented AI based roadside equipment on M9

We extend our grateful acknowledgment to



[www.fetci.com](http://www.fetci.com)

# FETCi RFID Based Mult-Lane Free-Flow Total Solution

<b>99.999999%</b> Billing Accuracy Rate	<b>100%</b> ETC Usage Rate	<b>99.994%</b> Toll Collectable Rate
<b>99.98%</b> Vehicle Detection Rate	<b>97%</b> Customer Satisfaction Rate	



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# REAAA Smart Highway Award 2025 Call for Application

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The Smart Highway Award aims to recognize REAAA members for their outstanding achievement and contribution in the development and application of smart highway management systems, to exchange and share their experience in smart highway development, and to promote cross-disciplinary integration and smart technology applications for road engineering.

## 1. Eligibility

- A. The candidate must be an Institutional Member of the REAAA.
- B. Project stakeholders including project owner, engineering consultant companies, main or subcontractors are eligible for being candidates of the Award.
- C. The Highway referred to herein is a major roadway with more than one lane of traffic in each direction designed for automobile operation in higher speed. It has barriers or wide median strips separating traffic travelling in opposite directions, and grade-separated intersections without roundabouts or traffic lights in the main route. Access to the highway is controlled by ramp.
- D. Applicant shall submit the document of a project it selects as a supporting material for competing for the Award. The submitted project shall be primarily composed of smart highway operation and management system and must be completed within 4 years before the announcement for application for the Award.
- E. Organizations affiliated with the members of the Award Selection Committee shall not be eligible for being selected as candidates.
- F. Applicant shall submit the application from with at least one recommendation letter from a current REAAA council member(s) and a consent letter from the project owner if the applicant is not the project owner.

## 2. Selection Criteria

The Award Selection Committee shall make the selection based on the following criteria:

- A. Being original or innovative application of the ICT technology.
- B. Being a newly developed or innovative technique, solution, service, or business model.
- C. Being successful in the service, concept, or product it provided.
- D. Making contributions to society, economy, and sustainability.
- E. Being innovative for Big Data application.
- F. Being a system with high efficiency and reliability.
- G. Promoting the effectiveness of maintenance.
- H. Making contributions to the growth of emerging industries.
- I. Promoting safety and effectiveness for road operation.
- J. Promoting effectiveness for energy saving and carbon reduction.

3. Award

The award recipient shall receive 20,000 US dollars (including handling fee and tax) as the prize money and an award plaque.

4. Applications

- A. The applicant shall fill out the application form truthfully, completely, and accurately, with at least one recommendation letter from a current REAAA council member(s) and a consent letter from the project owner if the applicant is not the project owner.
- B. Application documents including the application form, associated support material, consent letter from the project owner, and recommendation letter from a current REAAA council member shall be sent together by email or encrypted email to the address designated by the REAAA secretariat.
- C. Incomplete or invalid application shall not be eligible for being selected as a candidate and shall be precluded from the Award selection process.

5. Schedule

No.	Task	Duration (month)	Date
1	Calling for application	3	1 <sup>st</sup> Mar 2024 ~ 31 <sup>st</sup> May 2024
2	Organizing application documentation	1	1 <sup>st</sup> Jun 2024 ~ 30 <sup>th</sup> Jun 2024
3	Qualification review (by task team)	3	1 <sup>st</sup> Jul 2024 ~ 30 <sup>th</sup> Sep 2024
4	Clarification for review comments (by applicants)	3	1 <sup>st</sup> Oct 2024 ~ 31 <sup>st</sup> Dec 2024
5	Award selection (by Award Committee)	3	1 <sup>st</sup> Jan 2025 ~ 31 <sup>st</sup> Mar 2025
6	Award selection result approval	2	1 <sup>st</sup> Apr 2025 ~ 31 <sup>st</sup> May 2025 (at the 123 <sup>rd</sup> Council Meeting)
7	Notify recipient of the Award	1	1 <sup>st</sup> Jun 2025 ~ 30 <sup>th</sup> Jun 2025



6. Contact

REAAA Secretariat

E-mail: [exec.sec@reaaa.net](mailto:exec.sec@reaaa.net)

Address: 46B, Jalan Bola Tampar 13/14, Section 13, 40100 Shah Alam Selangor, MALAYSIA.

Phone: + 603 5513 6380

Fax: + 603 5513 6390

# Application of Recycled Aggregate in Road Engineering in Taiwan



**Dr. Jaw Chang Laiw**

Chief Technology Officer, Moh and Associates, Inc.  
Secretary General, China Road Federation<sup>1</sup>



**Mr. Hung Yen Lee**

Manager,  
Urban Development Department,  
Moh and Associates, Inc.

A circular economy is an economic system that aims to minimize waste and make the most of resources. In a circular economy, products and materials are reused, repaired, refurbished, and recycled to extend their lifespan and reduce the need for new resources. The concept contrasts with the traditional linear economy, where products are manufactured, used, and then disposed of as waste.

Key principles of a circular economy include design for longevity:

- Products are designed to be durable and easy to repair, upgrade, and disassemble, promoting reuse and minimizing waste.
- Material from products at the end of their life cycle is collected, processed, and reintroduced into the production process, thus reducing the need for virgin resources.
- The efficiency of resource use, such as energy and water, is maximized to reduce environmental impact
- The sharing and collaborative consumption of products and services is encouraged, which can reduce the overall demand for new products.
- The ownership model is shifted to a model of services, where consumers pay for the use of a product rather than owning it.
- Waste is minimized through responsible consumption and production practices.

The circular economy is one of Taiwan's 5+2 Industrial Innovation Plan<sup>2</sup>, of which the use of recycled aggregate is also an important part. There have been many successful cases in Taiwan. It is an environmentally friendly and sustainable construction practice that helps reduce the demand for natural resources and reduce construction emissions. Recycled aggregates are usually derived from existing or renovated buildings, roads, bridges and other infrastructure, or discarded concrete, bricks, stones, or industrial byproducts and other materials. The material is crushed and screened to produce recycled aggregate that can be used in road construction or secondary structures.

<sup>1</sup> jawchang.laiw@maconsultants.com

<sup>2</sup> The 5+2 Industrial Innovation plan aims to shift Taiwan Industries away from its traditional manufacturing sectors preparing it towards high value service, information and solution-oriented sectors by combining Taiwan's already established manufacturing and IT sector. Through this transformation, the Taiwanese Government wants to create jobs, improve innovation, and, most importantly, aims to establish Taiwan as a major global player. The sectors include Internet of Things (IoT), Biomedicine, Green Energy, Smart Machinery, Defense, New Agriculture and circular economy.

The “Basic Oxygen Furnace (BOF) slag” refers to a byproduct of the iron and steel manufacturing process. It is a type of industrial waste material that can be reused in various applications, such as construction and road paving, due to its potential environmental and economic benefits. “Garbage incineration bottom slag” refers to the residue or waste material left after the incineration of solid waste or garbage. This bottom slag typically consists of non-combustible and incombustible materials that remain after the combustion process. Proper disposal or management of this residue is essential to minimize environmental impacts and ensure compliance with waste management regulations. BOF slag and incineration bottom slag have gradually been turned into recycled aggregate for use in asphalt or road sub-base layers. They not only reduce environmental impact and load but also, through the output factory-free supply, save engineering costs. The service life is also higher than natural aggregate asphalt pavements.

In 2015, the Ministry of Environment (MOENV) issued the “Manual for the utilization of incineration bottom ash recycled aggregates in controlled low-strength material (CLSM)” to encourage county (city) governments to engage in the commissioning of incinerated bottom ash for further reuse. In 2000, the Chinese Pavement Engineering Society (Taiwan) published the Application of furnace slag in asphalt concrete pavement user manual". The main content of this manual includes information on furnace slag material properties, the engineering characteristics of furnace slag asphalt, practical examples and benefits of furnace slag asphalt applications, furnace slag asphalt mix design, considerations for using furnace slag in asphalt pavement construction, furnace slag asphalt production, transportation, construction, and quality management, etc. This manual serves as a reference for project managers, design and construction companies, asphalt mixing plant operators, and other relevant industries. Additionally, it provides technical insights into the resourceful utilization of furnace slag in asphalt pavements and contributes to the implementation of government policies by promoting sustainable development and ensuring the quality of public infrastructure projects.

In 2017, Ministry of Environment, Ministry of the Economy, Ministry of Transport and Ministry of the Interior jointly established an inter-ministerial committee to promote the use of recycled aggregate in public works with the Ministry of Economy and the Ministry of Environment respectively supervise the quality of recycled aggregate and implement flow management. The project owners then apply them to projects. This has led to a reduction in environmental protection disputes regarding the characteristics of (recycled) aggregate.

An important successful case study in Taiwan is the use of furnace slag in an asphalt pavement on Nanxing Road in Kaohsiung City. The use of furnace slag aggregate instead of 40% natural aggregate for the road pavement led to a greatly improved road quality and durability because of its low wear, high skid resistance, improved bearing capacity and surface roughness, and reduced noise levels. The amount of carbon emissions was reduced by 1,811 tonnes, and the service life of the road was improved by 2.67 times. The free provision of furnace slag can save about 10% of the project cost. This project won the Taiwan Public Works Gold Award.

About 800,000 to 900,000 tonnes of incinerated recycled aggregate are used instead of natural aggregate each year. It is used in controlled low-strength backfill materials (CLSM), road substrates, low-density recycled permeable concrete and other projects permitted by the EPA. Eight demonstration road projects have been completed successfully, and the results of environmental monitoring after two years are in line



with regulatory standards. In addition, the test results of testing of the soils used in the pilot road section at Diosin before and after construction showed that the properties met the soil monitoring standards, including the amount of heavy metals detected in the groundwater. This approach effectively reduced the project costs and made the optimum use of the existing buried space.

On 27<sup>th</sup> October 2017, an announcement was made regarding the "Taoyuan City Guanyin District Caota Comprehensive Development Unit City Land Reclamation and General Contracting Project" (Figure 1). This project is being carried out by the Taoyuan City Government's New Construction Bureau, in partnership with Moh and Associates, Inc., to manage various integrated development projects within the planning area. In order to achieve low-carbon and energy-saving goals, the project incorporates the use of eco-friendly recycled materials for certain construction aspects. Specifically, the new road design includes the use of asphalt milling materials (R60) for the gravel subbase layer, and the road surface is paved with asphalt containing recycled aggregate. Additionally, eco-friendly pavers with incinerated recycled materials are used for paving walkways in the park. In addition, controlled low-strength fill materials are blended with incinerated recycled granules, and steel wire mesh is employed to replace some steel reinforcement, thus reducing construction waste generation. Overall, this project resulted in a reduction of approximately 792,000kg CO<sup>2</sup>e of emissions, as detailed in Table 1.



Figure 1: Caota land reclamation vision simulation (Total area: 147 hectares)

Table 1 Types of recycled aggregates used in Caota land reclamation project

Recycled aggregate type	Asphalt milling material (R60)	Incineration bottom ash in CLSM	Incineration bottom ash in environmental brick	Asphalt pavement with steel furnace slag
Quantity used	21,600m <sup>3</sup>	8,209 tonnes	2,000 m <sup>2</sup>	436.4 tonnes
Amount of carbon reduction	40.3tonnes	67.8 tonnes	12.4 tonnes	60.8 tonnes
				

In summary, the correct use of recycling can reduce the dependence on natural resources and contribute to the protection of the environment and the promotion of sustainable social development. The circular economy concept is driven by the recognition that the traditional linear economy, which relies heavily on extracting, producing, consuming, and disposing of resources, is unsustainable in the long term. By embracing circular economy principles, businesses and governments can reduce environmental impact, save resources, and create economic opportunities while contributing to a more sustainable and environmentally friendly future.

# Vulnerable Road Users: Safety Status among REAAA Countries

**Ir. Dr. Muhammad Marizwan bin Abdul Manan<sup>1</sup>**

Director, Road Safety Engineering and Environment Research Centre, Malaysian Institute of Road Safety Research (MIROS)

Chair of REAAA Working Group C4WC2: Road Safety

## Introduction

In March 2021, the REAAA Governing Council endorsed the establishment of a Road Safety Committee (C4WC2). The goals of the Committee reflect issues of major concern to REAAA member countries. The critical concern of the committee is the safety of vulnerable road users (VRUs), particularly powered-two-wheelers (PTW). The output was to be the first technical report on vulnerable road users (VRU) in REAAA member countries.

‘Vulnerable Road users’ (VRU) is a term applied to those most at risk in traffic. They are mainly those unprotected by an outside shield, namely pedestrians, two-wheelers (e.g. bicycles) and powered- two-wheelers, as they sustain a greater risk of injury in any collision compared to a vehicle. They are therefore highly in need of protection against such collisions.

The aim of the project was to gain a better understanding of the current safety issues associated with the use of VRUs and to investigate existing strategies or plans related to the safety of VRUs in terms of providing the appropriate infrastructure or countermeasures to improve road safety. The report would also share information regarding successful case studies adopted in REAAA member countries.

The full report – including all references, notes and abbreviations – will be published as REAAA Technical Report No. 13 early in 2024.

## Questionnaire

A questionnaire was distributed among REAAA Countries in March 2022, and nine of the 11 member countries participated in this study. The questionnaire consisted of three parts:

- Part A: General road safety information – Participants were asked to provide relevant statistics related to VRUs in their country. This information was vital if the safety of PTW drivers was to be gauged and the data from each country compared. Participants were asked to provide statistics based on the latest data available or data from three years back from 2019. Participants also needed to declare, or cite, the source of the data.

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<sup>1</sup>marizwan@miros.gov.my; dg@miros.gov.my.

The contribution of representatives in the participating countries who provided road safety data and case studies is gratefully acknowledged



- Part B: Road infrastructure program, guidelines, or material related to VRU – Participant were asked to provide details of issues and implemented countermeasures relevant to all types of VRU which addressed road safety improvement.
- Part C: Case studies – Participant were asked to provide one or two examples from Part B in terms of safety issues related to VRUs, details of the implemented countermeasure, and the effectiveness of this implementation.

## General Findings

The full results will be published in an REAAA Technical Report (No. 13) which will be available early in 2024. A sample of the results is presented in this article.

### Population

Indonesia has the highest population compared to the other participating countries (Table 1). All participating countries have an almost equal number of males and females.

Table 1: Country populations

Country and year of data	Japan 2020	Taiwan 2020	Australia 2021	Singapore 2021	New Zealand 2020	Korea 2019	Thailand 2021	Indonesia 2019	Malaysia 2021
<b>Total</b>	126,146,099	23,560,000	25,422,789	5,450,000	5,127,200	51,829,136	66,300,002	272,681,000	32,700,000

### Registered vehicles

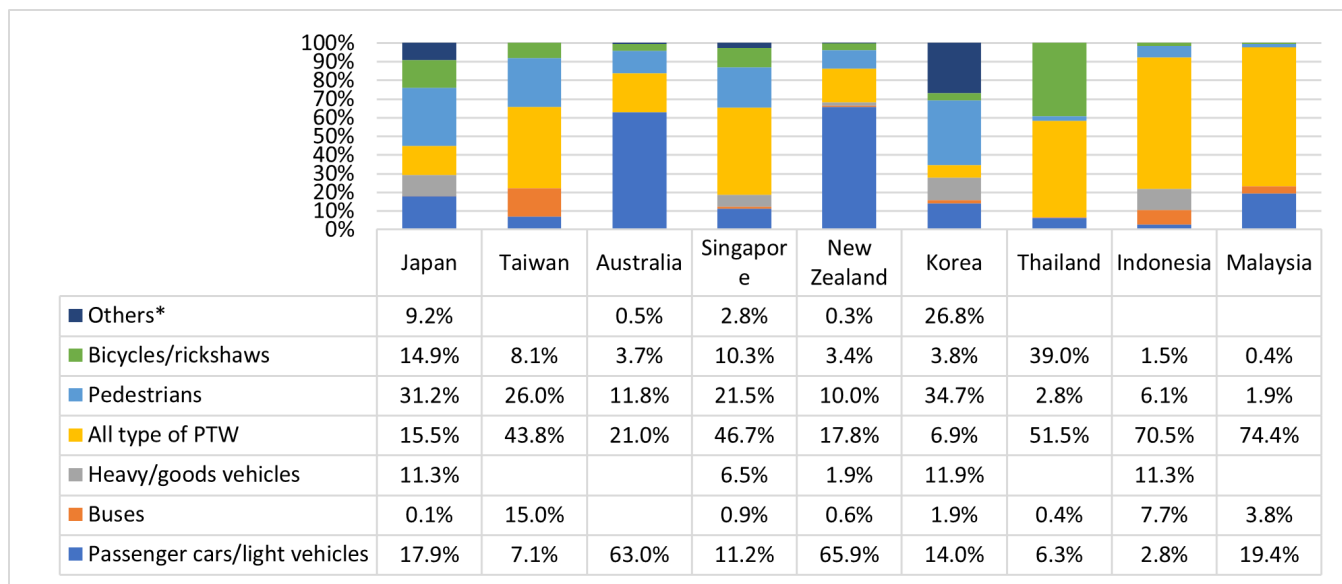
The cumulative number of registered vehicles in each participating county is shown in Table 2. Indonesia has the highest percentage of PTW (84%), followed by Thailand (52%) and Malaysia (46%). The participating countries which have the lowest percentage of PTW are Japan and New Zealand (4% each), and Australia (5%).

Table 2: Cumulative number of registered vehicles

Country and year of data	Japan 2020	Taiwan 2020	Australia 2021	Singapore 2021	New Zealand 2020	Korea 2019	Thailand 2021	Indonesia 2019	Malaysia 2021
<b>Total</b>	81,849,782	22,234,206	20,261,009	988,755	5,443,320	26,654,988	42,296,760	136,135,759	33,375,599

Road fatalities

In terms of the number of road fatalities by type of road users, Malaysia and Indonesia recorded among the highest rate of fatalities 74% and 70% for all types of PTWs (see Figure 1). The highest fatality rate for pedestrians is in Korea (35%) and Japan (31%), while bicycles, rickshaws are highest in Thailand with 39% from its total fatalities. As for passenger or light vehicles, New Zealand has the highest with 65.9% of its total fatalities.



Country and year of data	Japan 2020	Taiwan 2020	Australia 2021	Singapore 2021	New Zealand 2020	Korea 2019	Thailand 2021	Indonesia 2019	Malaysia 2021
<b>Total</b>	3,857	3,684	1,130	107	320	3,081	16,957	190,137	4,539

\*'Other' includes vehicle such as moto-tricycles, rickshaws, animal carts, etc.

Figure 1: Percentage of road fatalities according to type of road user

Gender and age group

As expected, males had the majority share of the fatalities in all countries, with Japan having the highest fatality rate (89%). However, Japan has the highest fatality rate among female road users with 32% of the total fatalities.

In the majority of countries, the highest fatality rate occurred in the 30-60 years old group, with Korea having the highest fatality rate (78%). Singapore had the highest fatality rate (37%) in the 'young' (16-29 years) age group.



Value of life

Figure 2 compares the Value of Statistical Life (VOSL), in USD million, and fatalities per 100,000 population. There is an obvious pattern, with high-income and high-VOSL countries such as Singapore, New Zealand, Japan, Australia and Korea having a lower fatality compared to the low- and middle-income countries such as Malaysia, Thailand and Indonesia. However, the trend in Taiwan is slightly different, with a high VOSL (2.3 million) but also a high fatality rate (15.64 fatalities per 100,000 population).

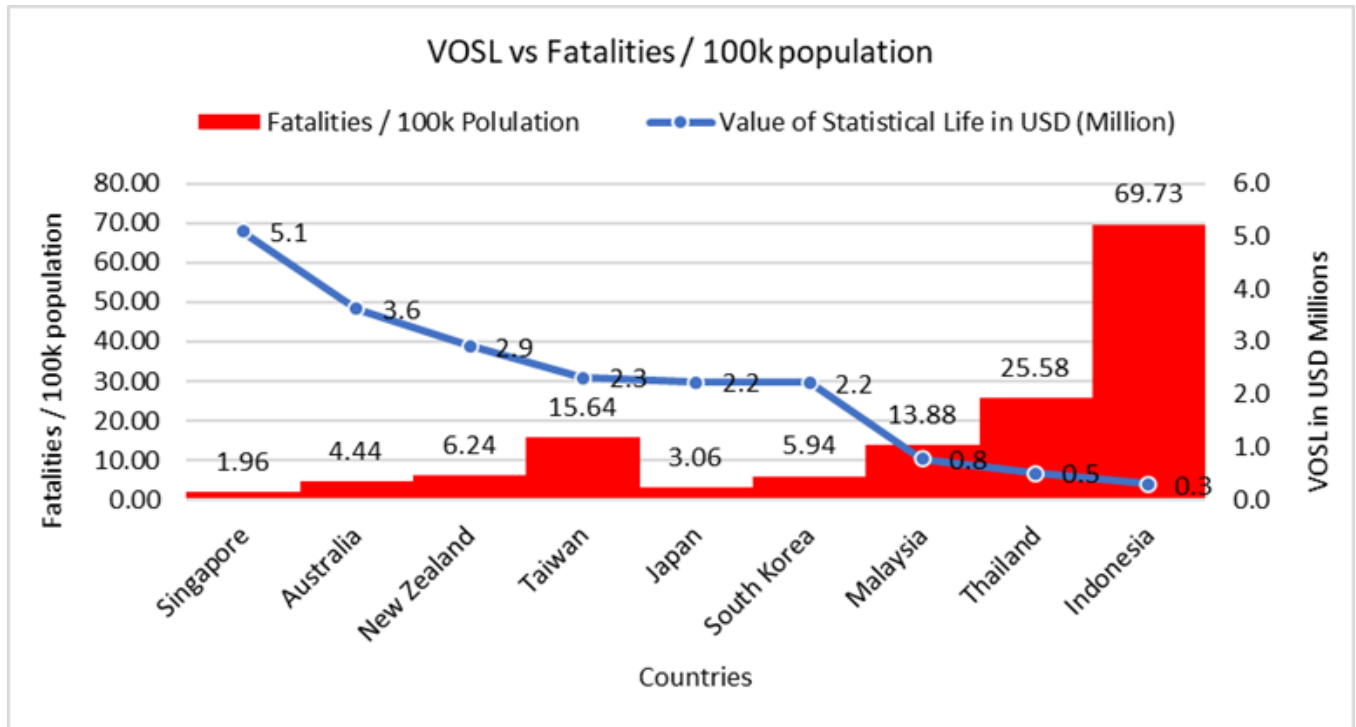



Figure 2: Comparison of Value of Statistical Life (VOSL) and fatalities per 100,000 population (2022)

Types of crashes

After matching the causes or fatal risk factors reported by each country, ‘speeding’ was the common causality factor in Australia, New Zealand, Thailand, Indonesia, and Malaysia. ‘Dangerous driving’ (e.g. abrupt overtaking, tailgating, etc.) was the major factor in Japan, Australia, Malaysia, and Thailand.

**Case Studies of VRU Countermeasures**

Case studies addressing VRU safety improvements were prepared by seven countries. An example of a non-exclusive motorcycle lane implemented in Malaysia follows.

	<p><b>Malaysia: PTWs</b></p>	<p>NEMCL is effective in reducing the occurrence of fatal crashes down from 1.7% to 0.2%, especially when the road is equipped with paved shoulders next to the NEMCL.</p>
	<p><b>Non-exclusive motorcycle lane (NEMCL)</b> The NEMCL is a 2 meters wide lane assigned for motorcycles. It is positioned on the left-hand side of a road and forms as part of the carriageway itself but painted marking provides separation for motorcyclists from other motorized vehicles. Currently, the total length of NEMCL in Malaysia is approximately 199 km and most of the NEMCL are located on the single-carriageway road.</p>	

## Implemented Guidelines, Programs or Countermeasures

Each country was asked to provide details of implemented guidelines, programs or countermeasures implemented for VRUs. This information will be provided in REAAA Technical Report No. 13, which will be issued early in 2024.

## Conclusions

The aim of this project was to determine the road infrastructure programs or road safety measures that are in place in REAAA member countries before addressing the problems pertaining to the groups of VRU, especially PTW. The following general conclusions can be drawn based on the general findings from the data presented by each country:

- Indonesia has the highest percentage of PTWs (84%), followed by Thailand (52%) and Malaysia (46%).
- Malaysia and Indonesia recorded the highest rate of fatalities (74% and 70%) for all types of PTWs, while the highest fatality rate for pedestrians is in Korea (35%) and Japan (31%).
- Korea has the highest fatality rate among the 30-60 years old group (78%), while for the young (16-29 years age group), Singapore had the highest fatality rate of 37%.
- High-income countries with high VOSL had a lower fatality per 100,000 population compared to the low- and middle-income countries.
- The main crash cause among the participating countries was ‘speeding’ and ‘dangerous driving’

Based on the case studies presented by the participating countries, only Malaysia has dedicated countermeasures for motorcycles (NEMCL), while Thailand is more focussed on proactive measures such as road safety audits. To ensure a safer environment for pedestrians and bicyclists, countries such as New Zealand and Korea use dedicated countermeasures to curb speeding and segregation. Among all the participating countries, Australia has the most comprehensive countermeasures, guidelines and programs for VRU and it is the only country that has established guidelines for micromobility devices.

# International Road Assessment Programme (iRAP)



## Greg Smith

International Road Assessment Programme  
greg.smith@irap.org; <https://irap.org/>



The International Road Assessment Programme (iRAP) is a registered charity dedicated to saving lives by eliminating high-risk roads throughout the world. Like many life-saving charities working in the public health arena, it uses a robust, evidence-based approach to prevent unnecessary deaths and suffering.

iRAP works in partnership with governments, road authorities, mobility clubs, development banks, NGOs and research organisations to:

- inspect high-risk roads and develop Star Ratings, Risk Maps and Safer Roads Investment Plans
- provide training, technology and support that will build and sustain national, regional and local capability
- track road safety performance so that funding agencies can assess the benefits of their investments.

iRAP has released its Plan for the Second Decade of Action for Road Safety to save 2,000,000+ people from death or injury, make 200,000+km of roads safer and influence USD\$200 billion of road infrastructure investment to save lives in the next 10 years. iRAP's Plan is aligned to the Global Plan for the Decade of Action launched in October 2021, of which achieving 3-star or better journeys is one of five key areas for action.

## Road Safety Toolkit

The Road Safety Toolkit provides free information on the causes and prevention of road crashes that result in death and injury. Building on decades of road safety research, the Toolkit has helped policy makers, planners, engineers and practitioners develop safety plans for car occupants, motorcyclists, pedestrians, bicyclists, heavy vehicle occupants and public transport users.

The Road Safety Toolkit was originally the result of collaboration between iRAP, the Global Transport Knowledge Partnership (gTKP) and the World Bank's Global Road Safety Facility (GRSF). Austroads and the National Transport Research Organisation (formerly ARRB) provided expert advice during the Toolkit's development. The Toolkit benefited from reviews and updates in 2021 funded by Bloomberg Philanthropies and undertaken by the GRSF with support from iRAP, the Global Road Safety Partnership (GRSP), the Towards Zero Foundation, Global NCAP, the Eastern Alliance for Safe and Sustainable Transport (EASST) and technical advisors.

Information about the Toolkit can be found at: [Road Safety Toolkit \(irap.org\)](https://irap.org/road-safety-toolkit).



### Star Rating for Road Safety Audits (SR4RSA) manual

To help ensure road designers can achieve Global road safety and performance targets and to ensure that roads are safe for everyone, a new Star Ratings for Road Safety Audits (SR4RSA) Manual will help policy makers and practitioners involved in designing, upgrading, and rehabilitating roads to meet safety targets and reduce injuries from traffic crashes.

The Manual supports the implementation of the Global Plan for the Decade of Action for Road Safety 2021-2030 which recommends the use of Road Safety Audits (RSA) and the iRAP methodology. The Global Plan recommends that national and local governments “Undertake road safety audits on all sections of new roads (prefeasibility through to detailed design) and complete assessments using independent and accredited experts to ensure a minimum standard of three stars or better for all road users”.

The Manual is part of a series of road safety engineering manuals of the CAREC Program that came from the endorsement of the CAREC Road Safety Strategy 2017-2030 by member countries. The strategy supports and encourages CAREC authorities to plan, design, construct, and maintain safe roads.

The Manual presents three approaches for how the RSA and iRAP methodology can be applied together during the design phases of a road project. The simplest approach makes use of the Star Rating Demonstrator, which can be used to prepare star ratings alongside road safety audits very quickly. The most advanced approach enables the production of enhanced metrics including star ratings, fatality and serious injury estimations and investment plans along with the audit.

The Manual was prepared under a technical assistance grant for Enhancing Road Safety for Central Asia Regional Economic Cooperation (CAREC) Member Countries (Phase 2) from the Asian Development Bank (ADB).

The new SR4RSA Manual is available for download at: <https://www.adb.org/publications/carec-road-safety-engineering-manual-star-ratings>.

# 27<sup>th</sup> World Road Congress



## Caroline Evans

Co-chair REAAA Climate Change, Resilience and Disaster Management Committee & Chair PIARC Technical Committee 1.4 Climate Change and Resilience of Road Networks

The 27<sup>th</sup> World Road Congress was held in Prague, Czech Republic, from 2<sup>nd</sup>–6<sup>th</sup> October 2023. Over 4,000 delegates (the largest number of delegates since the Congress in Mexico in 2011) attended the Congress including 2,000 students and 38 participants in the ministerial sessions. There were also 28 national pavilions and 229 exhibitors.

There were 74 sessions, including eight Plenary Sessions, two Ministers' Sessions (which addressed road safety and cycling), four keynote sessions, and opening and closing sessions. The main sessions included four Strategic Direction Sessions, 23 Technical Sessions and four 'Special Projects' Sessions, all of which were prepared by PIARC, 13 Foresight Sessions (organised with partners), and 16 Workshops (organised with partner organizations and/or PIARC's Technical Committees and Task Forces). In addition, there were six Poster sessions, National report sessions, and Terminology Committee demonstrations.

The program was very comprehensive, presenting the results of PIARC Technical Committees (TC) and Task Forces over the 2020-2023 working cycle, complemented by the outcomes of the call for papers addressing a total of 49 topics, including road safety, pavements, tunnels, etc. A meeting was also held during the Congress with key members from REAAA to discuss opportunities for enhancing collaboration between REAAA and PIARC, and the importance of continued work in the next term of 2024-2027.

In terms of relevance to the REAAA Climate Change, Resilience and Disaster Management Committee, issues addressed included:

- Resilience and adaptation to climate change:
  - Practical studies to increase the resilience of the road network
  - Climate change adaptation actions for road infrastructure
  - Cross-cutting issues of resilience and climate change.
- Disaster management:
  - Societal resilience involving disasters
  - Lessons learned from extreme natural events
  - How information technology can improve socio-economic resilience.
- More focused topics:
  - Road infrastructure asset management
  - Bridge resilience
  - Resilience and innovation of earth structures.

Key points from the Congress include the following:

- PIARC's Technical Committees presented 80 technical reports (a record) that were published throughout the 2020-2023 cycle.
- Strong involvement of private stakeholders.
- Strong involvement of PIARC partners, including the United Nations, US Transportation Research Board, ITF/OECD, World Bank, Asian Development Bank, iRAP, IRF, CEDR, and others.
- Geographical diversity across the globe with representation from USA, UK, Germany, Japan, Indonesia, Malaysia, Mexico, South Africa, Senegal and many others. Most REAAA member countries were represented at the Congress.
- Some emerging topics included: decarbonization of road transport, electrification, and gender inclusion and diversity in the road transport sector.

The main sessions on resilience and climate change were as follows:

- Session 1.4 – Climate Change and Resilience of Road Networks
  - Chair: Ms. Caroline Evans, Australia and Shafiq Alam, Australia – Chair of PIARC TC 1.4 'Climate Change and Resilience of Road Networks' and TC 1.4 Chair-elect
  - Organisers: Ms. Caroline Evans, Australia and Mr. Fernando Mendoza, Mexico – Chair and Secretary of PIARC TC 1.4 'Climate Change and Resilience of Road Networks'
- FS13 – Stress Tests Tool to Assess the Resilience of Road Asset to Climate Change Hazard
  - Chair: Ms. Teodora Popescu, France – Directorate General of Infrastructure, Transport and Mobility, France, and Vice-chair of the UNECE Group of Experts on Assessment of Climate Change Impacts and Adaptation for Inland Transport
  - Organiser: Mr. Lukasz Wyrowski – Sustainable Transport Division, UN Economic Commission for Europe (UNECE)
- Workshop 06 – Climate Change Adaptation Framework
  - Chair: Mr. Stuart Woods, New Zealand – Waka Kotahi NZ Transport Agency, Member of TC 1.4
  - Organiser: Caroline Evans, Australia – Chair of TC 1.4: Climate Change and Resilience
- Workshop 11 – Climate Change and Asset Management
  - Chair: Ms. Marie Colin, France – Cerema and Member of TC 1.4, and Rade Hajdin, Switzerland, Member of TC 3.3
  - Organisers: TC 1.4 and TC 3.3 Caroline Evans, Australia, Gerardo Flintsch, USA, and Pascal Rossigny, France – Chair of TC 1.4, Chair of TC 3.3 and Secretary of PIARC TC 3.3 'Asset Management'.

Conclusion reports outlining the key findings for each session are available on the PIARC website, Final Proceedings (<https://www.piarc.org/en/>).



# Joint REAAA-PIARC Meeting during PIARC Congress

## Dr. Keizo Kamiya

Chair REAAA Working Group on Pavement Technology

An informal meeting between REAAA and PIARC representatives was held during the recent PIARC World Road Congress in Prague. The participants included the following PIARC representatives: Mr. Nazir Alli, PIARC President; Mr. Patrick Mallejacq, PIARC Secretary General; and Jenny Cook, Technical Advisor – Strategic Partnerships and Promotion of Gender Inclusion and Diversity; and the following REAAA representatives: Dr. Keizo Kamiya, Chair of the REAAA Pavement Technology Committee; Dato Ir. Ibrahim bin Esa, Road Engineering Association of Malaysia (REAM); Ir. Sazali bin Harun, Malaysia Highway Authority; Mr. Hamzah Hashim, Chair of the REAAA YEP committee; Mr. Insoo Yeo, Korea Road Association (KRA); and Ms. Julia Agustine, Indonesia Road Development Association (IRDA).

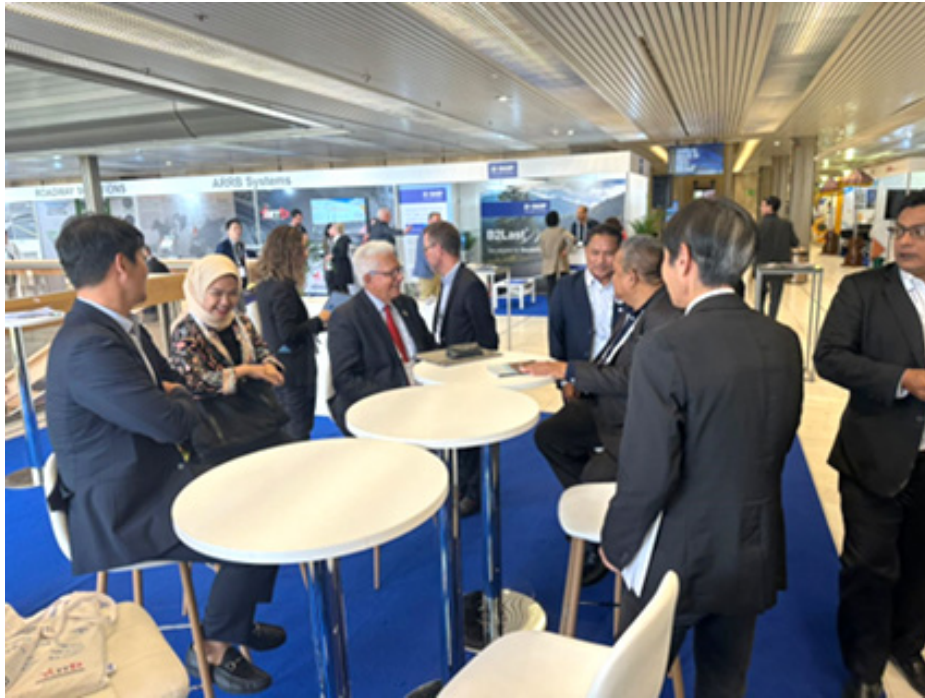
Both REAAA and PIARC confirmed the importance of continuing the collaboration work during the next PIARC cycle (2024-2027). The REAAA Technical Committee, chaired by Dr. James Grenfell, who succeeded Mr. Kieran Sharp as Chair in September, and the relevant PIARC Technical Committees will coordinate activities. To date, valuable collaboration has taken place in the areas of pavement technology, road safety, and climate change and resilience. This collaboration will continue with the respective Chairs of these REAAA Committees.

Along with the ongoing REAAA and PIARC TCs, REAAA will take steps to re-activate the International Committee. As well as continuing the cooperative work between PIARC and the International Road Assessment Program (iRAP), discussions will be initiated with the International Road Federation (IRF) and the UN ESCAP/Asian Development Bank. A member of the Governing Council will be appointed Chair of the committee.

To effectively promote this collaboration work, planning and scheduling will be discussed and coordinated and the Terms of Reference for the operation of the International Committee will be re-visited for approval by the Governing Council.

The Chairs of the PIARC Technical Committees will commence planning for the next four-year cycle in January/February 2024 with proposals and meeting schedules developed by PIARC. Ideally, the collaboration will include hosting a PIARC TC meeting at a future REAAA Governing Council meeting and involving PIARC in the next REAAA Conference, to be held in Seoul in October 2025.

The next REAAA Governing Council meetings are scheduled to be held in the Philippines in March 2024, Thailand in September 2024, and Japan in April/May 2025.







## Our **Mission**

To provide innovative and superior engineering solutions to government infrastructure projects through utilization of smarter, eco-friendly, and technologically-advanced approach backed by qualified industry experts and internationally approved processes.

## Our **Vision**

To be one of the leading engineering and infrastructure firm in the Philippines that provides a positive impact to an environmentally-conscious and resilient society.



# 50<sup>th</sup> REAAA Anniversary Celebration

The 50<sup>th</sup> REAAA Anniversary Celebration took place on 25<sup>th</sup> August 2023 at the Meruorah Hotel, Labuan Bajo, Indonesia. The golden jubilee of REAAA marked a significant milestone in its promotion and advancement of the science and practice of road engineering and related professions. To commemorate this milestone, REAAA, in collaboration with PIARC and organized by IRDA and Ministry of Public Works and Housing of Indonesia, organised a series of activities.

Over 500 guests gathered to celebrate the golden jubilee of REAAA. The event was attended by participants from countries including Indonesia, Malaysia, Thailand, Taiwan, Singapore, Japan, Cambodia, South Korea, Philippines, South Africa, Cambodia, Ethiopia, Australia, and Canada. The theme was "Connecting Golden Roads, Connecting Bright Future".

The 50<sup>th</sup> REAAA Anniversary Celebration event commenced with a welcoming performance of Indonesian traditional dance. The event was opened by Dr. Sung Hwan Kim, President of REAAA, and Dr. Mochamad Basuki Hadimoeljono, Minister for Public Works and Housing, Indonesia. A highlight of the event was the launching of a video including the establishment of the background of REAAA, interviews with senior REAAA members and their families, an REAAA event kaleidoscope, REAAA awards, and contributions from REAAA member countries. The video's success was made possible by the concerted efforts of individuals who worked tirelessly behind the scenes, and we express our sincere gratitude to everyone involved in this impactful video (video link: <https://www.reaaa.net/reaaa-golden-jubilee-50-years-celebration/>). Additionally, Mr. Richard Moh, representing China Road Federation, virtually participated in this celebration and announced the official launch of Swart Highway Award. The Award video was displayed at the gala dinner, which has been widely acclaimed. (Video link: <https://www.reaaa.net/smart-highway-award/>)

REAAA members were given the opportunity to showcase cultural performances and they certainly provided an enjoyable and entertaining moment

for all the participants present at the REAAA Anniversary Celebration. It included performances from Thailand (Thai folk performance and music), Japan (group vocal and modern dance), Indonesia (traditional Gambyong Pareanom dance), and group vocals from the Philippines, Malaysia, and Singapore collaborating with Taiwan. To add to the excitement, Dr. Mochamad Basuki Hadimoeljono, the Minister for Public Works and Housing, Republic of Indonesia, and Dr. Hedy Rahadian, Director General for Highways, and Vice President of REAAA, collaborated in an entertaining performance. These captivating performances successfully enlivened the atmosphere and amused all the participants.

The event closed with a spectacular performance from our guest star, Citra Scholastika, who was the runner-up in Indonesian Idol in 2010. Citra commanded the stage with a wonderful charisma, effortlessly hitting every song. Her connection with the audience was undeniable, as all the guests were singing along and dancing together. The highlight was when Citra performed some dangdut songs (a music genre originating from Indonesia) and invited guests to join her on stage and dance together. It was a night of magical performances.

The commemoration of REAAA's 50<sup>th</sup> Anniversary Celebration stands as a testament to the power of collaboration in driving positive change. This celebration is expected to foster connection and collaboration among countries in advancing international relations and cooperation to promote their respective nations, especially to improve road infrastructure and achieve sustainable transportation.

We hope the collaboration kindled by this celebration will continue to inspire each country to achieve our common goals and friendship.



Minister for Public Works and Housing, President of REAAA, President of PIARC, and representatives of REAAA member countries beat the Manggarai drums as a symbol of celebrating the 50 years of REAAA



HORA Meeting delegation leaders received plaques of appreciation from the Minister for Public Works and Housing, Indonesia



Souvenir presentation from Minister for Public Works and Housing to President of REAAA and President of PIARC



Dr. Sung-Hwan Kim, President of REAAA, delivered a welcome speech



Minister for Public Works and Public Housing engages in dialogue with delegate



Minister for Public Works and Public Housing interacts with the representatives of the countries





Mr. Richard Moh announced the official launch of Smart Highway Award



Smart Highway Award video was displayed at the gala dinner



Country performance from Thailand: Thai folk music with violin and guitar



Vocal group duet from Singapore and Taiwan singing "Can't Take My Eyes Off You" and Chinese song "The Moon Represents My Heart"



Vocal group performance from Malaysia singing "Dikir Puteri"



Vocal group and dance performance from the Philippines performed the songs "Sumayaw Sumunod" and "YMCA"



Individual dance performance from Indonesia with the traditional dance "Gambyong Pareanom"



Collaborative performance from Dr. Mochamad Basuki Hadimoeljono, Minister for Public Works and Housing Republic of Indonesia, and Dr. Hedy Rahadian, Director General for Highways & Vice President of REAAA



# 120<sup>th</sup> REAAA Council Meeting

The 120<sup>th</sup> meeting of the REAAA Governing Council was held on 25<sup>th</sup> August 2023, in Labuan Bajo, Indonesia. Attendees at the meeting included the President of REAAA, Dr. Sung-Hwan Kim, REAAA Honorary Secretary General, Ir. Mohd Shahrom Bin Ahmad Saman, REAAA Past President Dato Sri Ir. Dr. Judin Abdul Karim, REAAA Vice President Dr. Hedy Rahadian and Mr. Katsuji Hashiba, REAAA Honorary Treasurer Ms. Lydwina Marchiela Wardhani (Nonon), and Council members from Malaysia, Korea, Australia, Thailand, Taiwan, Singapore, Japan, the Philippines, and Indonesia.



Members at 120<sup>th</sup> REAAA Governing Council meeting

Mr. Toru Suzuki of the Express Highway Research Foundation of Japan was introduced as the newest Council member.



Mr. Toru Suzuki of Japan, the newest Council member

Ms. Nonon reported the current financial situation and presented the proposed 2024 budget. The proposed budget was approved by the Council.



The Honorary Secretary-General reported on the planning for the 50<sup>th</sup> anniversary of REAAA. He also reported that outstanding membership invoices have been sent to the Chapters and direct members for payment purposes and information updates. He also provided updates on the REAAA website, advertisement support, and other meeting reports.



120<sup>th</sup> REAAA Governing Council meeting

This session was followed by the Membership Promotion Committee report by Mr. Sugiyartanto. As of 15<sup>th</sup> July 2023, there were 1,126 members, including 36 honorary members, 388 life members, 585 ordinary members, four associate members, and 113 institutional members. Mr. Sugiyartanto reported that the membership had dropped by 327 over the four years.

The next report was presented by Dr. Maria Catalina Cabral, the Chair of the Advertising Committee, who was attending online. There are eight sponsors in 2023 from Japan, Taiwan, Malaysia, and the Philippines amounting to US\$17,500. Avenues for advertising include

technical reports, the Newsletter, and the REAAA website.



Mr. Richard Moh of MMA Consultants, who also attended the meeting online, presented an update on the progress of REAAA Newsletter. He reported that the first issue in 2023 had been published, and the plan is to release the second half-year issue on 1<sup>st</sup> February 2024.

Mr. Moh then presented the proposal for the Smart Highway Award, the aim of which is to promote cross-disciplinary integration and smart technology applications in road engineering. REAAA members will be recognized for their outstanding achievements and contributions to the development and application of smart technology in highway management and operation. The 'Call for Application for the Award' will be made in March 2024, one year prior to the conferment of the Award.



Mr. Toru Suzuki, the Acting Chairman of the Katahira and Mino Fund Committee, tabled the 2021-2023 financial statements. The plan is to present the Katahira Award and Mino Best Project Award during the 17<sup>th</sup> REAAA Conference, to be held in 2025 in Korea.

This was followed by the report from the Hwang Fund Committee. The 2<sup>nd</sup> Hwang Award will be presented at the 17<sup>th</sup> REAAA Conference in 2025 in Korea.

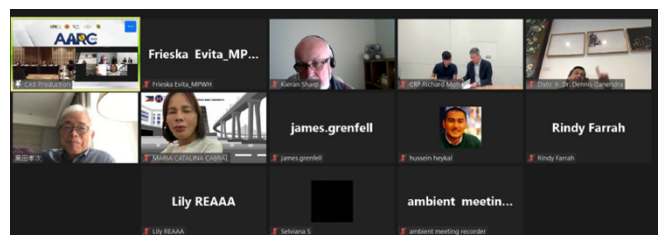


Dato Sri Ir. Dr. Judin Abdul Karim,  
Dr. Hedy Rahadian, Dr. Sung Hwan Kim

The Technical Committee report was presented by Mr. Kieran Sharp. It was agreed that Dr. James Grenfell would succeed Kieran as the Chair of the Technical by the end of 2023. Council moved a vote of thanks to Kieran for his work as Chair of the Technical Committee over the last 32 years.

Dr. Yusuf Adinegoro reported recent activities of the Young Engineers & Professional (YEP) committee, including the plan to develop a depository of technical presentations using Cloud storage, Google Drive, and Microsoft OneDrive. A procedure to administer the cloud storage, or storage at reaaa.net, will be developed.

Following the President's invitation to countries who were willing to host the 121<sup>st</sup> REAAA Council meeting between May and June 2024, it was agreed that the 122<sup>nd</sup> REAAA Governing Council Meeting would be hosted by the Roads Association of Thailand in the third quarter of 2024.



Some of the online participants attending the 2023 REAAA Governing Council Meeting



# 13<sup>th</sup> Head of Road Authorities Meeting

The Directorate General of Highways of the Ministry of Public Works and Housing Indonesia, Indonesia Road Development Association, Road Engineering Association of Asia and Australasia, and PIARC organised the 13<sup>th</sup> Head of Road Authorities (HORA) meeting in Labuan Bajo on 25<sup>th</sup> August 2023. The meeting was represented by members from Malaysia, Singapore, Taiwan, Korea, Japan, the Philippines, and the host country, Indonesia. The Director General for Highways of Indonesia acted as the Chairperson, while Professor Biemo W Soemardi of the Bandung Institute of Technology chaired the meeting.



(left to right) Mr. Miftachul Munir, Mr. Satrio Sugeng, Dr. Hedy Rahadian, Prof. Biemo Soemardi, Dr. Sung Hwan Kim

Attendees included HORA delegations, the Board of Directors from the Directorate General of Highways, and REAAA Council Members as observers.



HORA Delegates and REAAA Council members

Each HORA presented their experience on road administration based on the theme for this year's meeting, REAAA's Contribution to Member Countries. The theme was selected to commemorate the outstanding role that REAAA has played in the advancement of the road sector in the region over the past 50 years.



Chair Opening the meeting

Japan was represented by Mr. Shinichiro Nagao of the Ministry of Land, Infrastructure, Transport, and Tourism who presented "REAAA's contribution to Japan's road sector overseas business expansion". Malaysia was represented by Mr. Sazali Harun of the Malaysia Highway Authority who presented "REAAA's contribution to road development in Malaysia". Taiwan was represented by Dr. Jaw Chang Laiw of the China Road Federation who presented "Retrospect of Taiwan Freeway in 50 years (1970-2020)".



HORA delegates at the meeting

Mr. Chun-Woo Jung of the Ministry of Land, Infrastructure, and Transport of South presented “Road Policy of Korea” while Singapore was represented by Mr. Tong Kum Kong who presented “Building a Green Land Transport Ecosystem – the Singapore Experience”. Finally, Dr. Hedy Rahadian presented “REAAA contribution on Indonesia”.



HORA Delegates

and Papua New Guinea to attend as well; however, they were unable to attend.

The Director General for Highways expressed the wish that more countries could be represented in future HORA meetings. He outlined the plan for the next HORA Meeting to be held during the 17<sup>th</sup> REAAA Conference in Ilsan, Korea, in October 2025.

Following the presentations. The presentations were followed by a lively discussion. It was unanimously agreed that REAAA has played a significant role in promoting technology development in the field of road engineering in the Asia-Australasia region.



Delegates at the meeting

The session chair then invited the representative of the Cambodian government who was present at the meeting, Mr. Heng Kim Leng, to give his insight and impression of the meeting. The HORA meeting committee had tried to invite Timor Leste



# 24<sup>th</sup> REAAA Young Engineers & Professionals (YEP) Meeting

## Dr. Yusuf Adinegoro

Chair, 24<sup>th</sup> REAAA Young Engineers & Professionals (YEP) meeting

The 24<sup>th</sup> REAAA Young Engineers & Professionals (YEP) meeting was held on 23<sup>rd</sup> August 2023 in Labuan Bajo, Indonesia, in conjunction with the 120<sup>th</sup> REAAA Council Meeting, the 13<sup>th</sup> HORA Meeting, the 10<sup>th</sup> REAAA Business Forum, and the REAAA 50<sup>th</sup> Anniversary Celebration at the Asia Australasia Road Conference

The meeting was hosted by the Directorate General of Highways, Ministry of Public Works and Housing, Indonesia and in association with the Indonesian Road Development Association (IRDA). The appointed Chair of the YEP meeting, Dr. Yusuf Adinegoro from Indonesia, opened the meeting by providing guests with a historical overview of the YEP's establishment. Dr. Yusuf has been a core member of YEP from the beginning of 2014 and is still actively involved.

The topic of the meeting was 'Internet of Things in Road Design and Construction'. The meeting venue was set up in such a way that the meeting could be held in hybrid mode to ensure that each country's members could fully participate in YEP meeting. As part of the meeting's mandatory agenda, updates from each country were presented. The agenda allowed YEP members to share current activities with others and replicate them back home if applicable. There were 26 attendees from Singapore, Korea, Indonesia, Japan, Malaysia and Australia, Taiwan, and the Philippines participated virtually. Council members, the REAAA Secretary General, and the REAAA Secretariat were also in attendance.

The following reports on current activities in each country – in terms of policy, climate change, ongoing initiatives, and technology development – were presented:

- Malaysia: Mohd Uzed bin Mahmud – highest structure expressway in Malaysia
- Singapore: by Rongrong – transformative issues associated with managing projects in LTA, especially digitalization
- Japan: Hiromas Kobayashi – the Honshu-Shikoku bridge expressway
- Korea: Kwak Minju– details of the next REAAA Conference in Ilsan, Korea, in 2025
- Indonesia: Della Astari – update of AARC 2023
- Taiwan: Dr. Yu-Min Su – site visit to Tainan Northern Expressway Section II project
- Australia: Dr. James Grenfell – recent flood events in Australia and the use of recycled materials in stabilized pavements
- Philippines: Jayson – REAP on donating used items for the after-effects of a typhoon, and technical assessment of the capability of the YEP committee to organise regional technical conferences.

An ice-breaking session was held with all attendees and observers, and each delegate was given time to introduce themselves to the meeting. The REAAA Council Members and the Secretariat urged the YEP members to participate more actively in Technical Committee activities.

This was followed by the following technical presentations:

1. 'Internet of Things for road development (using big data, smart pavements-health check, building information modelling)' – Dr. James Grenfell (Australia)
2. 'Next generation expressway (adding new value to expressway spaces responding to the self-driving society, create expressway with the functions of new mobility services supporting future society sustainably)' – Go Hirochi, NEXCO-East (Japan)
3. 'Internet of things for road design and construction (3D mapping with LIDAR, 'scan & go' virtual reality by maximizing BIM, real-time project information portal GIS based, CCTC remote monitoring of maintenance works, video analytics for construction safety)' – Rongrong, Land Transport Authority (Singapore)
4. 'Laboratory frictional evaluation in thermoplastic pavement marking materials – Dr. Yu-Min Su' (Taiwan)
5. 'Disaster management of Kretek 2 bridge, Yogyakarta (This bridge is located in a disaster-prone area (earthquake, vault and liquefaction) but the bridge was designed and constructed by minimizing the risk of natural disasters, and equipped with sensors)' – Julian Situmorang, Directorate General of Highways, MPWH (Indonesia).

The meeting concluded with an offline and virtual photo session. The YEPs would like to express their appreciation to the host country for their exceptional venue arrangements and overall event planning.







# 10<sup>th</sup> REAAA Business Forum

The Road Engineering Asia Australasia Association (REAAA) is the foremost professional association for road engineering in the Asia-Pacific region. It has been a leader in supporting environmentally friendly road infrastructure and has backed the implementation of cutting-edge technologies to enhance road quality and safety and reduce adverse environmental impacts.

In celebrating its Golden Jubilee, REAAA, through the Ministry of Public Works and Public Housing (PUPR), in collaboration with the Directorate General of Highways and the Indonesian Road Development Association (HPJI) held a series of activities on 24<sup>th</sup>-27<sup>th</sup> August 2023 in Labuan Bajo, East Nusa Tenggara.

The Asia Australasian Road Conference 2023 (AARC) was attended by the Minister of Public Works & Public Housing of the Republic of Indonesia (PUPR), Mr. Basuki Hadimuljono, the Director General of Highways, Dr. Hedy Rahadian, the President of REAAA, Dr. Sung-Hwan Kim, the Coordinator of REAAA Business Forum Ms. Lydwina Marchiela Wardhani, and the Director of Operations I PT Hutama Karya (Persero), Mr. Agung Fajarwanto, who also chaired the Business Forum.

The 10<sup>th</sup> REAAA Business Forum was held on 25<sup>th</sup> August 2023 at the Meruorah Hotel, Labuan Bajo, Nusa Tenggara Timur, Indonesia. The aim of the Forum was to address the challenges associated with implementing Technology 4.0 in road infrastructure projects by providing a platform for discussing technical, financial, and policy aspects of adopting these technologies. The title 'Implementation of Technology 4.0 to Deliver Sustainable Road Infrastructure' was selected because it encompasses the two main themes of the forum – the role of Technology 4.0 in promoting sustainability, and the practical implementation of these technologies in delivering road infrastructure that benefits the community.



The Business Forum was sponsored by PT Adhi Karya (Persero), PT BAUER Pratama Indonesia, PT Hutama Karya (Persero), PT Semen Indonesia (SIG), and PT. Pembangunan Perumahan (PT. PP). The forum was opened by Ms. Lydwina Marchiela Wardhani, the Business Forum Coordinator followed by the chairman of the 10<sup>th</sup> REAAA Business Forum, Mr. Agung Fajarwanto. In addition to the keynote presentations and four other speakers and a speaker from Cambodia presented supported by the REAAA Fellowship Program through Minconsult, Sdn. Bhd.

<sup>1</sup> Industry 4.0 can be defined as the integration of intelligent digital technologies into manufacturing and industrial processes. It encompasses a set of technologies that include industrial IoT networks, AI, Big Data, robotics, and automation.



The forum was closed by awarding placards from The Coordinator of the REAAA Business Forum, Ms. Lydwina Marchiela Wardhani, and the Chairman of the REAAA 10th Business Forum, Mr. Agung Fajarwanto presented placards to all the speakers who had shared their material with the delegates.



Following the Business Forum, PT Hutama Karya (Persero) signed a Memorandum of Understanding (MoU) with Daewoo Engineering & Construction Co., Ltd, a construction company from South Korea, to work on a toll road undersea tunnel project at IKN Nusantara. The MoU was signed by the Director of Operations, PT Hutama Karya, Agung Fajarwanto, and the Senior Vice President, Overseas Marketing Development Team Daewoo, Dr. Sung-Hwan Kim.

With the implementation of the 10<sup>th</sup> REAAA Business Forum, it is hoped that this activity will be a catalyst for meaningful discussions, fruitful collaborations and the emergence of innovative ideas. We hope that everyone present will take advantage of this opportunity to imagine a future where technology and sustainability coexist harmoniously in our road infrastructure, and hope to see you all at the 11<sup>th</sup> REAAA Business Forum.

# Keynote Speakers and Technical Session: AARC 2023, Labuan Bajo

The Asia Australasia Road Conference (AARC) took place from 23<sup>rd</sup> to 27<sup>th</sup> August 2023, at Meruorah Komodo in Labuan Bajo, Indonesia. The conference theme was 'Advanced Technology Implementation Towards Sustainable Road Development'. The event was designed to foster the exchange of knowledge and experiences among both local and international experts and practitioners in the field of sustainable road infrastructure development, leveraging cutting-edge technology. Over the course of five days, the conference hosted a myriad of enriching discussions, insightful presentations, and valuable interactions among the 1,017 delegates hailing from 10 different countries. These exchanges furthered our collective understanding and commitment to shaping the future of road infrastructure.

One of the highlights of AARC 2023 was the Keynote Speakers and technical sessions, which featured a diverse range of technical discussions and keynote speeches delivered by industry leaders and experts. They illuminated the path to sustainable road infrastructure by exploring various topics, including investment opportunities, environmental sustainability, green financing, and the implementation of Technology 4.0 for resilient and intelligent road.



The Keynote Speaker sessions commenced with a presentation by Silvia Halim, Deputy for Infrastructure and Facilities at the Capital City Authority of Nusantara. The theme of her presentation was "Investment and Technology Opportunities in Indonesia's New Capital City". Dr. Sung-Hwan Kim, President of REAAA,



presented on the topic of “Environmental Sustainability in Road Infrastructure”. To conclude the keynote speaker session, Dr. Nazir Ali, the President of PIARC, delivered a presentation titled “Green Financing for Road Development”.



These presentations seamlessly transitioned into the technical sessions, where speakers invited by the AARC Committee took the stage. The Committee had a challenging task, as they received a total of 268 abstracts for consideration. By the deadline, they had diligently reviewed and assessed 127 papers submitted by authors from various parts of the world. Notably, most of the authors were from Indonesia (67%), followed by Japan (14%), Malaysia (10%), and Canada (3%), with contributions also from Ethiopia, Korea, Singapore, Spain, Taiwan, and Thailand. Out of the 127 papers evaluated, a remarkable 102 were chosen to present their work at AARC 2023.

The technical sessions were organized into the following seven topics, with each offering valuable insights and discussions:

1. New and innovative pavement design & maintenance/ road pavement recycling.
2. Road safety.
3. Resilience and disaster management for roads and climate change.
4. Geotechnics, bridges, and tunnels.

5. Transport and highway planning, geometric design of roads, and accessibility.
6. Transport administration and strategic improvisation of project management.
7. Asset management and digital technology in road networks.

Every session commenced with presentations from invited international speakers and also speakers from Indonesia.

## **Topic A: New and Innovative Pavement Design & Maintenance/Road Pavement Recycling**

Within the domain of new and innovative pavement design & maintenance and road pavement recycling, presentations delved deep into the realm of cutting-edge solutions. Discussion ranged from the utilization of the digital image correlation technique for in-depth analysis of bituminous mixtures, to the integration of warm mix asphalt and asphalt recycling for increased sustainability. These presentations showcased the remarkable advancements in pavement technology. Furthermore, speakers ventured into the realms of preventive maintenance and repair technologies, including the evaluation of a variety of materials for pothole patching, and considerations of walkability and user experience on pavement surfaces.





## **Topic B: Road Safety**

Road safety assumed a prominent role in another crucial topic. The collective endeavours to comprehend road accidents, enhance road safety campaigns, and implement intelligent road management systems are poised to pave the path toward safer journeys for all. With the incorporation of AI-driven adaptive equipment and the mainstreaming of iRAP methodologies, a future where road safety takes precedence is being actively pursued.



## **Topic C: Resilience and Disaster Management for Roads and Climate Change**

In terms of resilience and disaster management for roads and climate change, presentations underscored the vital importance of preparedness for the unexpected. Reported investigations into nature-based solutions, flood mitigation strategies, and wildlife management not only reflect the commitment to robust road infrastructure but also the dedication to resilience against both natural and man-made challenges.





## **Topic D: Geotechnics, Bridges, and Tunnels**

The geotechnics, bridges, and tunnels sessions provided valuable insights into the intricate aspects of designing, maintaining, and evaluating these crucial elements of road networks. Presentations addressed a range of topics, from innovative bridge inspection methods utilizing infrared technology to dynamic approaches for estimating cable forces. Through these discussions, knowledge of how to secure the durability and safety of these structures was enhanced.





## **Topic E: Transport and Highway Planning, Geometric of Roads, and Accessibility**

The discussions on transport and highway planning, geometric road design, and accessibility underscored the significance of efficient planning and design. Critical issues were addressed in these sessions, such as alleviating traffic congestion, assessing the impact of toll road networks on travel times, and the seamless synchronization of road functions to establish an integrated and accessible road network.



## **Topic F: Transport Administration and Strategic Improvisation of Project Management**

The presentations on transport administration and strategic improvisation of project management highlighted the importance of effective project management and administration. Presentations addressed a variety of strategies, including value engineering, the digitalization of construction progress monitoring, and the implementation of project management information systems. These approaches are essential to ensure the successful delivery of road projects.





## **Topic G: Asset Management and Digital Technology in Road Networks**

The sessions on asset management and digital technology in road networks highlighted the transformative impact of technology on road network management. Topics addressed included precision asset monitoring using mobile mapping systems, and the implementation of digital asset management for roads and bridges, all while considering the critical issue of climate change.

These discussions reflected the commitment to harnessing digital tools to optimize the performance and maintenance of road assets in the region.



## **Conclusion**

By the conclusion of this conference, delegates had been informed about advancements in pavement design, road safety measures, resilience strategies in the face of disasters and climate change, innovative geotechnical solutions, and the integration of digital technology into asset management. These invaluable insights will undoubtedly shape the path forward as we work toward a future where roads are not mere pathways but indispensable components of sustainable and thriving societies.

The depth and diversity of perspectives shared by delegates from various nations, the unity in purpose, and the shared commitment to the responsible development of road infrastructure reaffirmed the strength of the bond that binds the Road Engineering Association of Asia and Australasia.

It is hoped that this event can be the catalyst for continued collaboration, for the exchange of ideas that transcend borders, and for the drive to build a more sustainable and technologically advanced road network that will benefit generations to come.



## Technical Visit to Labuan Bajo during AARC 2023

Labuan Bajo is one of 10 prioritized tourist destinations incorporated in “10 Bali Baru”, an enterprise initiated by the Indonesian Government as a part of the “Wonderful Indonesia” campaign. Labuan Bajo is located on the westernmost tip of the Island of Flores, West Manggarai Regency, East Nusa Tenggara. Being a prioritized tourist destination, a well-constructed infrastructure had to be provided to optimize access. One example is the construction of the Labuan Bajo–Tanamori Road, which is 25 km long and divided into five segments: Labuan Bajo–Sp. Nalis, Sp. Nalis–Sp. Kenari, Sp. Kenari–Warloka, Warloka–Tanamori, and road improvements to the ITDC.

The development work occurred between April and November 2022. Erosion control using V-Ditches was implemented to prevent landslides and to control rain runoff. Geomat – a three-dimensional structure made of polymeric materials – was installed on the Labuan Bajo–Tanamori Road to protect the topsoil so that plants could grow without being displaced.

- a. Type I involved the use of woven coconut fibre, planted with legume cover crops vegetation using hydroseeding. The structure maintains the subsoil layer as well as the roots of the grass and plants to provide strength against rainfall and runoff.
- b. Type II involved reinforcing the soil using galvanized wire mesh which has a tensile strength of up to 40 kN/m

V-Ditch drainage was used on the Labuan Bajo–Tanamori road because of its quick construction process and ease of maintenance. Concrete with a quality of  $f_c' 15$  MPa was used in the construction of the drains.

AARC 2023 provided an opportunity for delegates to participate in a technical visit, which was held on 27<sup>th</sup> August 2023. Among the visitors were the President of PIARC, Mr. Nazir Alli, as well as participants from many countries, including Thailand, Philippines, Singapore, Korea, Malaysia, Japan, and Australia.







The Underpinnings of Road Safety:

# People and Technology

We position technological capabilities as a business foundation. To conduct effective and efficient operations such as maintenance inspection, it's our permanent mission to improve and develop our technology.

We, Central Japan Highway Engineering Nagoya Co., Ltd., as a member of the NEXCO Central Group, contribute to the sustainable development of society by ensuring safe, reliable and comfortable expressways through conducting everyday inspections and maintenance.



[“https://www.c-nexco-hen.jp/en/”](https://www.c-nexco-hen.jp/en/)



# Dato' Ir. Dr. Dennis Ganendra Receives Coveted RAE International Fellowship for Outstanding Engineering Contributions



*Subheadline: The CEO of Malaysian based Minconsult is the only Asian to be awarded by The British Royal Academy of Engineering this year*

**PRESTIGIOUS FELLOWSHIP AWARDEE is Dato' Ir. Dr. Dennis Ganendra - British ROYAL ACADEMY OF ENGINEERING**



**Dato' Ir. Dr. Dennis Ganendra**

September 20, 2023: The British Royal Academy of Engineering (RAE) awards the prestigious RAE International Fellowship to Dato' Ir. Dr. Dennis Ganendra. This Fellowship is the highest honour bestowed by the RAE and recognises Dato' Ir. Dr. Dennis Ganendra's exceptional contributions to Engineering, including his commitment to and continuing high deliverables in innovation, infrastructure projects, policy, and academic advancement.

Dr. Ganendra is the only Asian among the group of eight international fellows appointed this year. Dr. Dennis Ganendra is also a Fellow of the: Institution of Civil Engineers, UK; Institution of Engineers (IEM), Malaysia; Institution of Highways and Transportation; Academy of Sciences Malaysia (ASM); and a Climate Action Fellow of the UN Global Compact – Network Malaysia.

He is the Chief Executive Officer of Minconsult Sdn Bhd, a leading engineering consultancy firm, headquartered in Malaysia. ([www.minconsult.com](http://www.minconsult.com)). With over 30 years of multi-disciplinary engineering project experience, his portfolio includes numerous award winning local and international projects. His visionary execution and nation building initiatives continue to shape the industry, benefitting societies through transformative change. He is also the Founder of pioneering renewable energy contractor, Timeless Green Sdn Bhd.

He joins the luminary group of international fellows that includes: Steven Chu FREng, Nobel Prize in Physics, Stanford University; John Hennessy FREng, ex-President of Stanford University; Pioneer of RISC; Frances Arnold FREng, Nobel Prize in Chemistry, Caltech.

**The Royal Academy of Engineering (RAE)** is UK-based and created by Royal Charter. The RAE is dedicated to promoting engineering excellence and advancing the engineering profession. Its charter provides that: *"The object of the Academy shall be the pursuit, encouragement and maintenance of excellence in the whole field of engineering to useful purpose in order to promote the advancement of the science, art and practice of engineering for the benefit of the public and economy"*.



Prince Philip House, Royal Academy of Engineering, London St. James'

**END OF RELEASE**

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## E39 Setiawangsa-Pantai Expressway

The Setiawangsa - Pantai Expressway (SPE) or known as DUKE 3 is a 32 long km expressway that connects from Taman Melati to Kerinchi. As for now, only Section 4 which is from Setiawangsa to Taman Melati has been operating since December 2021 and expected to be fully completed and open to public in 2023.

Elevated highway at SPE



Noise Barrier at SPE



Solar Panel at Batu Toll Plaza



Tun Razak Link

## E33 Duta-Ulu Kelang Expressway

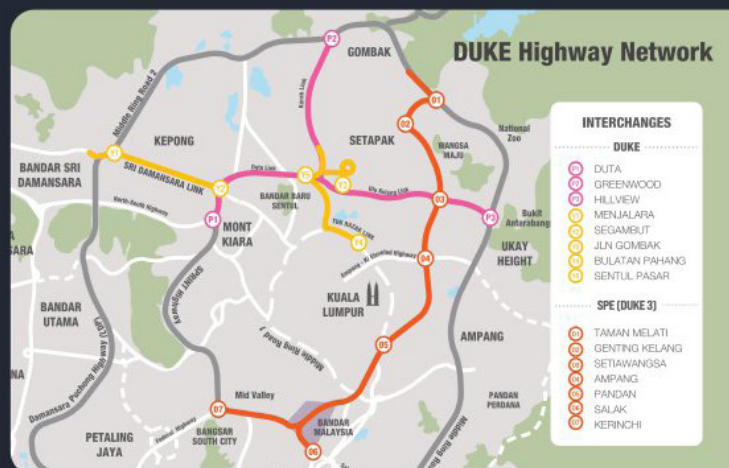
34 km long expressway known as Duta - Ulu Kelang Expressway (DUKE) has started the operations since 2009. This is the 'missing link' of the Kuala Lumpur Road Master Plan. DUKE highway connects the north and east of Kuala Lumpur (Jalan Duta to Ampang) and to the east coast via the Karak link.

In 2017, the DUKE Highway Phase 2 was opened to users by introducing two more additional links which known as Sri Damansara Link (SDL) and Tun Razak Link (TRL) which connect the existing DUKE Highway to Sri Damansara / Sungai Buloh and Jalan Tun Razak.

DUKE is a complement to the Middle Ring Road (IRR) of Kuala Lumpur, connecting the NKVE Expressway, the SPRINT Expressway and also the Middle Ring Road 2 (MRR2) in Ulu Kelang. The benefits obtained by using DUKE is to enjoy a fast and comfortable journey at the same time saving travel time.

### CONTACT US AT

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## Meet Dr. James Grenfell



At the recent meeting of the REAAA Governing Council, members endorsed the appointment of Dr. James Grenfell as the new Chair of the REAAA Technical Committee. James replaced Mr. Kieran Sharp, who had been the Chair of the Technical Committee since 1991 following the retirement of Professor John Metcalf, who took up a position at Louisiana State University.

James is a Principal Professional Leader at the National Transport Research Organisation (NTRO). He has more than 20 years of experience in the field of transportation engineering. Since 2020 he has worked within the Sustainability and Materials Performance team at NTRO.

Bringing with him his pavement engineering and materials expertise, Dr. Grenfell is the NTRO/NACOE Stream Leader for Sustainability which is undertaking projects looking at the use of recycled materials, sustainable solutions and decarbonisation in transport infrastructure. He was involved in a major project undertaken jointly for NACOE and WARRIP to investigate the use of recycled and reclaimed plastic in safe, sustainable future road infrastructure. He recently completed work as project lead on an Austroads project. 'The use of crushed glass in road infrastructure', which developed a specification for recycled crushed glass sand. He has also led work for Major Road Projects Victoria to develop a specification for plastic noise walls and has been involved in projects to develop specifications for plastic pipes and recycled organics. Previously, he was working within the Pavement Structures Team as part of Future Transport Infrastructure, having joined NTRO in February 2017. His work focused on projects for improving the cost effectiveness of foamed bitumen-stabilised pavements and increasing the use of low-cost modified granular materials in new and rehabilitated pavements.

Before joining NTRO, Dr. Grenfell spent 13 years as a researcher at the Nottingham Transportation Engineering Centre at the University of Nottingham in the UK. During this time, he worked on, and managed, various projects related to pavement materials, including the permanent deformation and fatigue properties of asphaltic materials, moisture damage in asphalt pavements, adhesion of bitumen to aggregate, warm mix asphalt technologies, the use of crumb rubber and recycled asphalt, and alternative binders. His main research interests are the fundamentals of adhesion, moisture damage of asphaltic materials, recycling, and the use of secondary materials.

Dr. Grenfell has published more than 100 journal papers and peer-reviewed conference papers. He is a Director-at-large of the International Society of Asphalt Pavements, a member of the Editorial Board for the Proceedings of the Association of Asphalt Paving Technologists, and a member of the TRB committee AKP30, 'Asphalt Pavement Design and Rehabilitation'. He is involved in several RILEM Technical Committees looking at bituminous and asphaltic materials. He is also a member of Standards Australia Committee CE-012 'Aggregates and Rock for Engineering Purposes'. Dr. Grenfell won the Category 2: Industry Excellence in Consulting, Research or Education award for the National Design Procedures for Lightly Bound Cemented Materials in Flexible Pavements at the 9th AustStab Awards of Excellence in 2021.

The title of his Ph.D. thesis was 'The effect of microalloying on the microstructure and mechanical properties of  $\gamma$ -based titanium aluminides'. This work focused on the relationships between microstructure and mechanical properties, the application being the replacement of heavier steel parts in aero-engines.

James is married with two children and lives in Melbourne.

In September 2021, Kieran Sharp was a co-recipient – along with the late Tan Sri Dato' Ir. Dr. Wan Abdul Rahman Bin Wan Yaacob – of the inaugural Hwang Award for his ongoing commitment and dedication to REAAA.

## YBrS. Ir.Sazali Harun



We are pleased to share that the Honourable Minister of Works Malaysia, YB Dato Sri Alexander Nanta Linggi, has announced the appointment of YBrS Ir Sazali Harun as the new Director General of Malaysian Highway Authority (MHA) with effect from 8<sup>th</sup> May 2023. It is our honour and pleasure to extend our sincere congratulations and best wishes on this appointment.

We look forward to working closely with him and his esteemed organisation to further strengthen our cooperation and partnership at all levels. We are confident that with his vast experience the industry, we will be able to tap much of the potential and opportunities to deepen our cooperation in many areas for our mutual benefit. REAAA once again wishes YBrS Ir Sazali Harun every success in all his endeavors!



Congratulation to Director- General Malaysian Highway Authority

## YBHG. DATUK IR. AHMAD REDZA BIN GHULAM RASOOL

REAAA is gratified to inform members that the Government of Malaysia has appointed YBhg. Datuk Ir. Ahmad Redza Bin Ghulam Rasool as Director General of Public Works Department (PWD) Malaysia effective on 5 January 2023. The letter of appointment was presented by YBhg. Tan Sri Dato' Seri Mohd Zuki Bin Ali, Chief Secretary to the Government of Malaysia. With this appointment, YBhg. Datuk Ir. Ahmad Redza Bin Ghulam Rasool is assuming the post of Vice President of REAAA. For local association, YBhg. Datuk Ir Ahmad Redza bin Ghulam Rasool has been elected as President of Road Engineering Association of Malaysia (REAM) for the term 2023-2025 during REAM AGM in July 2023.

YBhg. Datuk Ir. Ahmad Redza Bin Ghulam Rasool's appointment is based on merit, leadership and extensive experience in the engineering field, project management, asset management and had served as PWD State Director, Senior Director for Centre of Excellence for Engineering & Technology and his previous appointment was Deputy Director General (Infrastructure Sector) of PWD Malaysia.

REAAA would like to express its heartfelt congratulations to YBhg. Datuk Ir. Ahmad Redza Bin Ghulam Rasool, Director General of Public Works Department (PWD) Malaysia. Congratulations on his well-deserved promotion and it is very overwhelming to have him in REAAA.





# Honorary Secretary General, Ir. MOHD SHAHROM BIN AHMAD SAMAN

## promotion in PWD Malaysia

REAAA is very pleased to announce the appointment of YBrs. Ir. Mohd. Shahrom Bin Ahmad Saman as the Senior Director of the Centre of Excellence for Engineering & Technology, Public Works Department Malaysia effective from 7<sup>th</sup> February 2023. This is a promotion from his previous appointment as Director of Road and Bridge Engineering, PWD Malaysia.

His appointment is based on his vast technical experience in road and highway engineering in PWD Malaysia in particular of road safety engineering. He also actively contributed to producing many technical documents related to road safety including introducing road safety audit courses in Malaysia. He was also a member of PIARC technical committee for many years in various disciplines of road engineering. With this credential, also he was appointed as Honorary Secretary General of REAAA for the term 2021- 2025.

His latest appointment in PWD Malaysia shows recognition of his expertise and contribution towards road engineering in Malaysia, REAAA is honoured to have his experience and credentials in our team.

Congratulations!



## YBHG. DATO' IR. IBRAHIM BIN ESA

REAAA is delighted to announce the appointment of YBhg. Dato Ir. Ibrahim bin Esa as the Senior Director of the Road Division, PWD Malaysia effective from 7<sup>th</sup> February 2023. This significant appointment was commemorated with the formal presentation Letter of Appointment by Director General of Public Works Department (PWD) Malaysia. His previous appointment was as Director of Road Maintenance Division of PWD Malaysia.

Furthermore, please join us in congratulating YBhg. Dato Ir Ibrahim bin Esa is our REAAA Council Member as he has been re-appointed as Secretary General, Road Engineering Association of Malaysia for the new term 2023-2024. This appointment reflects his exceptional dedication and expertise in the REAM and road engineering fraternity in Malaysia, and we look forward to his valuable contributions to REAAA.

Congratulations!



## Meet New CRF President – Mr. Wen-Juei Chen

REAAA is delighted to announce the appointment of Mr. Wen-Juei Chen as the new President of the China Road Federation (CRF), effective 5<sup>th</sup> December 2023. We convey our warm congratulations on his prestigious appointment.

Currently serving as the Director General of Taiwan's Highway Bureau at the Ministry of Transportation and Communications, Mr. Chen is recognized for his expertise and dedication in road and highway engineering. His selection highlights his outstanding skills and commitment in this domain.

Since its inception in 1960, the CRF has been instrumental in supporting Taiwan's government with road construction, transportation, research, and skill development, while also collaborating with global road organizations like IRF and REAAA. For over past six decades, CRF's collaborative efforts across various sectors in Taiwan, greatly improving the nation's road and transport systems in terms of efficiency, safety, fairness, and sustainability. In line with the 2050 net zero emissions goal, the CRF proactively manages carbon emissions in road projects to support environmental sustainability. Additionally, it also seeks to enhance international collaboration by sharing Taiwan's innovative approaches in road transport development globally.

Under President Chen's leadership, the CRF is set to leverage resources from both public and private sectors, along with emerging digital technologies, to spearhead the digital transformation of roads, aiming towards the goal of digital highways.

REAAA is privileged to incorporate Mr. Chen's expertise and experience into our organization. We look forward to the upcoming collaboration with Mr. Chen and the respected CRF team.





# Building inspired cities

For four decades, IJM's Construction Division has been the indisputable cornerstone of our success story. With a track record that speaks volumes, we take pride in consistently delivering solutions that strike the balance between quality, functionality, cost and efficiency.

When we construct buildings that change skylines; when we build houses that people come home to; when we build bridges, roads and rail systems that connect communities; and when we work with our stakeholders as thought leaders to shape the industry, we deliver possibilities to reshape better landscapes that inspire a better tomorrow.

As we celebrate our 40<sup>th</sup> anniversary, we reflect on the countless possibilities we have brought to life. Each endeavour is driven by our resolute vision and unwavering commitment to excellence, propelling us forward to leave a lasting impact on the world around us.

*BESRAYA Highway*



# Calendar of Events

Date	Event	Place	Type	Remarks
5 <sup>th</sup> - 7 <sup>th</sup> March 2024	121 <sup>st</sup> REAAA Governing Council Meeting 25 <sup>th</sup> YEP Meeting	Conrad Hotel Manila, The Philippines	Meeting	Physical Meeting
4 <sup>th</sup> - 6 <sup>th</sup> September 2024	122 <sup>nd</sup> REAAA Governing Council meeting 26 <sup>th</sup> YEP Meeting 11 <sup>th</sup> Business Forum	Bitec Convention Center, Bangkok, Thailand	International Conference & Meeting	Physical Meeting  Theme: Future- proofing Roads for Asia and Beyond
Middle of April 2025	123 <sup>rd</sup> REAAA Governing Council meeting 27 <sup>th</sup> YEP Meeting 13 <sup>th</sup> Business Forum	Japan	Meeting	Physical Meeting
27 <sup>th</sup> - 31 <sup>st</sup> October 2025	124 <sup>th</sup> & 125 <sup>th</sup> REAAA Governing Council meetings 17 <sup>th</sup> REAAA Conference 17 <sup>th</sup> REAAA General Meeting 28 <sup>th</sup> YEP Meeting 14 <sup>th</sup> HORA Meeting 13 <sup>th</sup> Business Forum	Ilsan, Korea	International Conference & Meeting	Physical Meeting

The program is updated according to the decisions taken.

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# REAAA WELCOMES NEW MEMBERS

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The membership of REAAA as of 15<sup>th</sup> Jul 2023 was 1126. The REAAA Council and Chapters have approved the following 9 new members for the period between 31<sup>st</sup> March to 15<sup>th</sup> Jul 2023.

<i>Institutional</i>	3
<i>Life</i>	1
<i>Ordinary</i>	5
<b>TOTAL</b>	<b>9</b>

The list of new members approved at the 120<sup>th</sup> REAAA Council Meeting in Labuan Bajo, Indonesia on 24<sup>th</sup> August 2023 is as follows:

## Institutional Members

1.	Chye Joo Construction Pte Ltd	I.0390 Singapore
2.	KH Road Maintenance Sdn Bhd	I.0391 Malaysia
3.	Masterpave Sdn Bhd	I.0392 Malaysia

## Status Changed from Ordinary to Life Members

1.	Prof. Dr. Wong Shaw Voon	O.3844 to L.0438 Malaysia
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## Ordinary Members

1.	Ts. Dr. Khairil Azman Bin Masri	O.3912 Malaysia
2.	Ms. Wida Nurfaida S.T., M.T.	O.3913 Indonesia
3.	Ir. Satrio Sugeng Prayitno, MM	O.3914 Indonesia
4.	Ir. Budi Harimawan Semihardjo, M.Eng. Sc	O.3915 Indonesia
5.	Dr. Ir. Nyoman Suaryana, M.Sc.	O.3916 Indonesia