



## Safer Motorcycling

### The Global Motorcycle Industry's Approach to Road Safety

Including a compendium of industry-led best practices in safety and transport policy and awareness, training and education.





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## **ABBREVIATIONS LIST**

**ABS** – Anti-Lock Braking System

**ADAS** – Advanced Driver Assistance Systems

**AHO** – Automatic Headlamp-On

**ARRB** – Australian Road Research Board

**ASEAN** – Association of Southeast Asian Nations

**CBS** – Combined Braking Systems

**C-ITS** – Cooperative Intelligent Transport Systems

**CMC** – Connected Motorcycle Consortium

**FHWA** – Federal Highway Administration, USA

**FIM** – International Motorcycling Federation

**IPR** – Intellectual Property Rights

**IRF** – International Road Federation

**IRTAD** – International Road Traffic Accident Data group

**IRTE** – Institute of Road Traffic Engineering, India

**ITARDA** – Institute for Traffic Accident Research and Data Analysis, Japan

**ITS** – Intelligent Transport Systems

**LMIC(s)** – Low and Middle-Income Countries

**MAIDS** – Motorcycle Accidents In Depth Study, Europe

**MIROS** - Malaysian Institute for Road Safety Research

**NHTSA** – National Highway Traffic Safety Administration, USA

**OECD** – Organisation for Economic Co-operation and Development

**OEM** – Original Equipment Manufacturer

**OISEVI** – Ibero-American Road Safety Observatory

**PPE** – Personal Protective Equipment

**PTI** – Periodic Technical Inspection

**PTW** – Powered Two and Three Wheelers

**UNECE** – United Nations Economic Commission for Europe

**UN SDGs** – United Nations Sustainable Development Goals

**UNRSC** – United Nations Road Safety Collaboration



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# PREFACE

IMMA recommends this document for use by the global institutions, safety managers and policy makers as a valuable resource for developing holistic Powered Two-Wheeler (PTW)<sup>1</sup> safety and transport policies at global, regional and national level. This will help public administrations realise the objectives of the 'Vision Zero' approach which is now increasingly accepted as the overarching philosophy for traffic and transport safety.

Work by industry, governments and other stakeholders has resulted in notable improvements in the number of PTW fatalities per 10,000 vehicles in circulation in most countries. This relative reduction must be seen against a background of a large increase of the PTW circulating parc during the same period. In other words, the risk for an individual user of having an accident on a PTW has fallen significantly, despite fatality numbers remaining unacceptably high.

Road safety strategies should be focused on a progressive improvement of traffic policy and vehicle technical standards while still ensuring affordability and adaptability considering the specific local context: too many countries still lack even the most basic road standards.

This paper sets out four stages in policy making which, if adopted, comprise an effective, realistic and sustainable opportunity to address PTW safety.

Countries are encouraged to study the best practices established in this document and evaluate their adoption and implementation while considering the specific needs of their region. In regions with a relatively high use of PTWs, safety policy development should be directed at further enabling sustainable PTW use, recognising that PTWs are vitally important in terms of affordability, mobility, the economy and the environment.

In the back of this document you will find a feedback form. We would be very pleased to receive your comments.



A handwritten signature in black ink, appearing to read 'J. Loman'.

Johannes Loman  
President



A handwritten signature in blue ink, appearing to read 'E. Bastiaensen'.

Edwin Bastiaensen  
Secretary General

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<sup>1</sup> The term "Powered Two-Wheeler" (PTW) covers a wide diversity of vehicles. The products are divided into different segments such as moped, scooter, street, classic, super-sport, touring, custom, supermoto and off-road PTWs and tricycles. In international regulatory environment, PTWs fit under the term vehicles of category L. IMMA represents mopeds, PTWs and three-wheelers. Therefore, IMMA refers to PTWs as Powered Two and Three Wheeled Vehicles.



## ABOUT IMMA

The International Motorcycle Manufacturing Association (IMMA) represents the manufacturing industry of powered two wheelers (PTWs) at global level. IMMA represents a major part of the worldwide manufacturing of PTWs.

IMMA, as *the* trusted global voice of PTW manufacturers, promotes mobility through safe, sustainable motorcycling. This is achieved by the development and harmonisation of technical regulations affecting the PTW industry and by advancing inclusive policies for motorcycling.

In addition to the activities of IMMA members in their respective regions and countries, IMMA has made key contributions in various road safety networks and forums, such as the International Traffic Safety Data and Analysis Group (IRTAD), plus the OECD and International Transport Forum (ITF). In 2013, IMMA joined the United Nations Road Safety Collaboration (UNRSC). For over 50 years, IMMA has been a strong contributor to the work of the UNECE Inland Transport Committee (ITC), in particular the work of the World Forum for the Harmonization of Vehicle Regulations (WP.29) and the Global Forum for road traffic safety (WP.1).



*An assembly line in Austria. Workers are employed around the world in motorcycle manufacturing.*

IMMA's core business is the negotiation of global international legislation on the construction and use of powered two wheelers. IMMA enables the industry to speak with one voice at all levels. Membership comprises the following associations:



### Regional association members

- **The Motorcycle Industry in Europe (ACEM – [www.acem.eu](http://www.acem.eu)):** representative of the industry in Europe with members from Austria, Belgium, Czech Republic, France, Germany, Greece, Italy, Ireland, the Netherlands, Poland, Romania, Spain, Sweden, and United Kingdom.
- **The Federation of Asian Motorcycle Industries (FAMI – [www.fami-motorcycle.org](http://www.fami-motorcycle.org)):** representative of the industry in South and East Asia with members from Indonesia, Japan, Malaysia, the Philippines, Republic of China (Chinese Taipei), Thailand and Vietnam.

### National manufacturing members

- **The Society of Indian Automobile Manufacturers (SIAM – [www.siam.in](http://www.siam.in))**
- **The United States Motorcycle Manufacturers Association (USMMA)**
- **The Brazilian Association of Manufacturers of Motorcycle, Moped, Bicycles and Similar – (Abraciclo – [www.abraciclo.com.br](http://www.abraciclo.com.br))**

### Associated members

- **The Federal Chamber of the Automobile Industries (FCAI – [www.fcai.com.au](http://www.fcai.com.au)),** representative of the industry in Australia
- **The Motorcycle and Moped Industry Council (MMIC - [www.mmic.ca](http://www.mmic.ca)),** representative of the industry in Canada

# SUMMARY

Increasing numbers of PTWs are being used across the world. This document looks at various ways in which this increase can be achieved in a safe and sustainable manner, whilst continuing to allow the full benefits of PTW use.

IMMA proposes that policymakers use a Four-Stage Strategy when looking to improve the safety of PTWs. These Four Stages are:

- Stage 1. PTWs must be positively included in public policy
- Stage 2. Road infrastructure must be designed and maintained with PTWs in mind
- Stage 3. Effective and affordable training and education
- Stage 4. Harmonised vehicle requirements and technology advances

IMMA also sets out various other suggestions for improving road safety for PTW users, such as ensuring a wide range of stakeholders are involved in discussions, better data collection and tailoring campaigns to local needs. Industry is keen to play a part in an integrated approach alongside other stakeholders.

**This document calls upon governments across the globe to take a strategic approach to PTW safety, actively involving all relevant stakeholders and using accurate, standardised data to inform and support any policy decisions. The approach should take into account the specifics of PTW characteristics and their specific use. Countries are encouraged to study the best practices established in this document and implement these according to the specific local and regional needs.**



# 1 INTRODUCTION



*A flexible means of transport taking up little parking space. (Vietnam)*

Increasing numbers of people in both developed and Low and Middle Income Countries (LMICs) are choosing to use Powered Two Wheelers (PTW). To secure safe and sustainable use of this low-polluting and low-congesting mode of personal mobility, transport planning policies at all levels must integrate PTW use and recognise the benefits of PTWs in society, business and emergency transport.

According to the Global Status Reports on Road Safety by the WHO, the proportion of PTW user fatalities increased from 23% to 28% of all traffic fatalities globally between 2013 and 2016. Urgent action is needed to reverse this trend. It should however be noted that the fatality rate within the overall PTW parc improved as the number of total vehicles increased

IMMA, as the global voice of PTW manufacturers, promotes safer and sustainable PTW use through advocating the development and harmonisation of technical regulations affecting the PTW industry and by advancing inclusive policies. Road safety is an inherent part of the motorcycle business.

Continuous technological development has allowed manufacturers to significantly improve the safety and environmental performance of their vehicles while keeping them affordable according to circumstances in the region. Technical features such as Automatic Headlamp On (AHO), Combined Braking Systems (CBS), Anti-Lock Braking Systems (ABS), or Start-Stop Systems, are becoming more widespread in several regions as prosperity is growing. Manufacturers are also promoting safety through a variety of training, educational and communication activities.

An encouragement to develop and implement comprehensive legislation and policies on PTWs was also made in the recent UN Resolution A/72/L.48 'Improving global road safety', 6 April 2018<sup>2</sup>.

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<sup>2</sup> <http://undocs.org/A/72/L.48>

The need to improve and develop specific road infrastructure solutions for PTWs was recently further recognized in a series of PTW safety roundtable meetings, organized with the support of the Road Safety Forum WP.1. Infrastructure solutions such as dedicated PTW lanes or advanced stop lines need to be further explored.

In regions where there are already millions of PTW users, safety policy development should be directed at further enabling sustainable PTW use. The objective should be to maximise opportunities to ride on roads, which will be safer, while recognising that PTWs continue to remain vitally important in terms of affordability, mobility, the economy and the environment.

## 1.1 PURPOSE OF THIS DOCUMENT

IMMA's goals in this document are:

1. To improve motorcycle safety and by doing so, allow governments, administrations and society to benefit fully from the contribution that PTWs make to transport, mobility and the economy.
2. To prompt global, regional and national policy makers to consider PTW inclusion in strategic traffic and transport policies.
3. To demonstrate that an integrated approach, involving multiple stakeholders and taking account of local situations, is essential for improving PTW safety.
4. To promote key tools and instruments which enable PTW safety policies.
5. To improve rider skills and the promotion of training and education.
6. To promote harmonisation of vehicle requirements in the context of the UNECE World Forum for Harmonization of Vehicle Regulations (WP.29) and to advance the development and implementation of traffic policy under the Global Forum for Road Traffic Safety (WP.1)
7. To foster a healthy competitive environment across the global PTW industry and promote the development and use of state-of-the-art technologies.
8. To support forums establishing standards and methodologies, e.g. on accident data collection and analysis.
9. To support and contribute, through all the above, to the UN's Global Sustainable Development Goals.

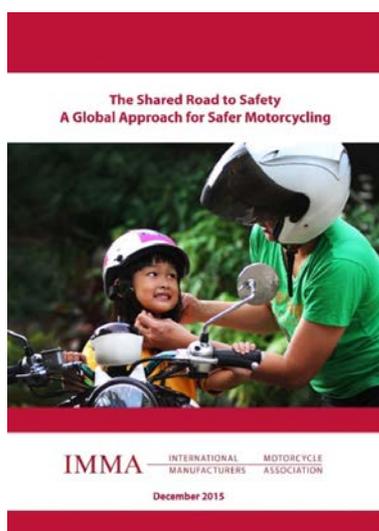
## 1.2 INTRODUCTION TO THE FOUR-STAGE STRATEGY

As a single key recommendation, IMMA calls for the adoption of The Four-Stage Strategy. A brief overview of this strategy is described below and more detailed examples can be found in chapter 3. The Four-Stage Strategy promotes road safety by: focussing on the positive inclusion of PTWs in national, regional and international transport policy; encouraging rider-friendly infrastructure policy; supporting lifelong training and education; and investing in safety related technological developments.

The Four-Stage Strategy's integrated perspective aims to deliver improvements at a holistic level rather than limiting changes to a single area of transport or safety policy. Working in partnership, with all stakeholders involved in PTW safety and policy, is essential to ensure that a holistic rather than a 'piecemeal' approach is taken.

Rather than taking a 'one size fits all' approach, the Four-Stage Strategy emphasises the local and regional context of transport, development and urbanisation, all of which affect the particular circumstances of PTW users and industry. By doing this, public authorities will have the greatest chance of securing safety improvements while at the same time realising the PTW opportunity that exists in relation to transport networks and citizens' mobility.

### Stage 1. PTWs must be positively included in public policy



*IMMA's Road Safety White Paper, 2015 edition.*

The promotion of PTW usage in transport policy can have a considerable impact on reducing congestion, and can bring economic gains through access to jobs, social mobility and even healthcare in LMICs where other transport modes are unavailable, impractical or too expensive.

PTWs should be integrated into policies and initiatives aimed at creating a safer environment for road users and addressing vulnerabilities shared by all users of two-wheeled transport (including cyclists). For example, a strong need for parking facilities for PTWs has been identified in many regions, especially near public transport hubs enabling door-to-door travel.



*Powered Two Wheelers in various mixed traffic situations (South-East Asia, India and Brazil)*

The social and economic benefits of PTWs include:

- The provision of affordable mobility solutions, especially in low personal income economies
- Reduction of congestion and pollution
- Increasing overall transport efficiency
- Mobility provider in urban, rural and remote areas
- Delivery of public services, including healthcare
- Enablers of business
- Increasing social inclusion and the engagement of young people
- Enabling access to areas affected by emergencies, such as natural disasters
- The PTW industry and its supporting sectors creating economic growth and employment
- The social and economic contribution of PTW sport, tourism and leisure

To facilitate an exchange of views on the required policy-making for including PTWs, IMMA and their members contribute to global policy making discussions and periodically organise road safety conferences in the regions to promote best practices.

## Stage 2. Road infrastructure must be designed and maintained with PTWs in mind

In many LMICs, uneven and damaged road surfaces have an important negative impact on PTW safety. However, even in developed countries, safety issues caused by poor infrastructure persist. Examples include badly positioned or unnecessary street furniture, visibility at junctions, potholed roads, dangerous crash barriers and raised divides on roundabouts.

- There is an urgent need to study possibilities for further improvement and promote the wider adoption of successful practices. The need to improve road infrastructure for PTWs, especially in LMICs, was recently recognised in a series of PTW safety roundtable meetings in 2015, 2016 and 2017, organized with the support of the Global Road Safety Forum WP.1.
- The conditions for the most effective PTW friendly infrastructure solutions that increase the road capacity and safety by creating a homogenous traffic flow, such as dedicated PTW lanes, advanced stop lines and access of PTWs to bus lanes need to be further researched, evaluated and promoted.

## Stage 3. Effective and affordable training and education

IMMA supports both pre- and post-license-test training for PTW riders. It is also crucial that other road users have an appreciation of the dangers of misjudging the speed or behaviour of a PTW rider – including the common error of failing to see an approaching PTW.

- Training for all types of license holders should include awareness of the characteristics and behaviours of other vehicles and their users.
- Initial rider training for novice riders, prior to their acquisition of a licence, should be encouraged and made available in countries where this option is not provided.
- Resources and infrastructure are needed for PTW training and education, especially in countries where the volumes of PTW usage exceed automobile usage by far.
- Improve the quality of the available training schemes: Minimum standards and certification of training and trainers should be introduced. Training should be designed to enhance PTW safety by putting rider's hazard awareness and perception at the core of the training curriculum.
- Promote lifelong training and voluntary post-licence training.
- Targeted mandatory components on the interaction between drivers/riders and perception of PTW riders should be a part of the training curriculum and licensing assessments of other vehicle drivers.



*Motorcyclists being trained (Thailand)*

Other measures linked to safety and education include:

- Impaired riding: Improving attitudes of riders towards safer and risk-free behaviour (inappropriate riding, alcohol, tampering, riding without a proper PTW licence) through awareness campaigns combined with appropriate and consistent enforcement.

- Helmets: The usage rate of safety helmets should be brought to 100% through a mix of targeted enforcement and safety awareness campaigns, geared towards local conditions. It is essential that targeted enforcement is only used as part of wider actions to engage riders in safety awareness in a positive way. Awareness should also be raised of the importance of ensuring the correct size, fitment and fastening of helmets.



*There is increasing awareness on the benefits of PPE (India)*

- PPE: The promotion of the benefits of proper personal protective equipment (PPE) amongst riders should be done in line with riders' specific needs, local context and climate conditions. Implementing certification procedures contributes to ensure the availability in the market of appropriate safety equipment for riders and passengers such as gloves, jackets, trousers and boots.

#### **Stage 4. Harmonised vehicle requirements and technology advances**

The industry is fully committed to the research and development of PTW safety technologies. When vehicle requirements related to new technologies are considered, IMMA emphasises the importance of addressing these through WP.29, for the harmonisation of vehicle technical regulations.

With appropriate consideration for the economic conditions of each vehicle market, manufacturers promote technologies suitable for the road conditions and usage patterns of the customers in each country or region.

It should be remembered that providing PTWs with additional options or technologies, or introducing a vehicle specific regulation, is not on its own enough without a strong and continued integrated policy involving rider behaviour, training and infrastructure.

To ensure and preserve fair, free and open competition, governments need to ensure clear vehicle requirements, which include the appropriate safety performance requirements for new vehicles in their country. Such vehicle requirements should preferably be based on international regulations established under or derived from the World Forum for Harmonisation of Vehicle Regulations (WP.29).

Contracting Parties to the UN instruments<sup>3</sup> under the Word Forum benefit from the uniform system of technical regulations for vehicles, equipment and parts and apply those international regulations suitable for their needs in their territories. The recent updating of the 1958 Agreement will create unprecedented benefits for countries that are not yet involved in the global forum to increase their safety standards, in conformity with their regional conditions.

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<sup>3</sup><http://www.unece.org/fileadmin/DAM/trans/main/wp29/wp29wgs/wp29gen/wp29pub/WP29-BlueBook-4thEdition2019-Web.pdf>

## 1.3 FURTHER RECOMMENDATIONS

Further recommendations towards a comprehensive PTW friendly policy are:

### Safe System Approach

Growing PTW traffic makes it imperative to adopt safety interventions targeting this mode of transport, while integrating it into a safe system approach. The safe system approach recognises that road users can make mistakes or take inappropriate decisions.

- The role of the system is both to minimize the production of these errors and to protect road users from death and serious injuries when errors occur<sup>4</sup>.

### Need for an integrated stakeholder approach

Improving the safety of PTWs should be a shared responsibility. Safer riding requires the involvement of all road traffic stakeholders: not only riders themselves but other road users, public authorities and governments, research institutions, national road infrastructure designers and local city planners.

- IMMA recommends the organisation of periodic PTW safety conferences both globally and regionally or nationally to evaluate progress and promote best practices.

### Need for accurate and harmonised data collection and benchmarking

Reliable road safety data is essential for the understanding, assessment and monitoring of the nature and magnitude of road safety problems and related solutions. It informs the setting of achievable safety targets, plus the design and implementation of effective safety policies and measures.

- To allow meaningful comparisons between country safety performances and evaluation of best practices in policy making, common methodologies should be applied for the collection of harmonised data, performance indicators and exposure data. Through benchmarking, many lessons can be gained from the analysis of a country's performance and policy in relation to practices in other countries especially when they are at the same level of development.
- Establishing common causes of accidents through in-depth accident investigations will allow stakeholders to understand causes and identify solutions.
- Data underreporting numbers of PTWs, their use, crashes and casualties are a significant problem and needs to be addressed in all regions.

### Actions tailored to local situations

Strategies, campaigns and activities aimed at safer riding will be most effective if they have the acceptance of the local public and riders.

- Measures need to be tailored to local traffic needs and local, national and regional constraints.

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<sup>4</sup> Improving Safety for Motorcycle, Scooter and Moped Riders, OECD/International Transport Forum, 2015 (<http://dx.doi.org/10.1787/9789282107942-en>)

## 2. POWERED TWO-WHEELERS AS A GLOBAL MOBILITY SOLUTION

### 2.1 SUSTAINABLE DEVELOPMENT AND PTW USE

In all regions of the world, increasing numbers of people are living in cities. The UN projects this trend will continue in the coming 40 years, with rural populations increasing only in Africa and Oceania. This development will exacerbate the problem of traffic congestion, parking provision and the inability of traditionally accepted alternatives to solve this problem.

In developed regions, use of PTWs will continue to grow due to:

- Their ease of movement in crowded urban environments
- Smaller parking areas needed
- Reduced environmental footprint
- Benefit of a personal door-to-door solution
- Low cost of use

In rapidly growing cities, public transport is not always well organised, adequate, or reliable. Average incomes are increasing, along with the need for personal mobility solutions. If PTW users were to switch in large numbers to public transport, existing systems would in some cases risk becoming overwhelmed.

In LMICs, PTW usage is expected to continue to grow steeply, due to:

- Their low purchase cost and low fuel consumption relative to personal income profiles
- Limited public budgets and the lack of flexibility in public transport systems remaining obstacles
- The increasing need for personal mobility solutions for commuting as a result of economic development.

These trends have implications for mobility, infrastructure and urban planning. Any increase in the use of PTWs can be linked to public policy agendas of increasing decarbonisation, improving air quality, and developing e-mobility schemes. This makes sustainable development important both to the PTW industry and to IMMA.

Recent developments in public policy now place cycling at the forefront of a wider strategy to encourage non-automobile modes of transport. This has been done despite cycling having a challenging road safety record. Measures to improve cycling safety to encourage use are now central to public policy. This example for another vulnerable road user group illustrates an acceptance that safety is not a good reason to fail to support a mode of transport if wider benefits



*Congestion beating solutions require attentive driving by all involved (Brazil)*

to society can be realised. PTW use offers an even broader range of social and economic benefits, therefore the policy tools applied to cycling use must also be applied to PTW use. This will unlock greater opportunities for public authorities to invest in PTW safety under mainstream transport policy.

The following examples demonstrate that embracing the PTW in public policy could help mitigate traffic congestion and meet other challenges of urban mobility.

### **Belgium, Europe: benefits of switching from automobiles to PTWs**

A 2012 study by the University of Leuven found that if just 10% of drivers swapped their automobiles for PTWs, their time spent in traffic would decrease by 40%. When 25% of automobile drivers switched, congestion was eliminated entirely. The time benefits on the Belgian highway network were estimated at 50 M€/ year.

### **Paris, Europe: 100 million additional km travelled by PTWs**

A study revealed that 100 million additional passenger km were made by PTWs in 2007 compared to 2000. The increase was due to the shift from public transport (53%) and private automobiles (26.5%). The shift resulted in a positive cost/benefit ratio with a €115 million improvement in prosperity. This switch to PTWs occurred through natural modal shift and not as the result of any campaign by the public authorities. The study concluded that, compared to the bus and other public transport, PTWs are a mode of transport which lend themselves to the high flexibility requirements of individuals' mobility.



*Innovations in vehicle stability and design has attracted new users to PTWs (Europe)*

### **Brazil, Latin America: PTWs supplementing public transport**

As in many Latin American countries, the use of PTWs continues to increase. According to the IRF, in 2016, 27% of all registered road vehicles in the country were PTWs. Buying a PTW instead of using public transport is more common (60%) than for pleasure/leisure (19%) or as a mode of transport for reaching work (16%). 10% of people use PTWs instead of their automobile. The boom can be also explained by the increase in purchasing power, availability of credit, and the fact that two-wheeled vehicles are relatively inexpensive and agile for congested city streets (OECD - ITF Joint Transport Research Centre draft Report "Safety of Powered Two Wheelers", 2014). This kind of modal shift has been shown to increase public transport capacity, so providing opportunities to decrease automobile use (See Pierre Kopp<sup>5</sup>).

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<sup>5</sup> [http://www.uetr.eu/en/upload/docs/IPOL\\_STU2018629182\\_EN.pdf](http://www.uetr.eu/en/upload/docs/IPOL_STU2018629182_EN.pdf)

## Japan, Asia: Park and Ride facilities for PTWs

As cities and local transport authorities are strongly investing in mass public transportation services, there is an additional and increasing need for adequate PTW Park and Ride facilities at public transport hubs. PTW use fills gaps in the public transport system and provides connections for the 'last mile'. An increase in such parking facilities will also result in eased traffic congestion and improved road safety.

In Japan, motorcycles are subject to parking violation enforcement. PTW parking availability contributes to safe and convenient road use. However, responses to a JAMA survey show that motorcycle users in urban areas in Japan continue to have difficulties in finding parking space and are demanding increased PTW parking availability.

Results of JAMA's fiscal 2017 domestic motorcycle market trends survey showed that the most prevalent (at 30%) use of motorcycles is for commuting to work or school. Nevertheless, more than half of the survey respondents residing in Tokyo affirmed that motorcycle parking availability is inadequate, particularly around train stations, in city centre areas, and in expressway service areas.

Results of a JAMA fiscal 2014 survey on the status of motorcycle parking measures taken by local administrative bodies showed that in some municipalities, motorcycle parking space demand had been effectively met through the provision of PTW parking space using vacant public land along roads, etc.



*Need for increasing the number and capacity of PTW Park and Ride facilities (Japan)*

## 2.2 THE WIDER SOCIETAL BENEFITS OF POWERED TWO-WHEELERS

Besides driving economic growth, PTW use also contributes towards wider economic and social goals. In many cases, PTWs are core to the delivery of essential public services.

### ‘Mototaxi’ or bike-taxi



*Increased use of PTW for delivery services (Thailand)*

‘Mototaxi’ or bike-taxi services are a common form of public transport. Different names exist in the regions and the services provided can vary per region as well as the type of vehicles that are predominantly used. The use of PTWs as commercial vehicles has substantially increased in several major cities over the past decade, particularly in LMICs. These types of flexible and affordable delivery and mobility services have emerged to address the problems of traffic congestion, hot weather, or simply for convenience. Riders will often offer a variety of services such as taxi or delivery providing a maximum of flexibility.

The use of PTWs as commercial vehicles has substantially increased in several major African cities over the past decade. Similar services also exist in South East Asia and in some countries in Latin America.

This phenomenon has also been observed in European regional and capital cities, including Barcelona and Paris, where small logistics deliveries provided by PTWs and ‘Mototaxi’ or bike-taxi fleets are common.

Mototaxi services should be developed according to appropriate safety procedures, emphasizing the importance of ensuring the safety of both riders and passengers.

## Social inclusion and mobility

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PTWs can offer a means to lessen social exclusion, particularly that caused through unemployment. PTW use can allow people to access work, training or education in areas of the world where public transport is unreliable, automobiles unaffordable, and commuting by bicycle unrealistic or impractical.

### Wheels-2-Work scheme

**UK, Europe:** Since it began in 2002, the scheme has given several thousand, mainly young, people the means to travel to work. This programme focuses on loaning mopeds to people in mainly rural areas, who would not otherwise be able to get to and from work.

### Motorcycle Ownership Programme

**Indonesia, Asia:** After one year of service, the employer will offer to convert each permanent employee's transport allowance to ownership of a motorcycle. Most employees will choose to convert, due to the greater benefits of having their own transport. The company will hold the Vehicle Ownership Document for four years, after which it will be given to the employee.

## Healthcare delivery

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*First aid can be delivered quickly with a motorcycle (Japan)*

PTW couriers delivering health care services and relief, often sponsored by industry, are common in various countries and regions.

## Motorcycle Outreach

**Indonesia, Asia:** A healthcare logistics project on the island of Flores provides small PTWs for use by healthcare workers in remote rural areas where roads are poor or non-existent. The ability for basic services to be provided via PTWs (to a population of over 50,000) has seen a dramatic improvement in basic healthcare indicators since 2002<sup>6</sup>.



**Motorcycle Outreach**  
healthcare needs delivery

## Blood Bikes

**UK, Europe:** “Blood Bikes<sup>7</sup>” have been a feature in the UK since 1969. In recent years the number of blood bike groups has grown significantly and there are now more than 1400 advanced qualified rider volunteers of the Nationwide Association of Blood Bikers (NABB). There are also other associations and charity foundations with similar objectives including delivery of human tissue such as organs. There are times when blood, or other medical items need to be transported urgently because a patient’s life is at risk. A “blood bike” can be relied upon to respond quickly and move with ease through busy traffic. Good practice is promoted among volunteer riders, who need to hold an advanced riding qualification to ride on a marked-up “blood bike”. According to NHS Blood and Transplant, volunteers delivered 1.32% of all the units of blood moved in 2015 (29,300 blood units).

## Motorlance

**Thailand, Asia:** In Thailand, which is well-known for traffic congestion especially in urban area, PTWs have been used for medical support or ‘motorlance’ since 1993 by Royal Thai Traffic Police. The traffic police are granted first-aid training enabling them to assist injured persons including taking them to hospital as quickly as possible. Motorlances are equipped with first-aid kits and necessary medical tools for emergency childbirth. As of October 2016, they have provided assistance to 11,989 sick or injured persons in a variety of situations and more than 145 cases of delivering babies.

## Natural disaster relief

Even where there are blocked roads, collapsed buildings and mountains of debris, PTWs can negotiate rough road conditions and cramped spaces. PTWs are used to send messages and information, to transport injured people, to deliver basic supplies, and to conduct numerous emergency relief activities immediately after quakes, volcanic eruptions and other natural disasters.

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<sup>6</sup> <http://www.motorcycleoutreach.org>

<sup>7</sup> <http://www.bloodbikes.org.uk/index.php/why>

### Delivery of mobile health services after an eruption

**Indonesia, Asia:** In 2010, the eruption of Mount Merapi in Indonesia affected a multitude of small villages including Jumoyo Village with a total number of 7,376 inhabitants. PTWs were used for rapid delivery of mobile health services.

### Help with relief after earthquakes

**Japan, Asia:** PTWs also provided significant support after the Great Hanshin Earthquake (1995), the Great East Japan Earthquake (2011) and the Kumamoto Earthquake (2016). The authorities and large numbers of volunteers used PTWs in these crises because of their greater mobility. Moreover, when the gasoline supply network failed, the subsequent severe fuel shortages meant that highly fuel-efficient PTWs proved extremely valuable.



*Motorcycle delivers aid after a natural disaster (Japan)*

## Rural PTW use

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Convenient and affordable transport services that allow rural residents to reach markets and basic services are essential. Access can be delivered through a variety of modes. Motorcycles and motorcycle taxis and ambulances are among the primary means of doing so, forming an important part of the rural economy in many countries.

As various crash causation studies clearly confirm that rural roads pose significantly higher risk than urban roads, there is a high need and urgency to upgrade rural infrastructures. This will also benefit other vulnerable road users such as bicyclists and pedestrians (Global Mobility Report 2017).

## Police, defence and enforcement services

PTW use by public authorities and defence forces remains widespread worldwide. The characteristics of PTWs lend themselves to a range of duties such as escort, communications, emergency assistance, enforcement (particularly in congested traffic), crowd control and rapid response to emergency situations. Police officers have reported feeling more approachable by members of the public and PTWs can have a more high-profile appearance when undertaking certain duties.



*Use of Powered Two Wheelers by law enforcement officers  
(Germany, Spain, Brazil, USA, Thailand, India)*

## Sport and Leisure

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Professional, off-road and amateur PTW sport is followed by millions of enthusiasts and communities around the globe. Sporting activities are structured in hundreds of motoclubs and federations around the world, most of them under the umbrella of the International Motorcycling Federation (FIM). PTW use for sport and leisure brings personal benefits such as stress reduction, social interaction with others, and the individual, or shared, pleasure of riding.



*An increase in female usage of motorcycles is observed in many markets (USA)*

## Motosharing

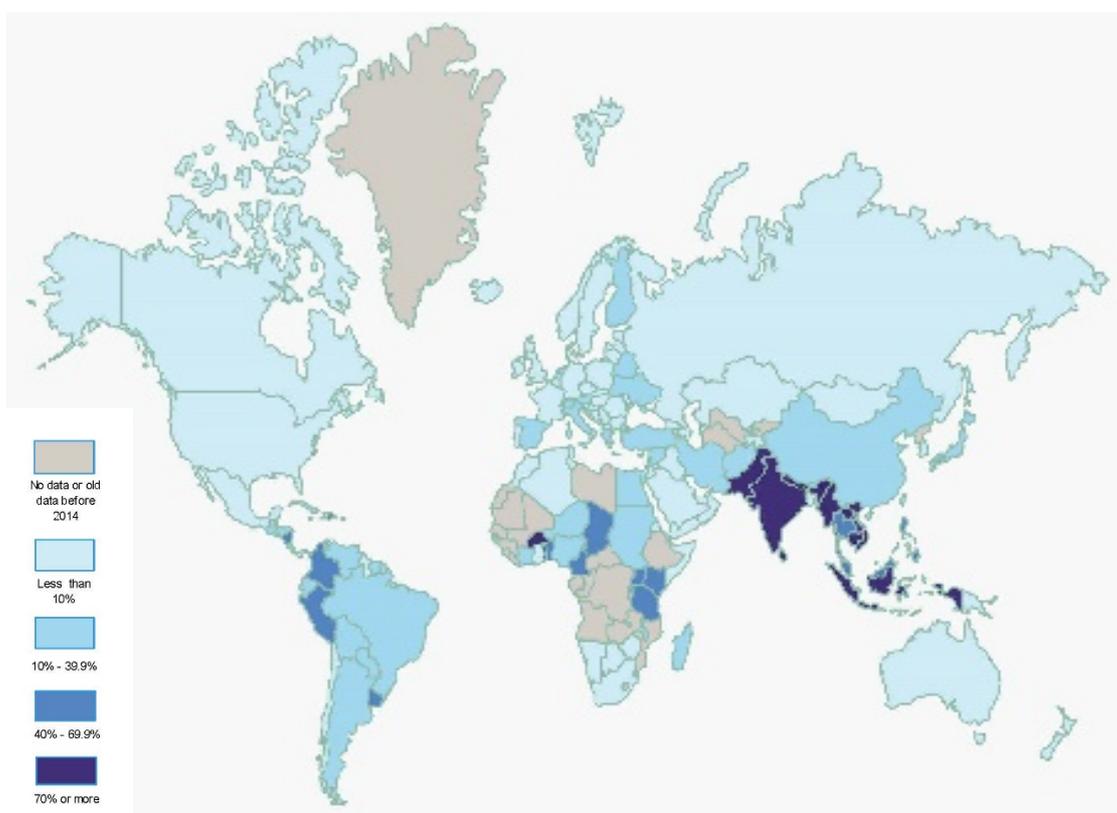
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Renting a motorcycle for relatively short periods of time is showing an upward trend in many cities and is becoming a popular alternative to the use of private vehicles and public transportation. This service allows the users to use a motorcycle at any moment by simply using a software application, during the time needed and then leaving it for its use by the next customer.

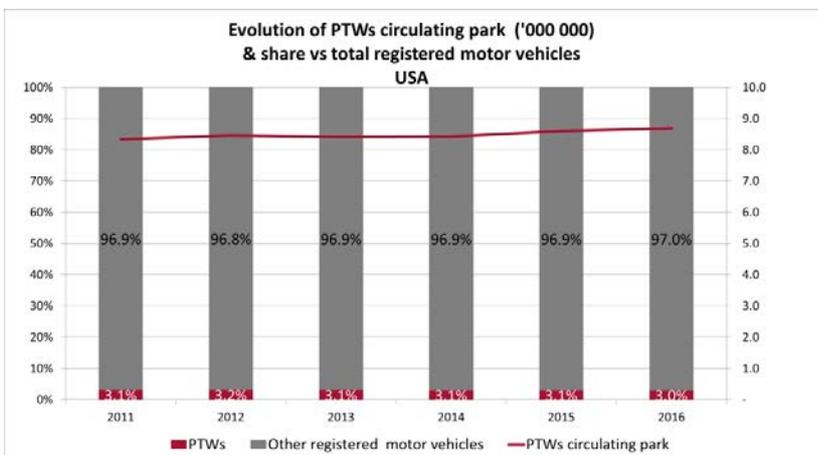
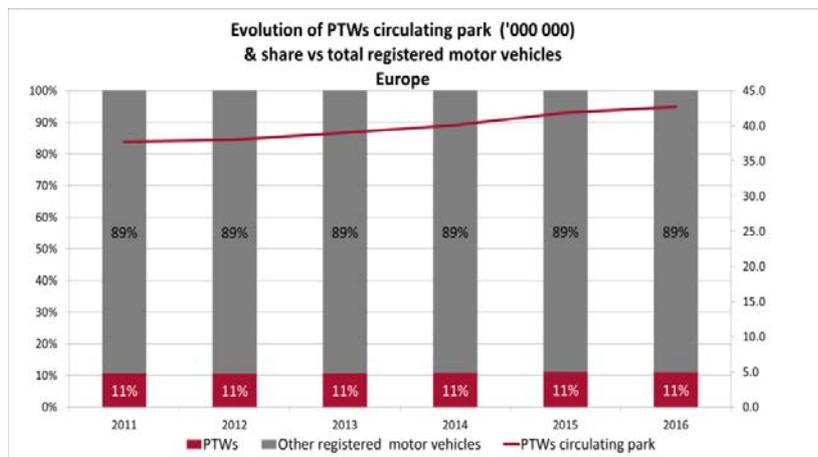
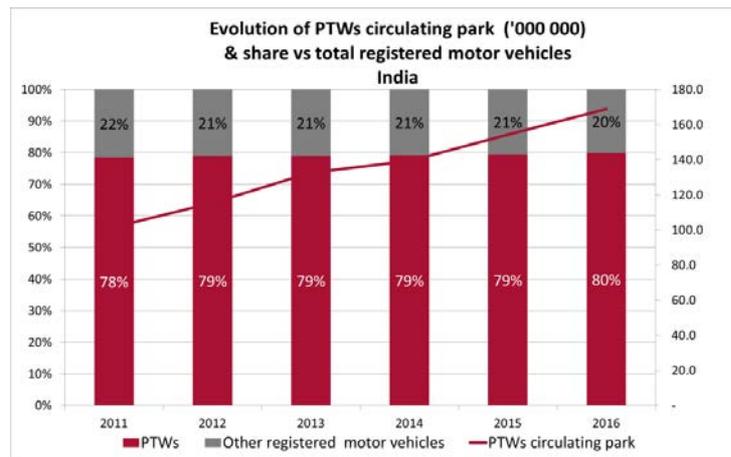
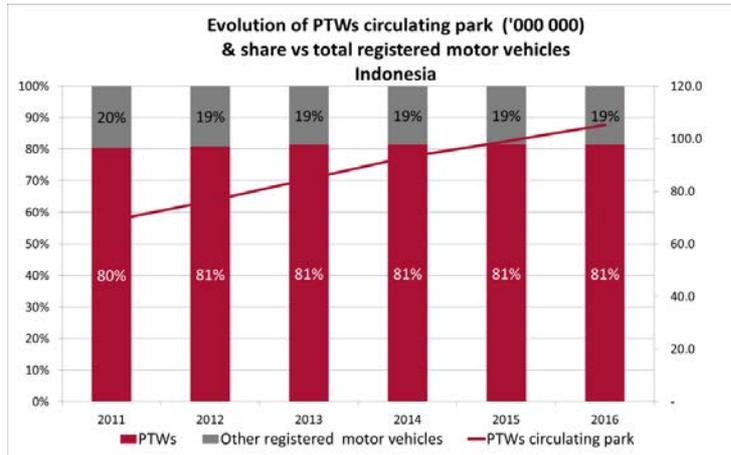
The PTWs used in these fleets are oftenly propelled by an electric powertrain, making this a flexible, affordable and sustainable solution for urban transport. It is vital that riders are properly licenced and trained according to local rules.

## 2.3 INCREASING PTW PRESENCE IN THE WORLD

PTWs are one of the most common types of motor vehicles in the world particularly in Asia, Africa and Latin America. In these regions, PTWs are crucial to national economies as a high proportion of these economies are organised around this means of transportation: commuting, post, delivery, police, firefighters, rescue teams, humanitarian workers, etc.



*Percentage of PTWs in total motor vehicles by country and variation of the PTW presence in the transport mix around the globe (Source IMMA, based on IRF and WHO Global Status Report Road Safety 2018)*



The share of PTWs on the road compared to other types of vehicle is extremely high in India (80%) and Indonesia (81%). This rate goes up to 93% in Vietnam in 2016<sup>8</sup>. According to IMMA-member FAMI, in their region, an average of 42% of registered motorised vehicles are PTWs.

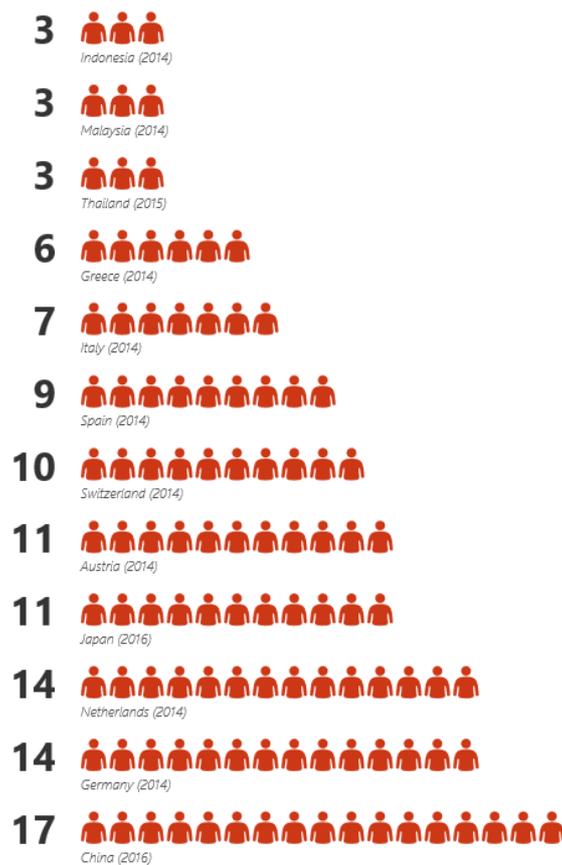
In the data used for China, e-bikes came under the same classification as bicycles, don't require a driver's license to operate and were thus not classified as motorcycles. A regulation published in 2018 addressed the situation by introducing a clear definition of e-bikes in China.

In India and Indonesia, the fleet of PTWs increased significantly in 6 years: India +66% (approximately 11% per year) and Indonesia +52% (approximately +9% per year). The fleet of PTWs in India is estimated above 160 million units.

In Europe, 11% of all registered motor vehicles are PTWs. In most of Europe, the average EU PTW circulating rate is 10% but can be as high as 30% in certain urban areas<sup>9</sup>. The rate of PTWs among all motorised vehicles registered is approximately 3% in North America and 4.5% in Australia.

In the USA, the growth of PTW vehicles in use is estimated at +2.9% and in Europe at + 11.2 % for the period 2011-2016.

## NUMBER OF PERSONS PER MOTORCYCLE



<sup>8</sup> World Health Organisation

<sup>9</sup> MAIDS

When considering population, motorcycle density has also been increasing in recent years in Indonesia, Malaysia, and Thailand, with one motorcycle in use for every three persons; in Greece, with one in use for every six persons; and in Italy, with one in use for every seven persons. In Japan, one motorcycle is in use for every 11 persons<sup>10</sup>.

In many Latin American countries, the mass sales and use of PTWs has increased considerably in the past 10 years. PTWs' share of the motorised vehicle fleet varies greatly, from 3% in Chile to 53% in Uruguay and 52% in Peru.

In Brazil, the PTW circulating park (vehicles in use) increased 41% between 2011 and 2017, reaching a share in the total motorised fleet of 27% in 2017.

In Colombia, 1 in 7 people use a PTW as personal transportation, a growth of 72% from 2011-2016<sup>11</sup>. Many of these PTWs are used for work, thus improving the quality of life for those on a low income and boosting the national industry and economy.

Use of PTWs for commercial purposes has been substantially increasing, especially in the form of 'mototaxi' or bike-taxi in Asia, Latin America and Africa, where it provides a flexible and competitive alternative to public transport and delivery services.

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<sup>10</sup> <http://www.jama-english.jp/publications/MIJ2018.pdf> pp. 10, 11, 19 and 20

<sup>11</sup> IRF data

## 2.4 DIVERSITY OF PTW CATEGORIES

### PTW characteristics

Noting the differences in the use of PTWs in the world, the term “Powered Two wheelers” (PTWs) includes products from small 50cc step-through vehicles, up to motorcycles of 1000cc and over. These products are divided into different segments, such as: moped, scooter, street, classic, performance or super-sport, touring, custom, supermoto and off-road motorcycles and tricycles.

In the international regulatory environment, in particular UNECE, PTWs are referred to with the term: ‘vehicles of category L’<sup>12</sup>.

Many people consider ‘motorcyclists’ to be a homogeneous group of people, and as such, road safety solutions and public policy decisions are often aimed at this ‘group’. However, PTW riders within each country represent a wide variety of people who use vast numbers of different vehicle types, with different characteristics, designed for myriad different terrains and used for numerous distinct purposes. The differences are even more significant when compared globally, where the terrain, cost of living, infrastructure and climatic conditions vary so greatly.

It is this diversity that means policy approaches cannot work to a one-size-fits-all approach designed to “improve motorcycle safety globally”. Safety policy needs to be tailored to differing local environments and to take account of the PTW’s position in the society and economy of any given country – plus the social, mobility and economic opportunities that safer motorcycling can bring to such societies. IMMA strongly supports the sharing of best practice, which can be applied or adapted where appropriate to the local situation of traffic and usage patterns.

### Diversity of owners and usage patterns around the world

As visually illustrated on page 18 on the map with the variation of the PTW presence in transport mix around the globe, in large parts of the world, PTWs are used by the majority of commuters and on a daily basis. In some regions, PTWs are also used by specific groups for leisure activities.

In many countries and in regions like Europe, leisure machines offer a ‘cross over’ function, also being used for commuting. In the UK for example, the Government estimates that over 60% of PTW distance travelled is for commuting, utility or socially practical purposes.

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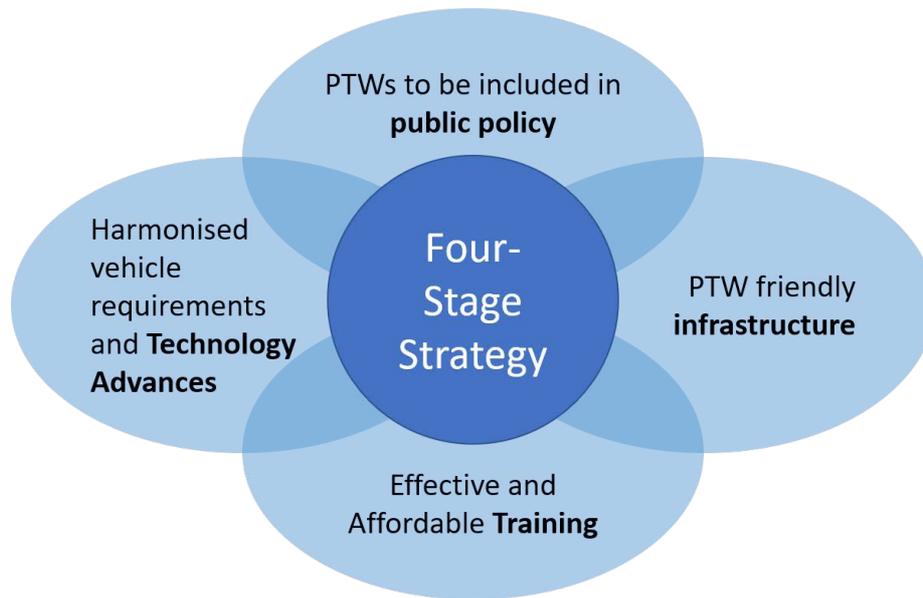
<sup>12</sup> Consolidated Resolution on the Construction of Vehicles (R.E.3)



*Diversity of PTW categories and use*



### 3. THE FOUR STAGE STRATEGY

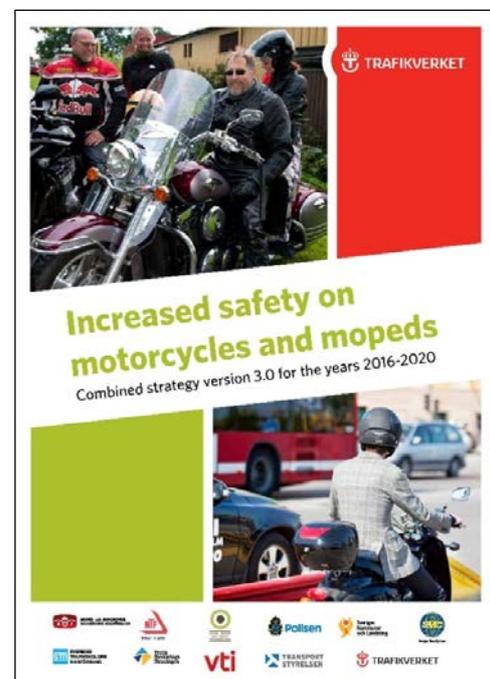


*IMMA's Four-Stage Strategy*

#### 3.1 PTWs MUST BE POSITIVELY INCLUDED IN PUBLIC POLICY

International and regional institutions must integrate PTW use into overall transport and urban planning policy to improve safety, support riders, and help realise the positive potential of PTWs for society. This systematic approach should involve major stakeholders: road operators, policy makers, legislators, road users, industry and media. It should apply realistic and economically viable principles, such as:

- Fair and equal access between and within all transport modes
- Freedom of choice by users and business to select the most appropriate transport mode for their mobility needs
- Transport and mobility efficiency, encouraging the most suitable and effective mode of transport according to the circumstances.
- Safety policies for PTWs should not merely imprint developed countries' initiatives onto LMICs.



*Example of a national holistic road safety strategy by government and stakeholders*

To achieve integrated, targeted and effective policies, safety issues should be 'pre-audited' and assessed by all important stakeholders: road operators, policy makers, legislators, road users, industry and media.

Effectively including motorcycles in traffic policies should also include the timely evaluation of adequate detection of PTWs by advanced technologies on other vehicles, such as Advanced Driver Assistance Systems (ADAS).

### OECD Conference

**Lillehammer, Norway:** In 2008, the first international conference<sup>13</sup> on PTWs safety of its kind was held, organised by the International Transport Forum (ITF). It brought together policy makers from various EU and OECD countries, manufacturers and academia. The workshop concluded that PTWs have a natural place in the transport system, while the vulnerability of riders necessitates training and awareness as well as responsibility from individual road users. Both IMMA and the wider industry support continued policy discussion in an international context, including a possible second global safety conference on similar lines to Lillehammer to be held alongside the 2020 Ministerial Conference.

### Industry Safety Policy and Promotion Conferences

IMMA members organise road safety conferences annually in their region, with the aim of engaging in discussions with policy makers on the need and directions for road safety policy making.



*Ceremony during the 20th FAMI Road Safety Symposium*

**Bangkok, Thailand, 2018:** IMMA regional member FAMI organises their road safety event once a year within their membership. The last one was organized by TAIA (Thailand). This event was attended by national and regional authorities, policy makers, the traffic police, academia and industry, facilitating best practices between countries, stakeholders and leading to a higher engagement towards the common goals by all involved.

**Guwahati, Assam, India, 2018:** IMMA member SIAM annually organises the Society for Automotive Fitness & Environment (SAFE) Annual Convention, addressing both safety and environmental issues across the country to discuss progress in the

different states in the country and exchange best practices with government, road safety policy NGOs, schools and administrators. Significant attention is usually dedicated to training aspects. The 2018 edition addressed the theme: 'Enforcement, Intelligent Transportation and Training for Safer Roads'.

### Joint Police and Industry Conference

**London, UK:** In November 2013, a conference organised by the Motorcycle Industry Association and the National Police Chiefs Council discussed PTW safety, both in terms of traditional approaches and how the overall transport policy environment impacts on casualties. Evidence presented from across Europe suggested it is possible to have a wider integration of increased PTW use within the urban environment, while at the same time reducing casualties. It was

<sup>13</sup> <https://www.itf-oecd.org/sites/default/files/docs/lillehammer08finalreport.pdf>

demonstrated that greater PTW use invariably leads to greater PTW safety as a proportion of the vehicle parc and user population, with risk falling sharply once PTWs reach 10% of the private vehicle parc.

### PTW Strategic Action Plan

**Victoria, Australia:** With significant increases in the numbers of PTWs on Victoria's roads, the need was identified for greater consideration of PTWs in road use and transport policy development and planning. It has been acknowledged that those working in these fields need to become more aware of the needs of PTWs and the role they can play in the transport network. In an environment where PTWs are an increasing component of Victoria's transport mix, the plan now seeks to identify initiatives and actions that will:

- significantly reduce the number of riders and pillion passengers killed or seriously injured
- ensure that PTWs are given appropriate recognition in transport and road use policy and planning

### WP.1 Global PTW Safety conferences

**New Delhi, India:** Under the auspices of the Global Forum for Road Traffic Safety (WP.1), the Institute of Road Traffic Engineering (IRTE) organised a series of conferences in 2015, 2016 and 2017 with the support of NHTSA (USA) and the FIA Foundation to address PTW safety in Asian countries. One of the major conclusions was the need to consider PTWs in infrastructure improvements.

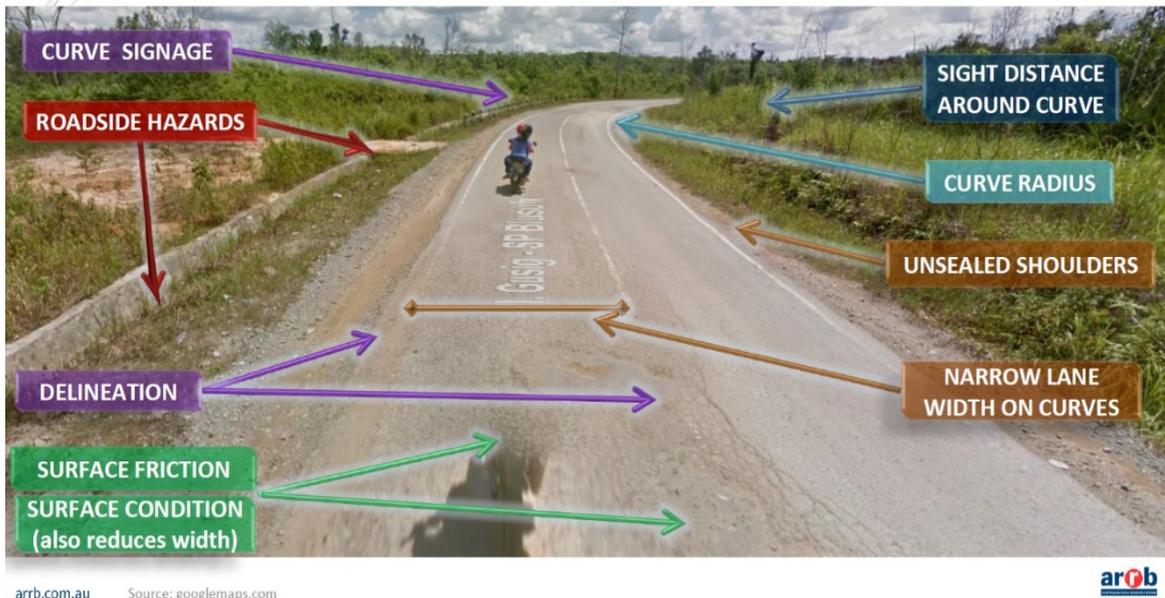


*One of a series of conferences on PTW safety was held in 2016, New Delhi*



## 3.2 ROAD INFRASTRUCTURE MUST BE DESIGNED AND MAINTAINED WITH PTWs IN MIND

### Infrastructure as a motorcycle crash factor



arrb.com.au Source: googlemaps.com

arob

*Road infrastructure elements contributing to run-off road crash risk*

Infrastructure is a highly important issue for PTW safety. Road infrastructure influences both the likelihood, as well as the severity, of a crash. As PTWs are often forgotten in road design and evaluation, they should be identified as an independent road user group and be considered as a 'design vehicle' during road design and asset management and maintenance practices as identified in the Austroads Research Report (2016)<sup>14</sup>.

- **USA:** Motorcycles were more frequently involved in fatal collisions with fixed objects than other vehicle types. In 2016, 23 percent of the motorcycles involved in fatal crashes collided with fixed objects, compared to 17 percent for passenger cars, 13 percent for light trucks, and 4 percent for large trucks<sup>15</sup>
- **Europe:** In at least 3% of accidents, the primary cause was a road design defect. Infrastructure played a role in 8% of all accidents. Poor conditions on many roads, and the fact that PTWs are often neglected by transport plans, are the principal reasons for this situation. Roadside barriers were found to present an increased danger to PTW riders, causing serious lower extremity and spinal injuries, as well as serious head injuries<sup>16</sup>
- **Malaysia:** Fatal motorcycle crashes occur mainly on major trunk roads with smaller access junctions<sup>17</sup>. Malaysia has been building exclusive lanes for motorcyclists since 1980 to

<sup>14</sup> [http://www.fema-online.eu/website/wp-content/uploads/australia\\_MC\\_and\\_infrastructure\\_research2016.pdf](http://www.fema-online.eu/website/wp-content/uploads/australia_MC_and_infrastructure_research2016.pdf)

<sup>15</sup> <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812492>

<sup>16</sup> MAIDS

<sup>17</sup> MIROS - Malaysian Institute for Road Safety Research, 2016

reduce the risk of collision and injury of motorcyclists by taking them out from the mix where interaction between motorcycle and larger vehicles is frequent.

- **Brazil:** Poor road conditions are a contributing factor in 18% of road accidents.<sup>18</sup>

Regional initiatives have helped point out the continuous need for validating the importance and design of crash barriers, the absence of objects on the side of the roads, and the importance of signage to warn road users of complex and hazardous situations ahead. However, many challenges remain, particularly in LMICs where many roads are unpaved, road user licensing systems undeveloped, rider training virtually non-existent, and structures to administer these systems are in a 'fledgling' situation.

## **Best practice in PTW mobility infrastructure**

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Several publications have been created through collaborative efforts by government officials, road design engineers and industry experts to identify specific issues of attention and to improve riding conditions for PTW users. This shared expertise has provided best practices which can be adopted in other countries or regions. These lessons and best practices need to be further promoted and disseminated to infrastructure planning officials in the developing world.

Some proven and tested best practice examples include:

### **Inclusion of PTW in initial design phase – PTW-friendly road design**

- Inclusion of PTWs in infrastructure policies, traffic issues, land use and parking
- Consideration of PTW users in design and construction of tolling plazas on motorways and consideration of toll-free highways for PTW users
- Separate vehicle categories to create more homogeneous traffic, e.g. through dedicated PTW lanes fitting to local situations and or advanced stop lines at traffic lights

### **Basic road infrastructure audits, assessment and adaptations**

- Narrow lane width, sharp curvature during a curve or poor skid resistance increase significantly the accident risk factor
- Standards for marking or signing road hazards, plus illumination at night of dangerous hazards
- Quality standards for unsealed roads. Even 'Grade A1' 'large chip' gravel roads are often hazardous for PTW users – firmer types of unsealed surface should be used and regularly graded and rolled. This problem applies worldwide

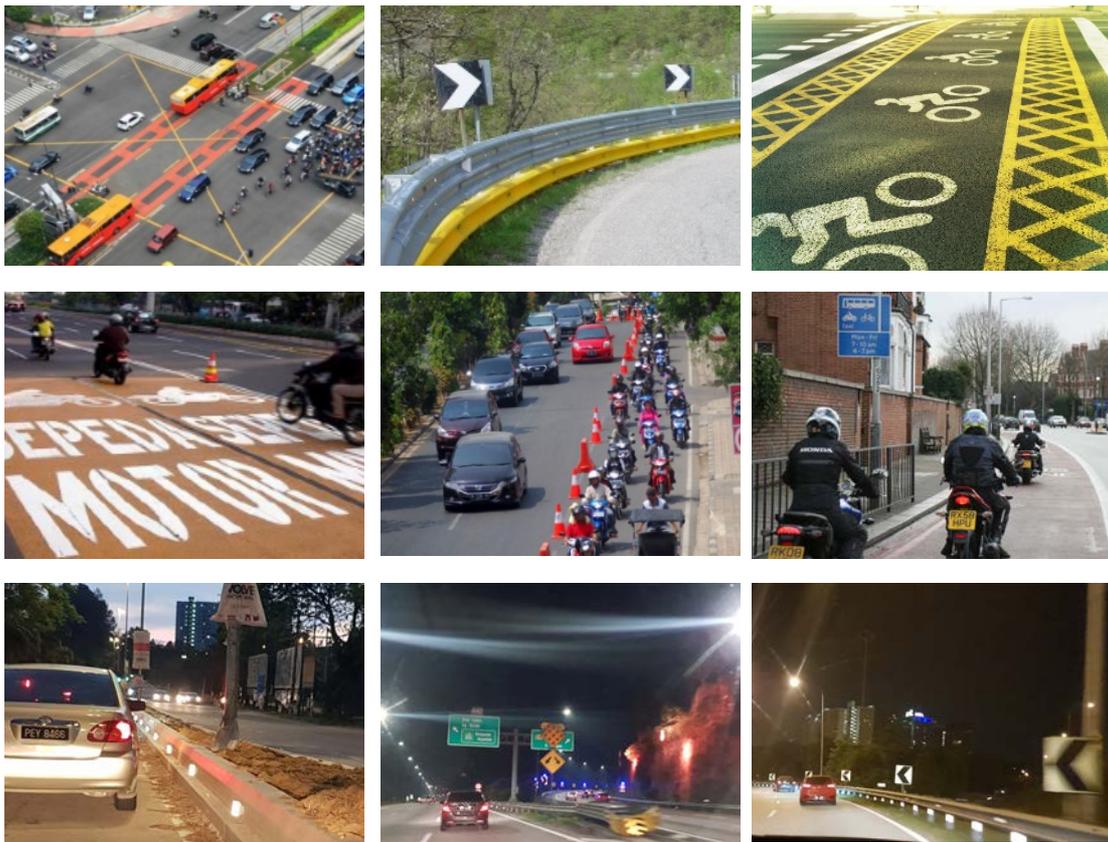
### **Simple infrastructure adaptations to support PTW friendly traffic and improve PTW safety**

- Remedial action towards black spots, with special attention to intersection design and traffic signs dedicated to warn riders at places of recurring accidents such as 'yellow box junctions' and enforcement
- Create dedicated parking spaces for PTWs
- Advanced stop lines at traffic lights for riders
- Bus lanes which allow access by PTWs

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<sup>18</sup> ABRACICLO

- Provision of separate lanes where there are large numbers of motorcycles can reduce the potential for conflicts with larger vehicles<sup>19</sup>. In Malaysia, benefits of reduced PTW accidents have been reported between 25 and 34%<sup>20</sup>.
  - Inclusive motorcycle lanes are installed on the existing road and are usually located on the outside of the main carriageway for each direction of traffic flow. Motorcycle lanes may be separated from the rest of the road by painted lines or physical barriers. They are a flexible solution for the road authority, by allocating a specific strip to PTW-users. At intersections inclusive motorcycle lanes rejoin the main carriageway and crashes can occur. Such solutions account for nearly 20% of the primary road network in Malaysia.
  - Exclusive motorcycle lanes require a completely separate carriageway from that used by other vehicles. Exclusive motorcycle lanes minimise crashes at intersections. Such infrastructures are exclusively for mandatory use by PTWs.
- Allow lane splitting and communicate clear behavioural guidelines for PTW riders.
- Fit safe roadside barriers which are motorcyclist friendly.
- Identify quick solutions, at a relatively low cost, such as reflective stickers and beacon lights, which can be installed to warn the PTW driver of dangerous situations ahead. Such easy to implement solutions should be used to address accident black spots.



*Research is needed to evaluate and promote the most effective solutions to adequately include PTWs in road traffic*

<sup>19</sup> <http://www.toolkit.irap.org> – provides also various design guidelines

<sup>20</sup> MIROS – Malaysian Institute for Road Safety Research (<http://www.miros.gov.my/xs/index.php>)

## Road maintenance and incident management

- Improvement and maintenance of road surface conditions (including avoiding poor quality road building leading to rapid deterioration, as can be seen in parts of West Africa and elsewhere) is also critical for safe riding.
- Remove oil spills that can create dangerous slippery conditions.

Although in advanced PTW markets there exists several PTW infrastructure manuals, there is a general lack of research and evaluation of PTW infrastructure solutions. There is a need for assessing these with a common methodology to enable researchers to deduct good and successful practices. Some experiences have been exchanged at PTW Policy workshops under Global Forum for Road Traffic Safety (WP.1) in 2016 and 2017. However, further research for friendly PTW infrastructure is needed.

### 3.3 EFFECTIVE AND AFFORDABLE TRAINING AND EDUCATION

Human error was found as the major accident cause in 87.9% of all accidents in Europe. Infrastructure was the main causation factor in 7.7% of accidents, and vehicle-related factors were the main causation factor in only 0.3%<sup>21</sup>. Encouraging behavioural change should therefore be at the forefront of road safety activities and initiatives.

#### Awareness raising for all road users

Greater emphasis is needed in pre-licence-test training for all vehicle types to raise awareness of the behaviour of other road users. Particular emphasis should be put on recalling that PTWs are smaller in profile, so harder to recognise in traffic, and that it is harder to judge their speed.

**Japan:** In 70% of accidents involving PTW users, automobile drivers were the primary causation factor, whereas PTW riders were exposed to a higher risk of being the victim in an accident. Furthermore, in over 80% of crossing collisions and collisions while turning right, the cause was a delay in the automobile driver noticing the PTW. In nearly 70% of instances this delay was due to an insufficient check on the traffic<sup>22</sup>.

**Europe:** Other vehicle drivers are largely responsible for PTW accident causation in 61% of the multi-vehicle accidents. However, PTW riders were responsible in 52% of fatal accident cases. Other vehicle drivers, who also have a PTW licence, are much less likely to fail to perceive the oncoming PTW (or misinterpret its distance and speed) than those drivers who do not have a PTW licence<sup>23</sup>.

**Brazil/Colombia:** Accidents in Brazil are reported to be mostly due to lack of attention of other drivers. The other vehicle is responsible in more than two thirds of the accidents in Colombia<sup>24</sup>.



*Exchange of experience is an important part of the training program (India)*

<sup>21</sup> MAIDS, Europe

<sup>22</sup> ITARDA – Institute for Traffic Accident Research and Data Analysis, “Information n°91”, November 2011, Japan

<sup>23</sup> MAIDS, Europe

<sup>24</sup> Causas de accidentes com motociclistas, ABRACICLO, 2013 and Las motocicletas en Colombia: aliadas del desarrollo del país, Asociación Nacional de Empresarios de Colombia, 2017

**USA:** Initial results of the FHWA study<sup>25</sup>, involving 350 in-depth PTW crash investigations in California, show that in 70% of the multivehicle crashes, the other vehicle drivers' traffic scan contributed to the crash and in 43% of the cases the other vehicle drivers' attention failures were identified as crash factors.



*Unpaved road riding skills training can improve on-road skills (Thailand)*

**Thailand:** The in-depth PTW accident investigation study involving a total of 340 cases, by the Thailand Accident Research Center (TARC) reported that:

- 22% of all motorcycle fatalities were single vehicle crashes and 77% of fatalities happened due to multi vehicle crashes, with another vehicle.
- The primary contributing factors to crashes were the PTW rider (53%) and the Other Vehicle driver (38%).
- In 27% of all cases, the primary accident contributing factor was perception failure on the part of the PTW rider, followed by the perception failure on the part of the Other Vehicle driver (24% of all cases), and reaction failure on the part of the PTW rider (14% of all cases).
- Among the PTW fatalities, 54% of riders did not have a license. 87% of accidents involved riders with no special training on how to ride a motorcycle. 72% of the involved automobile drivers also didn't have special training on how to drive. They were trained by families, friends or self-training.

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<sup>25</sup> <https://highways.dot.gov/safety/motorcycle-crash-causation-study/motorcycle-crash-causation-study>

## Lifelong training of PTW riders



*Training programmes address development of vehicle control skills and hazard perception (Indonesia)*

Good anticipation is perhaps the greatest aid to safety that a rider has, and the best way to acquire this is via training. However, much training happens ahead of a rider gaining a licence (so-called initial rider training) and sometimes the skills are not developed and practiced after the licence is acquired.

Training can be split into two key parts: vehicle control and hazard perception. Much initial rider training

necessarily focusses on vehicle control, as this is where the most common threat to the rider occurs, for example, falling off at low speed. At this stage, riders need to focus on balance, using the controls and learning to master the machine. Once the rider has mastered this to a basic level, the trainer then usually moves on to teaching how to spot and avoid hazards.

IMMA members are actively involved in rider training and often participate in conjunction with government agencies or working groups on rider education. Through these efforts, they can provide affordable, accessible and effective training to PTW users. The industry encourages continued outreach to new and existing PTW riders on the importance of life-long rider training in both novice rider training and voluntary training after riders have acquired a licence.

Rider training courses vary widely between countries due to differing national requirements, vehicle fleets and training resources.

In some countries (especially in LMICs) there is an absence of mainstream training schemes and the industry training offer is often the only one available which underlines the huge importance of the industry engagement in this domain. Courses are offered for different groups of riders: novice riders, advanced riders, corporate training, police force training, etc.

The following examples show very clearly the enormous impact of the industry's training activities:

- **USA** - Over 8 million motorcyclists trained over the last 44 years.
- **India** – 2,779,550 riders trained by the industry between 2011 to 2018.
- **Brazil** - Mobile Training Units are available in 22 states. Since 1998, 5,840 courses were organized, and more than 242,496 riders were trained through specific industry programmes.
- **Vietnam** – 3.8 million people were trained in 2017 in trainings mainly targeting teenagers, users and children.
- **Thailand** - 11.25 million riders were trained over 29 years (1989-2018) through the manufacturers' and dealer networks.

## Initial rider training

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*Use of a motorcycle riding simulator to develop foresighted riding skills (India)*

Initial rider training provides the basic skills and awareness needed for novice riders. Subsequently, more advanced courses provide additional opportunities to increase rider proficiency and safety and hazard perception skills. A variety of training options are offered within the context of PTW sports, on dedicated tracks and off-road terrains, which allow riders to greatly enhance their skills of control of the vehicle.

Due to the sheer number of PTW riders in the Asian region and the limitations of space and suitable facilities, the industry has been advocating with governments to promote the introduction of riding simulators to help to educate and provide affordable training to PTW riders.

## Advanced training

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Advanced training is often offered in conjunction with local governments and many manufacturers offer courses for riders. This training is usually for riders who have a licence and can therefore be considered for post-test training. As some parts of the world have little or no formal training pre-test, these training courses can be useful for teaching riders skills they did not previously have. As much of this training takes place in an off-highway environment, e.g. a closed race track, riders practice their skill in a safe environment and can push themselves to improve their machine control significantly. Moreover, this training has the added advantage of familiarising riders with new technology, such as ABS, which may not have been available when the rider initially acquired their licence.

However, studies of advanced training for automobile drivers have seen the concept of advanced training come under criticism for giving road users false confidence. Controlling a PTW can be a more complex task than controlling an automobile due to the necessity of the rider to move their bodyweight. Therefore, vehicle control skills on a PTW are important and can always be further developed.

Some advanced training, for example the KNMV “*Risico Herkennen*” course from the Royal Dutch Motorcyclists Association, has been shown by independent studies to improve the hazard

perception of riders. This course focusses on following riders and alerting them to the kind of hazards they experience on a regular basis. Its success has meant that it has even been subsidised by local authorities in the Netherlands. This type of training, allied to improving vehicle control and offered in various countries in various ways, gives riders multiple reasons to undertake advanced training and is the reason that IMMA's members continue to promote advanced rider training and life-long learning. An example of the industry ensuring continued high standards in advanced training is the European Motorcycle Training Quality Label, more details of which can be found in Annex 1.



## Promoting safer riding behaviour through sport and leisure



*Long distance touring by motorcycle may involve both on-road and off-road riding*

Motorcycle sports and leisure offer numerous opportunities to effectively reach and influence the motorcycle enthusiast regarding road safety. Firstly, the sports environment leads to greater interest to choose and equip the rider with state-of-the-art PPE, to keep a well-

maintained vehicle and to improve riding skills. A sports environment can also impart the importance of rider planning, or the 'systematic approach' to safe riding. Off-road sport can be of enormous help in imparting machine control skills.

The opportunity to improve riding skills on tracks and in off-road environments enables riders to test the limits of their own and their vehicle's abilities under safe conditions. In many regions of the world, manufacturers and sports federations organise track-days and off-road tours allowing enthusiasts to improve their skills with the support of professional coaching. These sports activities have been a strong contributor to introducing a safety culture among riders and in promoting advanced riding skills. PTW sports also contribute to the development and promotion of cutting-edge PPE, such as the motorcycle airbag jacket.

## Preventing impaired riding

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Impaired riding includes riding without a proper license and riding under the influence of alcohol or drugs. Alcohol or drug consumption, by reducing awareness and inhibition, is considered among the major causes of road casualties according to the WHO.

- **Sweden:** Alcohol or other illegal drugs are stated as an important cause of PTW accidents in up to 30%<sup>26</sup> of the cases.
- **USA:** Of 5,286 motorcyclists involved in fatal crashes in the USA in 2016, 27% were under the influence of alcohol (Blood-Alcohol Concentration of more than .08 g/dL<sup>27</sup>); 27% percent of motorcycle riders involved in fatal crashes in 2016 in USA were riding without valid motorcycle licenses<sup>28</sup>.
- **South East Asia:** Alcohol is also a key issue in some Asian countries, e.g., in Thailand, where alcohol was involved in more than 35%<sup>29</sup> of PTW fatalities.

## Use of helmets and protective gear

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IMMA strongly encourages riders and passengers to wear certified PPE, including helmets, and to comply with the legal requirements in their particular region. Wearing a helmet of a proper quality standard, and in the proper way, can reduce the risk of death by 40% and the risk of serious injury by over 70%.<sup>30</sup>

Despite the high safety value of helmets, the creation and enforcement of helmet laws should not be regarded as a simple political 'fix' for PTW safety. In isolation, such a policy can only mitigate the consequences of an accident rather than preventing the collision in the first place.

Choosing a helmet should be at the discretion of the rider: it is their responsibility to select the adequate type and size fitting with their specific use, climatic and economic considerations.

In countries where helmet wearing rates are very high, emphasis in education and enforcement campaigns should be placed on the correct usage of helmets, with the chinstrap fastened correctly. Such actions need in general to be repeated and the effects and impacts measured.



*Helmet sticker campaigns address concerns around fastening the chinstrap correctly (various countries)*

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<sup>26</sup> TRAFIKVERNET

<sup>27</sup> 2017 Motor Vehicle Crashes Overview, October 2017, DOT HS812486

<sup>28</sup> <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812492>

<sup>29</sup> Thailand Accident Research Center

<sup>30</sup> "Global status report on road safety 2013: supporting a Decade of Action", World Health Organisation.

Diversity in the approaches taken also needs to be recognised. For example, in some of the ASEAN countries, governments are considering the development of an alternative specification of helmets, which are lighter and could be considered more appropriate for use in hot and humid climates.

While protective gear by itself will not prevent a collision, good quality gloves, footwear and basic eye protection can do much to mitigate the effects of one. Rider choice will vary according to specific needs and the different climatic conditions around the world. IMMA promotes the safety benefits of using a range of protective garments.

- **Europe:** Analysis of the MAIDS database showed that for light and medium weight garments, protective equipment was effective in preventing or mitigating injuries in 73% of all cases. In the case of heavy garments, protective equipment was effective in preventing or mitigating injuries in 93% of all cases.
- **USA:** NHTSA estimates that helmets saved 1,859 motorcyclists' lives in 2016, and that 802 more lives could have been saved if all riders had worn helmets<sup>31</sup>.

## Detection of PTWs and their riders by other vehicle users

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Other road users often fail to see PTWs approaching. This is thought to be due to the smaller area a PTW presents to the eye, unlike a bus or truck. Various research has also shown that in many instances, road users are not expecting to see PTWs and therefore don't notice them against a complicated background of other vehicles, road infrastructure and immediate hazards. This is known as the 'looked but failed to see' phenomenon.

Other vehicle drivers, who also have a motorcycle licence, are much less likely to commit a perception failure in relation to the oncoming motorcycle (or misinterpret its distance and speed) than 'other vehicle' drivers who do not have a motorcycle licence. This finding was re-confirmed in the study conducted by VIAS&KFV in 2018<sup>32</sup>. It shows clearly the differences between dual drivers (automobile drivers with motorcycling experience) and automobile drivers:

- Dual drivers have different visual strategies and are better in predicting potential conflicting events.
- Dual drivers are constantly aware that a motorcycle might approach, and they know which manoeuvres can be expected from motorcycles.

This risk can be mitigated by training drivers to look for PTWs when approaching junctions or other hazardous areas. Some of this training can come from automobile drivers having motorcycling experience<sup>33</sup>. However, the industry is also looking at technological solutions to mitigate this problem via C-ITS, although this technology may take decades before it reaches a significant market penetration.

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<sup>31</sup> <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812492>

<sup>32</sup> See 'Detection of motorcyclists by automobile drivers with and without motorcycling experience. A virtual reality driving simulator study including eye-tracking (MOVIT)' by Sofie Boets, Charlotte Desmet, Daniela Knowles, Alexander Pommer and Martin Winkelbauer (Vias & KFV), presented at IFZ-2018-Cologne, October 2018.

<sup>33</sup> See also 'Detection of motorcyclists by automobile drivers with and without motorcycling experience. A virtual reality driving simulator study including eye-tracking (MOVIT)' by Sofie Boets, Charlotte Desmet, Daniela Knowles, Alexander Pommer and Martin Winkelbauer (Vias & KFV), presented at IFZ-2018-Cologne, October 2018.

## Passenger safety

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*Passengers should be able to reach the footrests provided*

There is increasing attention on the safety of passengers, particularly in Asia and Latin America. Again, there is wide variation in regulation and practice both between countries and between urban and rural areas.

Though the number of crashes involving PTW passengers is relatively low, some crash investigation studies indicate that passenger behaviour may contribute to the cause of a crash, hence it is important that they are prepared and briefed properly by the rider before mounting a PTW.

IMMA's view is that the most important factor in passenger safety is that all riders should wear a helmet and their feet should be able to comfortably reach the footrests. The size, fit and maturity of the passenger should be used as a legal determinant, rather than age or any other arbitrary factor.

## Regular maintenance of vehicles

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Periodic inspections reduce the incidence of safety related defects to tyres, brakes and lights, particularly those of which the owner may be unaware. Regular checks of vehicles would possibly have a much greater impact in LMICs, where running damaged or dilapidated vehicles can be common.

Countries developing an inspection regime should adapt regulations to meet national characteristics and needs. For example, the very highest standards of Periodic Technical Inspection (PTI) regimes may not be appropriate in territories where there are economic challenges and the ability of users to afford costly in-depth technical inspections is low. In such cases, an initial PTI regime should focus on a basic inspection of the operation of vehicle's safety-critical items, such as tyres, brakes, steering, suspension, lights, etc. Such PTI regimes can develop as the local situation evolves in a positive economic and social direction.

IMMA member manufacturers provide technical support through their service channels available in each market and recommended service intervals for the optimal performance of the vehicle.

## 3.4 HARMONISED VEHICLE REQUIREMENTS AND TECHNOLOGY ADVANCES

Product safety is of utmost importance for IMMA members



*Increased rider confidence with an additional front wheel.*

When developing products, manufacturers strive to achieve the highest standards of construction and technology, considering specific aspects for different global markets. New products are subjected to a series of stringent tests and quality management systems that aim to protect the safety of riders and improve environmental performance. To implement increasingly advanced regulatory and industry standards, manufacturers resort to enhanced designs, refined construction methods and advanced technologies.

### **Industry has been driving advances in preventative, primary and secondary safety**

Preventative safety aims at improving riding and driving standards. Primary safety refers to functions such as vehicle stability, braking, traction control, innovative ergonomics and chassis designs that improve the rider's control of the vehicle.

Industry has also developed and successfully introduced various secondary (passive) vehicle

safety improvements. However, due to the specific nature of two-wheeled vehicles, such as the exposed position of the rider, the possibilities for secondary safety on the vehicle are limited and very complex. However, it is worth noting that the use of appropriate PPE has a big influence on the mitigation of severe injuries in the case of an accident.

With evolving technologies, additional competencies have been developed by manufacturers. Examples are Intelligent Transport Systems, functional safety of electrically and hybrid propelled vehicles and safety of their batteries, and safety of Fuel Cell propelled vehicles.

As various studies from around the world have demonstrated, in several regions, the majority of PTW accidents are caused by the driver of the other vehicle who 'did not see' the PTW (rider). Conspicuity has been and is continuously being improved through advances in vehicle daytime and night-time lighting technologies. Conspicuity is also anticipated to be addressed in the future through electronic devices, whereby the PTW (rider) can be "seen" by the other vehicle through C-ITS.

## Technological developments

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The PTW industry has a significant record in developing and introducing a wide spectrum of improvements on vehicles. These include:

- Vehicle lighting technologies
- Braking systems
- Ergonomic design of rider position and controls
- Use of light and durable materials
- Design and construction of the vehicle frame
- Innovations improving overall vehicle stability
- Suspension, tyres, fuel system integrity



*Advanced rider control features to easily navigate the dashboard functions*

In addition, because of regional and global cooperation between manufacturers, the industry continues to develop new and updated international standards and UN Regulations.

## Vehicle lighting

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*State-of-the-art technology allowing unique front lighting signatures*

Vehicle lighting technology is subject to rapid evolution. The industry has been deeply involved in adapting these technologies to PTWs to improve rider vision, visibility and the lighting signature of PTWs. In addition, various specific concepts for PTWs have been introduced to provide additional lighting to increase vision for the rider during banking/leaning of the vehicle. Thanks to the increasing spectrum of lighting technologies, including advanced ones such as LEDs, the lighting signatures and vision during different environmental conditions are constantly improving.

The lack of conspicuity - being seen and being perceived correctly - has been identified by various studies as a very important factor in PTW accidents. In addition, various researchers have raised

concern of reduced conspicuity for PTWs due to Daytime Running Lights (DRL) or driving with headlamps-on with cars.



*Activation of additional lighting units to illuminate the bending road*

Headlamp-on riding has generally been considered an important measure to improve individual safety in most regions in the world. The promotion of this measure by IMMA resulted in its formal introduction in the 1968 Vienna Convention on Road Traffic<sup>34</sup>. The AHO system ensures that the front light is automatically turned on when the engine runs. To include AHO as a global standard for PTWs, the WP.29 has updated vehicle lighting legislation with corresponding specification, following proposals by IMMA.

Manufacturers continue to develop and introduce additional lighting solutions, with these applying to specific vehicle types and/or to meet local market needs and conditions. An example is the cornering light or bend lighting option

which involves activation of additional lighting units in conjunction with the driving beam to improve the road illumination in the direction of the vehicle.

It should be remembered that PTW conspicuity is strongly related to the behaviour of riders. Whether or not the rider is seen largely relates to the observational skills and behaviour of riders and drivers of other vehicles and to aspects of behaviour and planning on the part of the PTW rider. Examples of issues that impact conspicuity are the position of the PTW in the traffic lane, the distance of the PTW to other vehicles within the lane and differences in speeds between the PTW and the surrounding traffic.

## **Braking**

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The PTW industry has developed and introduced several braking technologies, enhancing the effectiveness of these devices and adjusting them to specific manoeuvres and needs. Advanced braking systems encompass different systems, technologies and approaches, such as Anti-lock Braking Systems (ABS) acting on one or both wheels, Combined Brake Systems (CBS), Rear-wheel Lift-off Protection (RLP) and automatic brake force distribution. Such systems can be present individually or in combination.

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<sup>34</sup> The 1968 Convention on Road Traffic is the key legal instrument forming the basis for the majority of traffic rules around the world. There are 78 Parties to the Convention, in Europe, Africa, the Middle East, Asia and Latin America, with Nigeria being the latest country to join in October 2018. By acceding to the Convention, countries agree to transpose uniform 'rules of the road' in their domestic traffic legislation for safe driving behaviour.

To introduce a global regulatory framework for braking, encompassing advanced braking systems, IMMA has led the discussion on the creation of a new Global Technical Regulation (UN GTR) on PTW braking under WP.29.

In Europe, India and the Republic of China (Chinese Taipei), ABS has become standard on new types of PTWs with an engine capacity of 125 cc and above, while for vehicles under 125 cc, manufacturers continue to have the option to equip the vehicles with a CBS or ABS. Other markets identify other specific categorizations for equipping PTWs with ABS or CBS, considering the local situation.

While the potential benefits of ABS are considerable, it should be remembered that the benefits and limitations of various advanced braking systems vary significantly per type of PTW. It is also important that riders are taught to use the full potential of PTW brakes in a proper way, as advanced braking systems can lead to over-confidence among some riders.



*Front wheel disk brake fitted with ABS*

Also, the typical riding environment and patterns of riding can have a strong impact on the effectiveness of an ABS. This can often be the case in relation to off-road environments, or roads which are constructed mainly of dirt, gravel or 'piste'. Manufacturers consider factors such as customer expectations, regulatory requirements, intended vehicle usage costs and the primary road infrastructure when determining which types of systems to offer for a given vehicle in each market.

IMMA additionally emphasises the importance of the education of riders on the benefits and limitations of advanced braking systems. Without proper training, the introduction of advanced braking technology may lead inexperienced riders to demonstrate over-confident behaviour which can reduce or eliminate the desired safety benefits<sup>35</sup>.

## **Holistic perspective**

As noted in the two examples above, IMMA and its associated manufacturers have a track record of advancing vehicle technology and performance.

However, providing PTWs with additional vehicle related options or technologies, or introducing vehicle specific regulation, is not on its own enough without strong and continued focus on rider training and the behaviour of the rider. Adequate vehicle maintenance by the owner and attention to the quality of the road infrastructure by public authorities is also vital.

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<sup>35</sup> NHTSA automotive ABS effectiveness study for four-wheelers, - <http://www-nrd.nhtsa.dot.gov/Pubs/811182.PDF>

Consequently, IMMA member manufacturers invest significant effort in educating customers and promoting new safety solutions. In addition, IMMA members have been active in promoting PTW road safety with policy makers and undertaking collaborative research on a regional or global scale. An example is the Safer Motorcycling Research Consortium, involving 6 motorcycle manufacturers in the US, aimed at advancing on-road motorcyclist safety through pre-competitive research collaboratively with federal agencies in the US.



## Intelligent Transport Systems (ITS)



*Research into advanced technology applications on vehicles could improve motorcycle safety*

In addition to the extensive efforts within PTW manufacturers' in-house R&D departments, there are numerous global non-PTW-industry collaborative initiatives. These are aimed at developing cooperative or standalone technologies, undertaking feasibility studies and promoting standardisation.

IMMA is concerned that several of these initiatives do not include PTWs within their thinking and work. This is a deficiency that must be addressed. PTWs should not be forgotten or overlooked whenever ITS are considered in road infrastructure upgrades, and in work on other vehicle types like automobiles and trucks. The application of advanced technologies to PTWs, as well as the impact of advanced technologies on PTWs, should be considered at the initial design stage.

IMMA is concerned that several of these initiatives do not include PTWs

The fitment of ITS on PTWs can be a complex challenge. The application of such technologies on PTWs is in most cases far from a simple 'carry-over' from automobile technology. This is because the characteristics of PTWs (vehicle size, use, weight, space, balance, dynamics, handling, usage environment) vary considerably and often require many specific adaptations before being applied to PTWs.

For example, Advanced Driver Assistance Systems are primarily engineered for use in cars, and have the potential to be dangerous if applied to a PTW without modification. Any system not specially designed for PTWs which intervenes in the control of the brake, throttle, or steering could severely affect the stability of the PTW and may lead to loss of vehicle control.

IMMA members are working actively on ITS for PTWs. Some Driver Assistance Systems (DAS) for PTWs are already on the market, mainly as optional equipment at the higher end of product ranges, due to the additional consumer cost of these systems. These DAS comprise a comprehensive range of equipment.

## Cooperative systems and the Connected Motorcycle Consortium

PTW safety, comfort and environmental performance may be further enhanced via vehicle-to-vehicle and vehicle-to-infrastructure communication (V2X). Additional communication frameworks are expected to improve safety in critical scenarios for PTW riders (intersections, blind spots, rural roads, poor visibility areas, etc.). In the long term, vehicle-to-vehicle and V2X will potentially address many common PTW accident configurations (approximately 50% of PTW European accidents occur at an intersection according to MAIDS) and they may offer solutions in

certain cases where conspicuity plays a critical role. However, there is a need to include PTW-specific safety aspects.

The Connected Motorcycle Consortium (CMC) is a collaboration between manufacturers, suppliers, researchers and associations to make PTWs part of the future connected mobility. CMC's goal is to develop a common basic specification for PTW ITS, with as many cross-manufacturer standards as possible.

Technologies developed in the CMC, such as 'PTW approach indication and warning' are designed to enhance the digital conspicuity of PTW users. The technologies aim to reduce the probability of accidents, such as those that happen at intersections because of automobile drivers overlooking PTW users, or when they are unable to clearly see PTWs due to poor infra-structure or adverse conditions.

Once the necessary infrastructure has been developed and initial economies of scale have been achieved for cars, PTW safety will benefit

from being included in this connected world. One potential benefit could be the development of a level of electronic conspicuity, which can be shared between riders and drivers of other road vehicles.

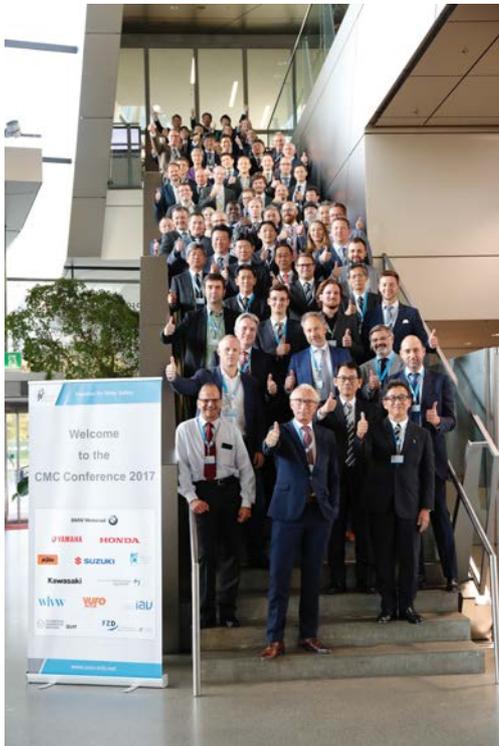
### **PTWs should always be detected irrespective of the level of automation of other vehicles**

ITS technologies have the potential to increase as well as decrease crash injury risk through introducing driver distractions and changes of behaviour.

Governments should require repeatable, and evidence-based measures to ensure that vehicles meet public expectations on crash avoidance and ensure the safety of users and the public.

While development and field testing of highly automated vehicles is accelerating in different regions, the best methods and strategies for assuring safety have yet to be determined. As the use of PTWs varies significantly per region, extensive testing is required considering regional differences.

When considering the development of highly automated vehicles, the principle of equity and coexistence of different vehicle types in mixed traffic should be respected. Roads are shared by a wide variety of road users, and PTWs should be detected in all traffic conditions by vehicles equipped with advanced technologies and by their drivers.



*Annual meeting of the Connected Motorcycle Consortium (CMC), 2017*

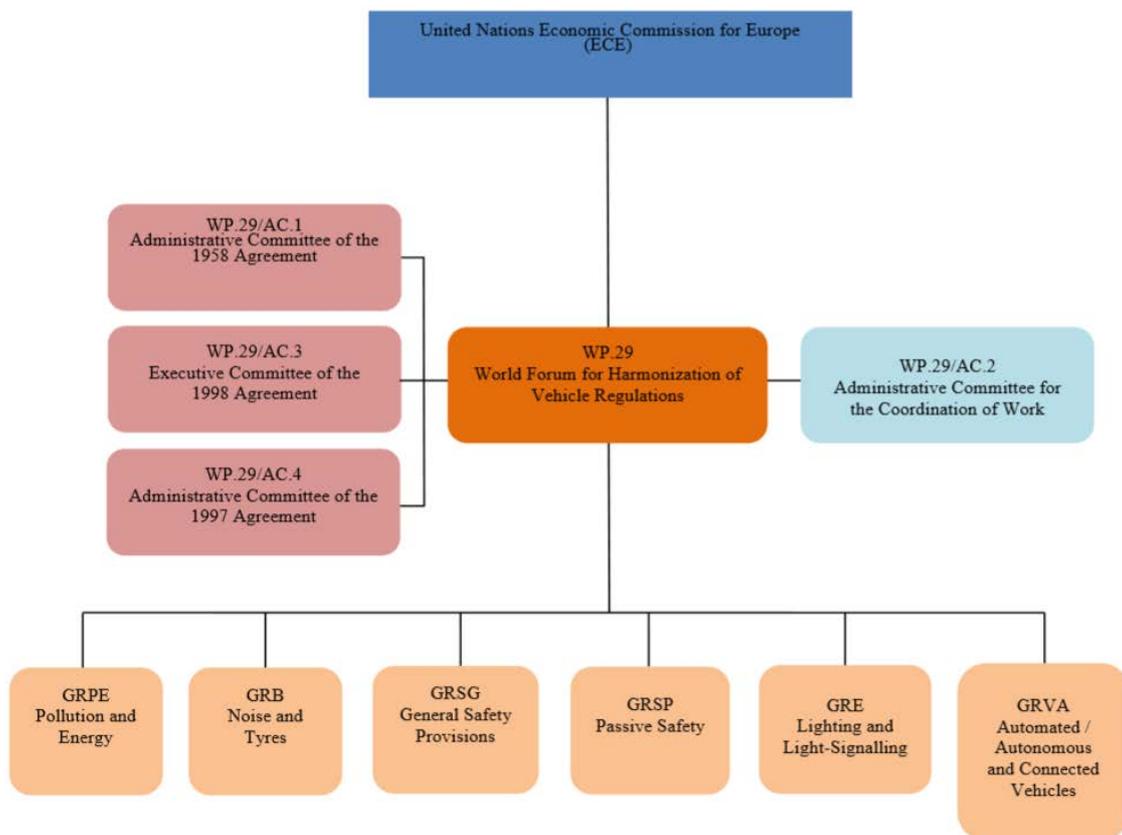
## World Forum for Harmonisation of Vehicle Regulations (WP.29)

IMMA has been involved for over 50 years in the World Forum WP.29, a UNECE body for the development and maintenance of regulations. IMMA strives to ensure that the process of rulemaking in which all decisions are taken by governments, is facilitated through the provision of technical information, discussion and scientific data, resulting in the development of technical legislation to appropriate levels.

When considering implementation of new technologies in legislation, policy makers should recognise the regional diversity of PTWs, the users and their types of usage, as well as the great variation in road infrastructure, traffic conditions, and stages of economic development.

In some cases, before new technologies are considered for mandatory application by government administrations, the application of the latest international standards and regulations should be the first step.

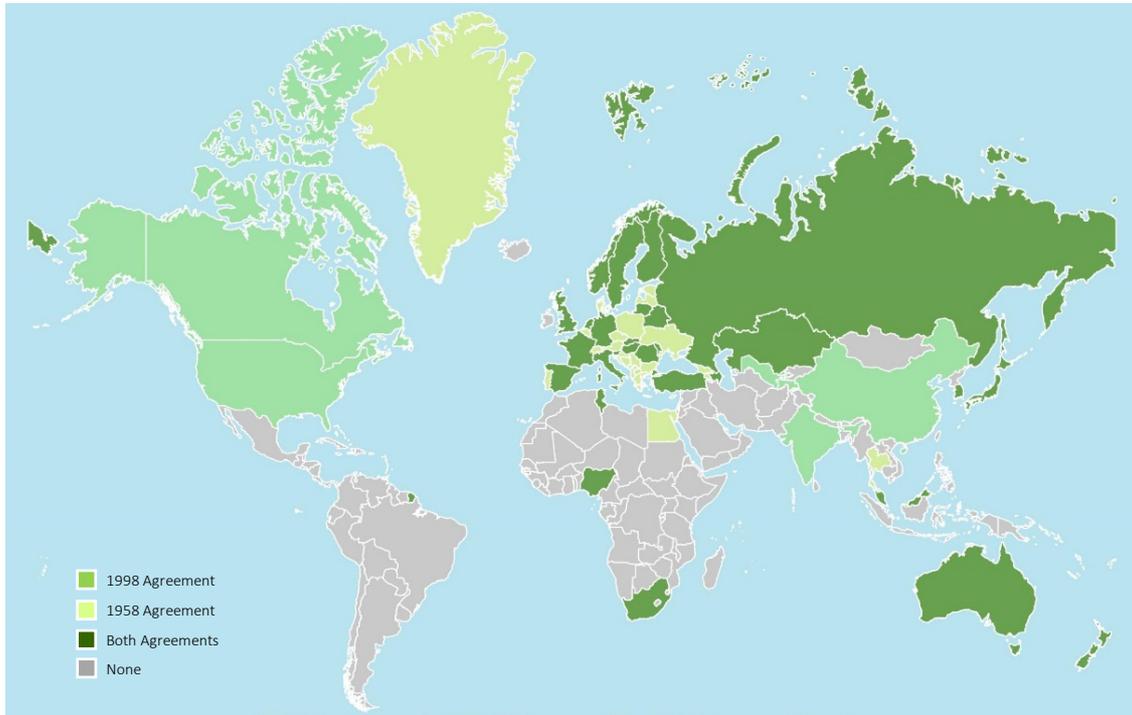
Whilst technical advances in PTWs will continue to play a role in rider safety, the primary focus must be placed on public policy development, rider behaviour and safer roads for riders.



*The structure of the UNECE's work on vehicle standards*

IMMA believes WP.29 should promote global harmonised regulations on safety and environmental performance. The creation of globally harmonised markets would lead to more efficient PTW production and help manufacturers roll-out new technologies more quickly. This would improve vehicle safety and bring additional benefits to end users. The organisation of WP.29 is illustrated above.

IMMA calls on countries who are not yet signatories or have not acceded to the instruments managed by the World Forum, such as the 1958 Agreement and 1998 Agreement, to join WP.29, accede to the agreements, and adopt worldwide regulations for safety and environment.



*In April 2019, the 1958 Agreement counted 53 Contracting Parties and the 1998 Agreement counted 38 Contracting Parties.*

## Counterfeiting and PTW safety

As a result of globalisation, economic development and rapid motorisation in various emerging and LMICs, manufacturers and consumers face complex issues related to Original Equipment Manufacturer (OEM) items and counterfeit products.

Today, trade in counterfeit products is reaching epidemic proportions, particularly in LMICs, which are highly price sensitive. Customers can be easily attracted by low cost, but low quality, counterfeit spare parts marked illegally with well-known global brand names designed to mislead customers. Counterfeit products, being cheaper, are usually made of low-quality raw materials and rarely go through any safety tests or quality certification. The most commonly counterfeited spare parts are those which are fast moving in the aftermarket and those which are frequently replaced, such as all types of filters, spark plugs, brake pads, clutches, suspension items, electrical items etc.



*Consumer awareness should be raised on the dangers of fitting very low cost counterfeit parts and vehicle components. Genuine parts, such as this shock absorber, go through rigorous safety and durability testing*

Often the customer either cannot distinguish between OEM or counterfeit parts or is not concerned by it. However, these customers may not fully understand the adverse impact counterfeit spare parts may have on other vehicle systems, vehicle performance, environmental and legal compliance and ultimately on their own road safety.

Consumer awareness is the key to eliminating this problem. OEMs have started regular campaigns and various outreach programs in

educating influencers and end consumers on the benefits of using genuine parts. Many of these manufacturers have hired agencies specialised in Intellectual Property Rights (IPR—e.g. trademarks and copyright) protection to identify infringements and support the authorities to conduct raids on outlets manufacturing and/or selling counterfeit parts.

To protect customers from accidents caused by counterfeit products of inferior quality and safety, IMMA emphasises the importance of enforcement measures to prevent the marketing, distribution, sale and use of either non-compliant, or unsafe PTWs and their parts, or those in which IPRs are infringed. In parallel, those efforts must be intensified to increase public awareness of IPRs and the seriousness of IPR infringements, as counterfeiting puts in danger consumer's health and safety.

## 4. SAFETY PERFORMANCE AND MONITORING

### 4.1 MONITORING METHODOLOGIES

Harmonised data is essential for the analysis of global trends or patterns of progress. With 80 members and observers from more than 40 countries, IRTAD has become a central force in the promotion of international co-operation on road crash data and its analysis. In recent years, significant progress has been made by IRTAD and OISEVI (Ibero-American Road Safety Observatory) to harmonise definitions, collect and exchange road safety data.



As a member of IRTAD since 2012, IMMA continuously appeals to governments of LMICs to adopt harmonised methods and to collect adequate road safety statistics. Care should be taken when comparing the performance between countries due to the major differences in the actual traffic context or traffic mix in the regions such as different use of PTWs, state of the infrastructure, driver licensing schemes, and climate conditions. Data collection efforts, definitions and methods are also very different between regions.

The absence of data relating to distance travelled by different vehicle modes is a very serious deficiency. This means that accurate records of casualty rates per distance travelled, the most accurate measure of relative safety, continues to be unavailable. Analysis of only the absolute number of fatalities can lead to misinterpretation and inadequate comparison as the growth or decline of the riding population is not considered.

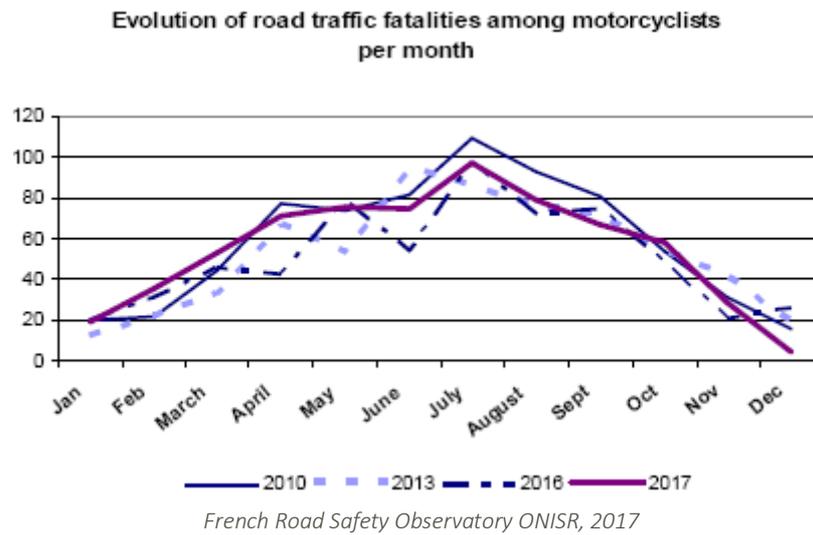
#### Recommended indicators for studying PTW safety trends:

- PTW type of usage (e.g. daily commuting, or utility, majority leisure)
- The trend and absolute number of fatalities and number of registered vehicles (circulating parc) by category of road users (including different types of PTW)
- The trend and absolute number of kilometres/miles ridden by the different categories as exposure risk data. When details on distance travelled are not available, the ratio of riders killed per 10,000 circulating PTWs will provide insight to identify trends
- Information on seasonal and weather-related aspects of motorcycling which may have a significant impact on exposure and hence, the number of crashes.
- Specific behaviour of the PTW rider population, e.g. the wearing of certified PPE; with statistics on helmet wearing, related policies and general use of approved helmets



*Some riders travel large distances on their motorcycle*

- Results of awareness raising campaigns combined with targeted enforcement actions.
- Caution is advised when comparing the PTW road safety situation in one country/region with other localities, countries or regions, because the context of PTW use, PTW type, distribution, road condition, infrastructure, economics, social factors and regulatory framework can be very different. For example, across Africa, differences may be significant in the use of PTWs, due to local circumstances.

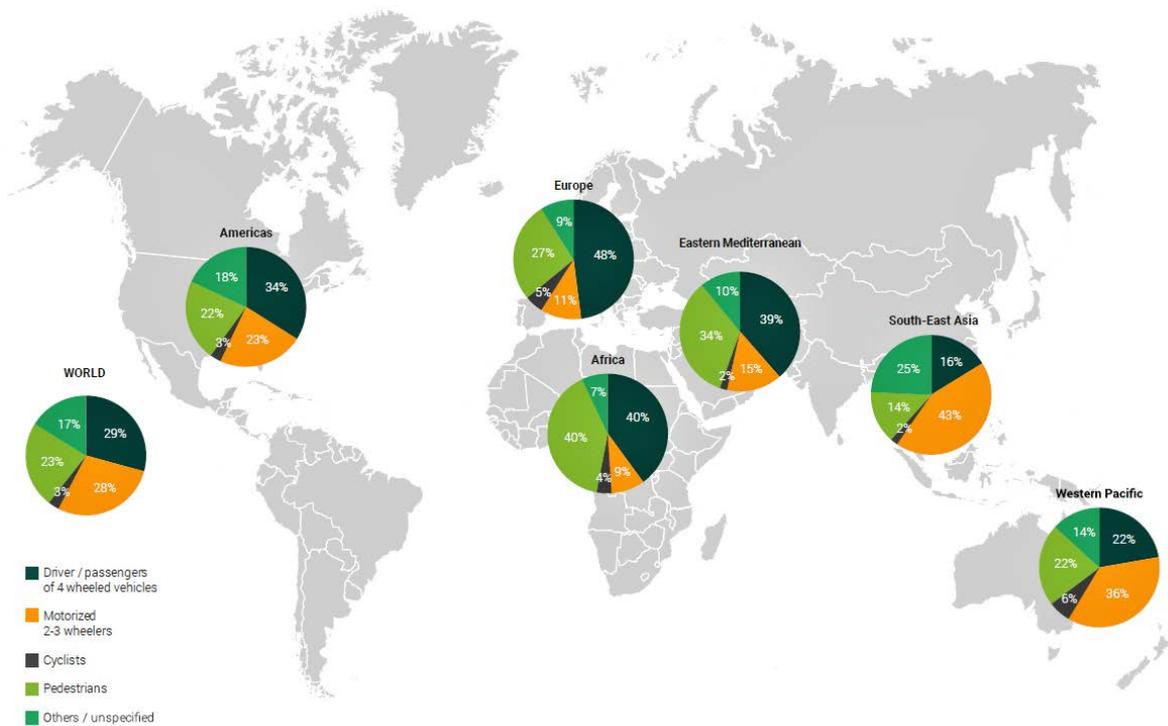


## 4.2 PTW SAFETY TRENDS

### Proportion of PTW user fatalities

The WHO reported that the fleet of PTWs increased between 2013 and 2016 by 10%, noting that the safety per vehicle level improved, but that the PTW share of traffic fatalities globally increased over the same period from 23% to 28%.

The WHO reported additionally that in South-East Asia, PTW fatality proportion increased from 34% to 43% between 2013 and 2016. In Europe the percentage of PTW fatalities increased from 9% to 11%, in the America's from 20% to 23% and in Africa from 7% to 9%<sup>36</sup>.



Road traffic deaths by type of user, by WHO region (Source: Global status report on road safety, 2018, WHO)

<sup>36</sup> Global Status Reports on Road Safety by WHO in 2015 and 2018

## Trends in fatality rate per registered vehicle

The table below reports on the main PTW safety trends:

Trends 2011-2013-2016								
		2011	2013	2016	2011-2016			2016
Region	Country	# PTW fatalities/10,000 PTWs	# PTW fatalities/10,000 PTWs	# PTW fatalities/10,000 PTWs	Trend # fatalities/10,000 vehicles	Trend # PTW fatalities	Growth # registered PTWs	% PTWs in motorised vehicles fleet
Oceania	Australia	2.9	2.9	3.1	5%	28%	22%	5%
Europe	<b>Europe (average)</b>	1.6	1.2	1.1	-30%	-16%	19%	12%
	France	3.9	3.1	1.9	-52%	-21%	64%	10%
	Germany	2.0	1.1	1.0	-50%	-18%	65%	11%
	Greece	0.5	0.0	1.0	90%	-13%	-54%	31%
	Italy	1.6	1.0	0.9	-43%	-22%	36%	17%
	Poland	1.8	1.4	1.2	-31%	-13%	26%	10%
	Spain	1.5	0.7	0.8	-46%	1%	86%	15%
	Sweden	1.6	1.0	1.1	-32%	-101%	18%	7%
	United Kingdom	3.0	2.7	2.7	-9%	-7%	3%	3%
Asia	India	2.7	3.1	2.6	-2%	66%	73%	73%
	Indonesia	1.9	1.0	2.2	18%	80%	53%	81%
	Japan	0.7	0.6	0.6	-13%	-20%	-8%	13%
	Malaysia		3.9	3.5		8%	0%	46%
	Philippines	1.7	1.5				37%	58%
	Chinese Taipei	0.6	0.6	0.5	-21%	-29%	-10%	64%
	Thailand	3.1	2.8	3.0	-6%	7%	13%	55%
Americas	Brazil	6.2	5.5	4.8	-23%	5%	37%	27%
	Canada	2.6	3.0	3.3	28%	35%	5%	3%
	USA	5.5	5.7	6.2	13%	16%	3%	3%

Europe includes in this overview the countries Austria, Belgium, Czech Republic, France, Germany, Greece, Ireland, Italy, The Netherlands, Poland, Spain, Sweden, United Kingdom

Data sources include IRF, WHO and national industry associations (IMMA members), they collected from national government agencies.

A significant improvement in PTW fatalities per 10.000 vehicles is observed between 2011 and 2016 in most countries and in most regions, a significant growth of the fleet of PTWs in traffic is also observed.

The relative reduction of PTWs fatalities needs to be associated with the high increase of the PTW circulating parc during the same period. In other words, the risk of having an accident on PTWs has fallen despite fatality records not having improved as fast as is desired.

Nevertheless, in a number of countries reported, the absolute number of PTW fatalities increased between 2011 and 2016. Hence, urgent action is required to implement the four-step approach involving all stakeholders.

From a number of countries, data was not available, and different sources have been used to create this overview. Care should be taken when comparing the above data between countries as the exposure, the actual use of the PTW, varies strongly between countries and cities in the world. Further exploration and research is required.

## 4.3 NEED FOR IN-DEPTH STUDIES AND NATURALISTIC RIDING STUDIES

In-depth studies help us to better understand the various causes of PTW accidents and may allow some estimate of the effects of introducing new technologies, new licensing and training schemes, as well as new PTW-friendly infrastructure.

The MAIDS project was an extensive in-depth study of motorcycle and moped accidents during the period 1999-2000, in five areas in France, Germany, Netherlands, Spain and Italy, using the methodology from Organisation for Economic Co-operation and Development (OECD) for on-scene in-depth motorcycle accident investigations. A total of 921 accidents were investigated in detail, resulting in approximately 2000 variables being coded for each accident.

Naturalistic riding studies are an essential tool for collecting and analysing exposure data on PTW rider behaviour and trajectories to identify risk factors. If combined with in-depth crash investigations, such studies can also be used for the evaluation and design of, for example, training programmes, Human Machine Interfaces (HMI), or road signage.

Lastly, to isolate the most prevalent behaviour and causes of accidents in any country, localised studies are required.

## CLOSING REMARKS

Ensuring the safety of PTW riders is essential to successfully reduce the total number of global road fatalities. This can most effectively be done by adopting an integrated, comprehensive approach which encompasses mainstream transport policy, infrastructure improvements, advances in vehicle technology, law enforcement and education and training for all road users.

This paper has set out the key elements that, taken together, comprise an effective and sustainable approach to PTW safety. Adopting, in full, the Four Stage Strategy offers a realistic opportunity to address safety within the holistic context of urbanisation and transport policy. It will allow the greatest chance of securing safety improvements, while at the same time realising the PTW opportunity that exists in relation to transport networks and citizen mobility.

This document was developed by the IMMA Road Safety Working Group, with the support of Rowan Public Affairs, UK. Special thanks for the support in the process go to:



*Mr Shigeo Yoshizawa,  
Chair IMMA Road Safety  
Working Group*



*Ms Meenakshi Kureja  
Chair of the dedicated  
IMMA Task Force, SIAM*

- Mr Takahiro Fujimura, Chair of the JAMA International Motorcycle Road Safety Working Group, JAMA
- Mr Sergio Martins de Oliveira, ABRACICLO
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- Ms Wandee Tangtawilthaworn, Chair of FAMI Road Safety Task Force, TAIA
- Dr Veneta Vassileva, Safety Coordinator, ACEM
- And many other experts.



# ANNEX 1: COMPILATION OF BEST PRACTICES FROM THE REGIONS

## INTRODUCTION

A wealth of global knowledge exists on PTW safety, which should be shared and implemented, with suitable local adaptation. IMMA has pooled the extensive knowledge and resources that exist across the world to create a shareable resource for global institutions, governments, public authorities and other stakeholders with an interest in improving PTW safety.

The best practices contained below cover industry-led initiatives in safety and transport policy and awareness, training and education. They have been developed by IMMA members in collaboration with public authorities, by industry, by governments themselves, or by a mixture of these. The initiatives all fit within the principles of the Four Stage Strategy.

### 1. ACEM (Europe)

- European Motorcycle Training Quality Label, page 56
- "Motorcycle: Certainly Safe!" campaign (Germany), page 57
- Motorcycle Policy Conferences, page 58

### 2. AISI (Indonesia)

- Safety Riding Education (school/public) (Indonesia), page 59

### 3. ABRACICLO (Brazil)

- Motorcycle Industry Honoured with Yellow May Award by the National Road Safety Observatory 2018, page 60
- Road Safety Education at High Schools, page 61
- Moto Check-up, page 62

### 4. JAMA (Japan)

- The "Smile-on Motorcycle Day" Event (Japan), page 63

### 5. MMIC/CMIC (Canada)

- Motorcyclists Confederation, page 64
- Strategy Focusing on Vulnerable Road Users, page 65

### 6. MSF (USA)

- Motorcycle Safety Foundation (MSF), page 66

### 7. MASAAM (Malaysia)

- Road Safety Education Programmes (Malaysia), page 67

### 8. MDPPA (Philippines)

- Road Safety Jamboree (Philippines), page 68

### 9. SIAM (India)

- Safe Rider Program, page 69

### 10. TAIA (Thailand)

- Society Helmet Project (Thailand), page 70

### 11. VAMM (Vietnam)

- Training on Road Traffic Law and Safety Riding Skills (Vietnam), page 71

# EUROPEAN MOTORCYCLE TRAINING QUALITY LABEL – EUROPE

## Introduction

The European Training Quality Label is an easily-recognised symbol that helps riders to identify the highest quality advanced safety training programmes in Europe. The PTW industry encourages continued outreach to new and existing PTW riders on the importance of life-long training including post-licence voluntary training.

## Summary of the initiative and activities developed

The Quality Label is a voluntary certification process for post-licence safety training programmes. A certified training system is guaranteed to be safety orientated, to have qualified trainers and to be based on adequate training methodology. The Quality Label is granted for a period of 4 years (renewable) and annual verification ensures continued high standards. The awarded programmes gain high visibility towards users of PTWs, paving the way towards higher quality standards for training in Europe and increased demand for continuous education and training of PTW users.

## Results achieved

- Two years after the launch of the label in 2016, 28 training programmes from different countries have been certified<sup>37</sup>.



*Launch event, ACEM Annual Conference, 2016 First labelled programme: Early perception risk, Dutch riders' organisation (KNMV) Left to right: Antonio Avenoso, European Transport Safety Council, Alisa Tiganj, Member of Cabinet, European Commissioner for Transport, Jacqueline Lacroix, German Road Safety Council, Arjan Everink, Dutch riders' organisation KNMV, Stephan Schaller, Former BMW Motorrad and Former ACEM President; Antonio Perlot, ACEM*

<sup>37</sup> <https://motorcycle-training-label.eu>

# “MOTORCYCLE: CERTAINLY SAFE!” CAMPAIGN – GERMANY, EUROPE

## Introduction

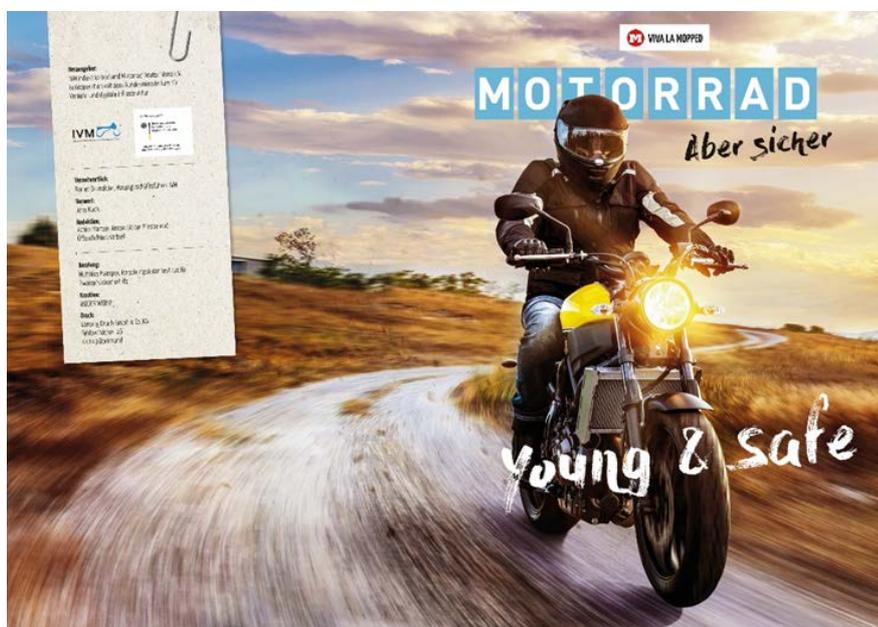
“Motorcycle: Certainly safe!” builds upon years of experience in promoting responsible rider behaviour and represents one of the most comprehensive safety platforms in Europe.

## Summary of the initiative and activities developed

Supported by the German Federal Ministry of Transport and Digital Infrastructure, the Industry association IVM has been deploying a Facebook community platform named VivaLaMopped<sup>38</sup> addressing motorcycle safety through written information, videos and blogs. This platform developed into an online encyclopedia on motorcycle safety<sup>39</sup> for both riders and the professional community, covering topics including advanced rider assistance systems for motorcycles, protective clothing, the right way to ride curves, and visibility.

## Results achieved

- The social media platform <http://www.facebook.com/vivalamopped> reached more than 23 million users a year; with individual contributions of more than 1 million.
- The 12 episodes on advanced rider assistance systems gained nearly 6 million views. <https://vivalamopped.com/motorrad-aber-sicher/view/352>.



*Motorcycle: Certainly Safe! Campaign – online encyclopedia on motorcycle safety*

<sup>38</sup> [www.facebook.com/vivalamopped](http://www.facebook.com/vivalamopped)

<sup>39</sup> [www.motorrad-aber-sicher.com](http://www.motorrad-aber-sicher.com)

# MOTORCYCLE POLICY CONFERENCES, EUROPE

## Introduction

Through ACEM, the PTW industry in Europe joins forces to engage national policy makers and stakeholders in specific actions to improve PTW safety. The ACEM Safety strategy, signed by all ACEM members in 2014, encompasses three main pillars: technology, training and cooperation with stakeholders at national level.

## Summary of the initiative and activities developed

The industry has embraced a country-tailored approach to reflect the specific national road safety context and identify opportunities to address at national level. As part of this initiative, motorcycling safety events were organized by the industry key motorcycling countries in Europe in 2016 and 2018, bringing together experts from public authorities, law enforcement, user organisations, road safety NGOs, research institutes, and insurance companies. Concrete actions followed at national level.

## Results achieved

- Italy launched the 'Refresh' training project, for riders returning to motorcycling after an extended period, and trained 550 riders in 2016.
- Spain launched 'Training 3.0.', aimed at improving motorcyclists' riding skills.<sup>40</sup> For a period of 2 years more than 1100 reborn riders were trained in Catalonia. The industry association is in discussions with the Spanish Ministry of Transport on rolling out this project nationally.
- Greece developed an online (eDrive) interactive road safety programme to create safety awareness among pupils, high-school students, parents, professors, and driving and riding trainers. The program has been introduced in all schools in Greece.
- Poland developed an online road safety platform to collect data and best practices on PTW safety.



*Road safety event organised by the industry, Barcelona, Spain, June 2018 –  
Panelists: Catalanian Ministry of Transport, PTW industry, Police forces, road  
safety NGOs, an insurance company and users organisations*

<sup>40</sup> <https://www.youtube.com/watch?v=TOgcp0VSHfi>

# SAFETY RIDING EDUCATION (SCHOOL/PUBLIC) - INDONESIA

## Introduction

PTW manufacturers conduct regular activities across the country to educate the public on rider safety, including well-attended exhibition events, which can be also used to encourage PTW check-ups before riding.

## Summary of the initiative and activities developed

The industry's Safety Riding Education for School and Public campaign has gained momentum, becoming a well-known activity across the country. At exhibitions and other events, pre-delivery safety advice (PDSA) leaflets are distributed with guidance on how to conduct a check-up before beginning riding.

## Results achieved

- 200,000 PDSA leaflets distributed
- 2017 saw 1,250 events on safety, including check-ups, with 145,490 participants.



*PTW Safety Riding Education Event, 12 March 2018, Tangerang, Indonesia*

# MOTORCYCLE INDUSTRY HONOURED WITH YELLOW MAY AWARD BY THE NATIONAL ROAD SAFETY OBSERVATORY 2018 - BRAZIL

## Introduction

National Traffic Week has been organised in Brazil annually since 1997 by a collaboration of stakeholders under the patronage of the National Road Safety Observatory. The industry has consistently been one of the most active players in National Traffic Week.

## Summary of the initiative and activities developed

National Traffic Week sees moto check-ups organized by the industry all over the country. In 2018, partnership with a major Brazilian soccer team allowed the initiative to reach thousands with safety messages such as: “Motorcyclist: Your life is not a game” and “The biggest win is to get home safely”.

## Results achieved

- 900,000 educational leaflets and banners distributed all over the country in 2018
- 4,500 riders underwent a moto check-up
- The industry has twice been honored for its promotion of safety with “Yellow May Award” by the National Road Safety Observatory.



*The banner translates as "Driver, respect the motorcyclist! On a motorcycle you have a father or someone like you"*

# ROAD SAFETY EDUCATION AT HIGH SCHOOLS - BRAZIL

## Introduction

A partnership between industry and government to work with more than 44 technical schools in order to promote safety awareness amongst high-school students, with particular emphasis on cyclists and motorcyclists.

## Summary of the initiative and activities developed

Since 2014, educational lectures on safety have been delivered to high-school students across Brazil. Topics covered include safety rules, legislation for motorcycles and bicycles, the importance of maintenance, safety equipment and the correct use of brakes.

## Results achieved

In 2018, more than 10,000 students attended lectures in 44 high schools across Brazil.



*Safety education at Brazilian schools targeting young cyclists and motorcycle riders, Brazil*

# MOTO CHECK-UP - BRAZIL

## Introduction

This is a free educational program, established in 2008, which focuses on motorcycle maintenance, safety awareness and traffic education. The industry encourages and supports regular PTW check-ups by users through facilitating access to maintenance services, supported by police forces, local traffic authorities and the professional motorcyclists' union.

## Summary of the initiative and activities developed

Motorcycle riders are strongly encouraged to benefit from this service, which is offered on a regular basis in different locations across the whole country. The motorcycle check-up is accompanied by braking demonstrations, a safe riding video and a simulation experience of drunk riding.

## Results achieved

Over 48,000 motorcyclists have attended the program.



*MotoCheck-Up: Awareness and maintenance action for motorcyclists  
São Paulo 2018. More than 5.000 motorcyclists attended*

# THE “SMILE-ON MOTORCYCLE DAY” EVENT – 19 AUGUST - JAPAN

## Introduction

The government of Japan has designated 19<sup>th</sup> August as Motorcycle Day since 1989. This annual event aims to promote motorcycle safety and raise road safety awareness amongst all road users. JAMA and the Japan Motorcycle Promotion & Safety Association jointly sponsor the “Smile-On Motorcycle Day” event every year.

## Summary of the initiative and activities developed

Smile-On Motorcycle Day 2018 was held in Tokyo’s popular Akihabara district. On-stage events promoting motorcycle riding safety included a road safety presentation by the Tokyo Metropolitan Police Department’s elite “Queen Stars” female officers’ motorcycle squad and the department’s mascot; appearances by media personalities; talks by former MotoGP riders; an exhibition of safety equipment, including chest protectors for motorcycle riders; and reminders to motorcyclists to consider the safety of all road users while riding. The event aimed to increase road safety awareness among the totality of its attendees—whether motorcyclists or not and representing the spectrum of road users, including children—and to expand recognition of the appeal and merits of motorcycle use.



*Tokyo Metropolitan Police Department elite “Queen Stars” leading a women riders’ parade, 19th August 2015 at Akihabara.*

## Results achieved

- Smile-On Motorcycle Day 2018 was a major success, drawing over 14,000 attendees.
- Attendance included an impressive media presence, which communicated the event’s entertaining road safety awareness-promoting program and activities nationwide.

# MOTORCYCLISTS CONFEDERATION - CANADA

## Introduction

The Motorcyclists Confederation of Canada (MCC) has become the recognized voice of PTW riders in Canada, with representatives from rider organizations making up 75 percent of the Board of Directors to ensure the interests of motorcyclists are represented.

## Summary of the Initiatives and Activities Developed

MCC has undertaken a broad variety of activities, including advocacy to the Government of Canada's Ministries of Transport, Environment and Sport, supporting PTW rider competition and events, and developing and undertaking national PTW rider safety campaigns.

## Results Achieved

- May has been identified as Motorcycle Safety Awareness Month. This campaign began nationally in 2014 and continues to evolve.
- The 'Motorcycle Safety Pledge' aims to make Canada one of the safest places in the world to ride a PTW and initiated a program to find Canadian motorcyclists making a difference in their local communities.
- Published study on *Fitness and Health Benefits of Off-Road Vehicle (ORV) Riding and Recreational Motorcycling in Canada – 2014-2040*<sup>41</sup>



*Skill training and promotion of adequate use of PPE for off-road riding in June 2018, Ontario, Canada*

<sup>41</sup> [www.motorcycling.ca/resources/](http://www.motorcycling.ca/resources/)

# STRATEGY FOCUSING ON VULNERABLE ROAD USERS - CANADA

## Introduction

Since the early 2000s, the Motorcycle and Moped Industry Council (MMIC) has been an active participant in policy discussions supporting the vulnerable road-user safety strategy developed by the Canadian Council of Motor Transport Administrators (CCMTA). In 2010, MMIC received the Associate Member Award of the Year for its policy contributions.

## Summary of the Initiatives and Activities Developed

PTW riders have been included as VRU in the *Road Safety Strategy (RSS) 2025 - Making Canada's roads the safest in the world*, combined with Vision Zero. The Strategy provides all stakeholders with an inventory of road safety initiatives which can be adopted or adapted to address specific road safety challenges.

## Results Achieved

The outputs of the VRU task force include:

- Vulnerable Road Users Strategy<sup>42</sup>
- Fatally Injured Vulnerable Road Users in Canada (2004-2006), by Transport Canada<sup>43</sup>
- Bike Helmet Legislation Chart<sup>44</sup>

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<sup>42</sup> [http://ccmta.ca/images/pdf-documents-english/rsrp/STRID/VRU/vru\\_strategy\\_jan\\_2009.pdf](http://ccmta.ca/images/pdf-documents-english/rsrp/STRID/VRU/vru_strategy_jan_2009.pdf)

<sup>43</sup> [http://ccmta.ca/images/pdf-documents-english/rsrp/STRID/VRU/tc\\_vru\\_report\\_april\\_09.pdf](http://ccmta.ca/images/pdf-documents-english/rsrp/STRID/VRU/tc_vru_report_april_09.pdf)

<sup>44</sup> [http://ccmta.ca/images/pdf-documents-english/rsrp/STRID/VRU/bike\\_helmet\\_legislation\\_chart.pdf](http://ccmta.ca/images/pdf-documents-english/rsrp/STRID/VRU/bike_helmet_legislation_chart.pdf)

# MOTORCYCLE SAFETY FOUNDATION (MSF) - USA

## Introduction

In 1972, representatives from several manufacturers established the Motorcycle Industry Council Safety and Education Foundation, Inc. (MICSEF), later renamed the Motorcycle Safety Foundation. MSF provides leadership to the PTW safety community through its expertise, tools, and partnerships.



*Training courses available for different levels – from beginners to advanced, USA*

## Summary of the Initiatives and Activities Developed

By working with federal, state and local stakeholders such as safety officials, educational institutions, motorcycle clubs, the National Highway Traffic Safety Administration and others, MSF developed instructional materials and audio-visual aids establishing uniform safety strategies, operating practices, and skills testing. In 2014 MSF released an update to its Basic Rider Course that included an online learning segment, updated classroom training to address hazard perception and behaviour and updated, hands-on, range exercises to improve novice riders' skills, knowledge and judgement.

## Results achieved

- Over 8 million motorcyclists have learned basic riding skills, knowledge, and judgement, or boosted their existing skills in MSF-developed courses during the first 44 years of the MSF's existence.
- Today, and for the past four decades, most of the state-wide motorcyclist training programs in states across the U.S., and all branches of the U.S. military, offer only the MSF RiderCourses<sup>SM</sup>.
- In August 2011, MSF partnered with the Virginia Tech Transportation Institute to launch the world's first, large-scale, naturalistic PTW riding study, the MSF100. Findings from this study will inform both PTW and automotive training and education programs for years to come<sup>45</sup>.

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<sup>45</sup> <https://www.msf-usa.org/research.aspx#/home>

# ROAD SAFETY EDUCATION PROGRAMMES - MALAYSIA

## Introduction

The industry is strongly engaged in government road safety programs in Malaysia, including a Road Safety Advocacy group to investigate the country's increasing number of fatalities.

## Summary of the initiative and activities developed

The Ministry of Transport and the Road Safety Department, working with industry and other stakeholders, aims to reduce the number of accidents and fatalities for road users and vehicles. Initiatives include road safety lessons for school children and students and safety campaigns during festive season.

## Results Achieved

A higher level of road safety awareness is being achieved, although there has not yet been an official measurement of the initiative's impact.



*PTW safety event, Sungai Besi Toll House, Kuala Lumpur, Malaysia, In corporation of The Ministry of Transport, the Road Safety Department, the motorcycle manufacturer, the Police Department and NGO Free service bike campaign to check all brands of bikes during the Festive season 'HARI RAYA' in the month of June 2018*

# ROAD SAFETY JAMBOREE - PHILIPPINES

## Introduction

The industry, supported by government authorities, has introduced a concrete approach for cultivating responsible rider behaviour and attitude when sharing the road with different users. Riders are strongly involved in various activities which aim to enhance their responsibility as reliable and respectful road users.

## Summary of the initiative and activities developed

The industry has organized a multitude of activities with the active involvement of riders and riders' federations, including teambuilding activities, personal testimonies, sharing best practices and the dissemination and promotion of various safety awareness campaigns. The industry has also strengthened voluntary work to improve road safety.

## Results achieved

The first Jamboree in 2012 attracted 300 riders. To reach more riders and enthusiasts in local municipalities, two Road Safety Mini-Jamborees were organized in 2013 and attended by more than 500 riders from the southern provinces of Luzon. In 2016 the Road Safety Jamboree, renamed the Road Safety Festival, attracted almost 500 riders and enthusiasts from the northern provinces of the country together with other road safety advocates and government officials.



# SAFE RIDER PROGRAM - INDIA

## Introduction

Society of Indian Automobile Manufacturers (SIAM) has partnered with stakeholders in safety and environment to set up the Society for Automotive Fitness & Environment (SAFE), supporting road safety awareness programs across India.

## Summary of the initiative and activities developed

The industry has established free safety training for first-time riders by professional instructors, with courses tailored to the specific needs of target audiences. They are conducted with a high degree of interaction and participation and tackle all levels of literacy and understanding in all major Indian languages.

An essential part of the programme emphasizes the vulnerability and limitations of a rider, as PTWs account for nearly 30% of road fatalities in India. Riding assessment, demonstration, rides and feedback are all optional parts of the training program. The courses include pre- and post-course written tests and grading and, if desired, an on-the-road ride assessment.

## Results achieved

- In the absence of two-wheeler training institutes, SIAM members are voluntarily providing the Safe Riders training to novice drivers.
- Many of India's leading companies, several diplomatic missions and a variety of organisations ranging from NGOs to Government departments use these programs to train their personnel in road safety and have reported a significant improvement in their safety records.



*The industry provides Safe Rider Training programmes for women across the country (India)*

# SOCIETY HELMET PROJECT - THAILAND

## Introduction

The industry initiated a large-scale national campaign to raise awareness of and to encourage the proper use of helmets, working with government agencies, civil organization and the private sector.

## Summary of the initiative and activities developed

The 'Society Helmet Project' aimed to reduce the mortality rate of motorcycle accidents and improve responsibility of riders and passengers with regards to helmet wearing. The campaign involved national TV and radio, as well as online campaigns featuring popular personalities. The campaign distributed helmets in all levels of schools and universities, emphasising the need for correct helmet wearing.

## Results achieved

- More than 35,000 helmets were distributed to students all around the country
- The project now forms part of the curriculum at high schools and elementary schools
- The real impact of this project will be evaluated 3 years after its launch.<sup>46</sup>



*Society Helmet Campaign, Episode 3 "Dream Protector", Bangkok, Thailand Press Conference: 5 September 2018 A corporation with Office of the Basic Education Commission (OBEC), Save the Children, and TAIA member. launching a helmet campaign to encourage parents to wear helmets when riding on a motorcycle.*

<sup>46</sup> <https://thestandard.co/safety-motorcyclehelmet/>

# TRAINING ON ROAD TRAFFIC LAW AND SAFETY RIDING SKILLS - VIETNAM

## Introduction

Training and educational courses are provided by the industry, along with stakeholders, to meet the needs of various groups of riders. General road safety courses are also offered to students in Vietnam.

## Summary of the initiative and activities developed

Various training courses are provided, tailored to the needs of groups including novice riders, advanced riders, corporate riders and traffic police.

## Results achieved

- In 2017, the industry provided safety training to 168,296 youth and student trainees and 524,096 customers and local residents, as well as 703 police officers.
- In 2017, the industry provided general road safety educational courses to over 3 million students – 6% more than in 2016.



*Safety event for children – Industry offers road safety education for children all over the country next to specialised motorcycle training courses, Hanoi, 2018*



# ANNEX 2: FEEDBACK FORM

Name:

Organisation:

Country:

Email:

No.	Question	Response (Yes/No)- With explanation
1.	Do you represent Government, other public authorities, NGO, research body, or other (if other, please specify)?	
2.	Does IMMA's Road Safety Paper provide a useful overview of the global and regional PTW safety situation?	
3.	Are you satisfied with the facts and figures shared in this paper with regards to PTWs worldwide? If not, what elements do you think should be added?	
4.	Do you find IMMA's Publication helpful in tracking the overall trends in PTW safety?	
5.	Will this publication help your country/region to adopt new road safety awareness initiatives?	
6.	Please share any recommendations/additional feedback for improving future updates of the document?	

**Please respond to:**

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20, Route de Pre-bois • CH-1215 Genève 15 • Switzerland  
Contact: [info@immamotorcycles.org](mailto:info@immamotorcycles.org)



# ANNEX 3: PICTURES

## Pictures contributed by:

**ABRACICLO** (pages 5, 9, 16, 23, 62, 63, 64)

**ACEM** (pages 10, 16, 23, 40, 41, 42, 58, 60)

**ARRB** (pages 28, 31)

**CMC** (pages 44)

**FAMI** (pages 5, 6, 31, 33, 35, 38, 55, 61, 72)

**Honda/Honda (UK)** (pages 23, 33, 44)

**IMMA** (page 4)

**IRTE** (page 26)

**IVM** (page 59)

**JAMA** (cover and pages 11, 13, 15, 23, 43, 65)

**KTM** (pages ix, 31, 37)

**MASAAM** (pages 31, 67)

**MDPPA** (page 70)

**MCC** (page 66)

**MSF** (pages 16, 68)

**SIAM** (pages 5, 7, 16, 33, 36, 71)

**UNECE** (pages 47, 48)

**USMMA** (pages 17, 23, 35, 49)

**VAAM** (page 73)



