

Improving motorcyclist safety: Priority actions for Safe System integration

At a glance

- Powered two- and three-wheelers (PTWs) are one of the most common and popular modes of individual transport in the world.
- PTWs provide essential mobility for commuters and professional drivers for delivery and first responder services, as well as tourism and leisure.
- PTWs' affordability, flexibility and performance in dense traffic have driven their increased use, particularly in low- and middle-income countries.
- According to the WHO, PTW users accounted for 30% of all road-traffic deaths worldwide in 2016.
- The picture differs at the regional level, with fewer fatalities in Europe and many more in Southeast Asia.
- Addressing the safety of motorcyclists is essential to meeting global road-safety targets and helping create a Safe System for all users.
- This Policy Brief sets out eight priority actions for governments, road safety authorities, fleet owners, manufacturing industry and rider groups.

Motorcycling is one of the most common modes of transport in the world. But the use of powered two-wheelers (PTWs) raises major safety issues for people, governments and road-safety authorities.

This Policy Brief summarises the current extent of PTW usage worldwide, highlights pressing safety issues for motorcyclists and presents priority actions for improving motorcycling safety.

It results from a series of virtual workshops on motorcyclist safety held in 2021 and co-hosted by the International Transport Forum (ITF) and key road-safety partners.

The workshops brought together more than 150 experts, representing a wide range of stakeholders, including policy makers, researchers, motorcyclists and industry groups.

The main aim of the workshops was to discuss how the recommendations of the third Global Ministerial Conference on Road Safety, held in Stockholm in 2020, apply to motorcycling.

In December 2021, the Swedish National Road and Transport Research Institute (VTI), published [a summary of the workshop series](#). This Policy Brief draws on that document as well as the presentations of individual researchers during the workshops.

Motorcyclists' Safety: Riding in a Safe System

Virtual workshop series
June/September 2021

This Policy Brief is based on a 2021 series of virtual workshops on motorcyclist safety co-hosted by the International Transport Forum (ITF), the Swedish Transport Administration ([Trafikverket](#)), the Swedish National Road and Transport Research Institute ([VTI](#)), the International Motorcycling Federation ([FIM](#)), the International Motorcycle Manufacturers' Association ([IMMA](#)) and the European Association of Motorcycle Manufacturers ([ACEM](#)).

[Access the workshop presentations, videos of proceedings and further resources.](#)

Motorcycling around the world

Motorcycling is one of the most common modes of transport in the world.

[People use PTWs as a mode of transport for varying reasons](#), including primary mobility purposes; professional uses such as delivery and first responder services (e.g. traffic police, medical assistance and fire fighters); and for tourism, leisure and sport.

Defining powered two- and three-wheelers

There is a wide range of PTWs on the market. While national classifications differ, generally speaking the term PTW encompasses mopeds, motorcycles and scooters. Tricycles or three-wheelers are also often included in this category.

The most typical PTWs are motorcycles, with an engine displacement above 50 cubic centimetres (cc); and mopeds, with an engine displacement equal to or below 50 cc.

Scooters, corresponding to a shape classification (“step-through” design) and an engine with automatic transmission, can be either the motorcycle or moped type, depending on engine displacement. PTWs can be powered by thermal or electric engines.

Regional motorcycling trends

Motorcycling safety differs significantly between regions. The share of PTW fatalities ranges from around 10% in Africa and Europe to over 40% in Southeast Asia.

The affordability and flexibility of PTWs, and their performance in dense traffic conditions, have led to a continuous increase in use in all regions, and in particular in low- and middle-income countries.

In Africa, Asia and Latin America, PTWs are the only affordable mode for millions of people, providing access to education, work and medical care. Several countries have also seen a sharp increase in the use of PTWs for urban deliveries, in particular since the Covid-19 pandemic.

As a result, the share of PTWs in traffic is extremely high in some countries, for example in India (72%) and Indonesia (80%).

The nine recommendations of the Academic Expert Group

- 1. Sustainable practices and reporting:** Include road safety interventions across sectors as part of Sustainable Development Goals contributions.
- 2. Procurement:** Utilise the buying power of public and private organisations across their value chains.
- 3. Modal shift:** Move from personal motor vehicles towards safer and more active forms of mobility.
- 4. Child and youth safety:** Encourage active mobility by building safer roads and walkways.
- 5. Infrastructure:** Realise the value of Safe System design as quickly as possible.
- 6. Safe vehicles across the globe:** Adopt a minimum set of safety standards for motor vehicles.
- 7. Zero speeding:** Protect road users from crash forces beyond the limit of human injury tolerance.
- 8. 30 km/h:** Mandate a 30 km/h speed limit in urban areas to prevent serious injuries and deaths of vulnerable road users when human errors occur.
- 9. Technology:** Bring the benefits of safer vehicles and infrastructure to low- and middle-income countries.

Source: Swedish Transport Administration (2019), [Saving Lives Beyond 2020: The Next Steps](#).

Motorcycling safety challenges

According to [the most recent WHO data](#), riders of powered two- or three-wheeled vehicles account for almost 30% of all road-traffic deaths worldwide. This figure has remained essentially unchanged in the past decade. In some countries, however, PTW users represent more than 70% of road deaths.

[The UN Second Decade of Action for Road Safety \(2021-2030\)](#) aims to reduce by 50% the number of people killed and seriously injured in road crashes.

Governments and road safety authorities need to address the safety of PTW riders and passengers promptly if the world is to meet this target.

Measures to improve motorcyclist safety can also help create a Safe System for all road users.

Priority actions for motorcyclist safety

Participants at the 2021 workshop formulated recommendations for governments, road safety authorities, fleet owners, manufacturers and riders' groups. These actions mirror the recommendations of the Academic Expert Group (see box), with the overall aim of integrating PTW safety in [the Safe System approach](#).

1. Move to sustainable corporate management practice for powered two-wheelers

Public and private organisations should, in the context of the Safe System principle of Shared Responsibility, apply best practice in PTW safety.

All organisations should report, separately for PTWs, on their safety footprint across the entire value chain, to improve road safety for professional users, customers, employees and other road users.

Fleet owners and local governments should assess where and how they use PTWs in their operations. Furthermore, fleet owners, policy makers and researchers should develop and promote self-regulation and legislation for professional PTW taxi and delivery fleet operators.

Finally, governments and researchers should perform PTW risk assessments and develop local sustainable transport plans.

2. Make smarter use of urban space

Governments should support shifts both away from and where appropriate towards PTWs, to improve the overall safety, efficiency and sustainability of urban mobility. This means rethinking infrastructure and urban planning and reallocating road space to include sustainable and safe use of PTWs.

Manufacturers and researchers should improve and demonstrate the safety and environmental footprints of PTWs as a space-efficient mobility mode. City planners should also enable better connection of PTWs with public transport.

Local governments should improve the management of PTW parking capacity, especially at public transport hubs to enable modal shift from and to PTWs. Other measures include preserving pedestrian access through better parking infrastructure design and enforcing parking rules.

Local and national governments should increase safe transport choices. Authorities should make more school buses available for small children to reduce their forced reliance on PTWs, which is a particular challenge in low- and middle-income countries.

3. Adopt safe vehicles and equipment in line with international standards

Regulations, procurement policies and incentives from governments, fleet operators and insurance companies should promote safe vehicles and products. Industry should also continue to drive safety performance in all markets. This applies particularly to PTW safety technologies.

The Second Decade of Action prioritises anti-lock braking systems (ABS) and combined braking systems (CBS) for accelerated rollout. Policy makers in all regions should develop progressive roadmaps to equip new motorcycles with ABS, adapted to local contexts. Corporate fleet owners should set voluntary policies and procurement guidelines that specify fitting CBS and ABS on new vehicles.

In line with [UN General Assembly Resolution 74/299](#) (2020), national and regional regulatory bodies should implement the minimum requirements of the [World Forum for Harmonization of Vehicle Regulations](#) (WP.29). Automatic headlamp-on (AHO) systems are a minimum requirement under WP.29 and the 1968 Vienna Convention on road traffic, but require further promotion as a PTW safety solution.

Scientific results from independent consumer safety-rating programmes should stimulate consumers to choose safe vehicles, helmets and other personal protective equipment (PPE). For example, the Malaysian Institute of Road Safety Research has developed [a motorcycle assessment programme](#) that could offer a model for other jurisdictions.

Governments and vehicle industries should safely integrate PTWs in connected and automated mobility, addressing both efficient connectivity systems and the detection of PTWs by other vehicles.

4. Educate motorcycle riders and promote a traffic safety culture

Governments, authorities, rider associations and industry groups should promote state-of-the-art rider education and licensing systems. They should all work to accelerate the availability of effective, affordable and accessible education, training and licensing programmes in all regions but especially in low- and middle-income countries.

PTW training and education programmes should increase rider awareness of the risks involved when riding with a child and provide recommendations for minimising these risks.

Public and private organisations should also lead the development and promotion of a new traffic-safety culture. They should raise awareness of risks, interactions with vulnerable road users and the benefits of helmets and other PPE.

5. Redesign infrastructure to increase motorcyclist safety

Infrastructure must be safer for PTW users, starting with the design of roads and traffic systems. Governments and road authorities should comply with the latest infrastructure safety standards related to PTW use and update documentation to reflect best practice and Safe System principles.

Infrastructure managers, researchers and institutions should update and promote road design standards, manuals and guides to reflect best-practice knowledge on PTW safety.

All stakeholders should develop new ideas to rethink the traffic system, for example regarding space re-allocation and infrastructure design.

Researchers, manufacturers and governments should share knowledge of safe and efficient infrastructure solutions which support the mix of PTWs, other vehicles and other vulnerable road users in road traffic.

6. Ensure safe speeds for all road users, including motorcyclists

Road authorities should set appropriate speed limits aligned with Safe System principles. All stakeholders should promote technology, infrastructure design, enforcement, procurement, information, training and education to ensure speed-limit compliance.

All stakeholders should promote a maximum 30 km/h speed limit in urbanised areas where

vulnerable road users and vehicles frequently mix. They should also develop infrastructure design solutions for traffic calming.

Industry bodies, insurance companies and authorities should develop and promote new solutions for supporting riders in choosing the appropriate speed.

7. Reduce children's exposure to motorcycle crashes

Children are one of the most vulnerable road-user groups, and the risks to children riding as passengers on PTWs are extensive. Governments at all levels should offer suitable transportation alternatives (e.g. school buses) to PTW riders carrying small children.

Child PTW passengers should use appropriate safety equipment, and PTWs should have relevant child-occupant protection systems. Urban safety and urban mobility plans should aim to reduce risks for children and youth on PTWs.

Children should be protected in school zones through additional infrastructure measures and other interventions including technological solutions.

Training and education for riding PTWs should address and minimise the risks of riding with a child. Corporations and governments could require subcontractors to have policies preventing child or youth passengers on company-owned motorcycles.

8. Invest in knowledge on the causes of and remedies for motorcycle crashes

Governments, industry groups and the research community need to fill knowledge gaps and develop innovative solutions for the safety of PTW users.

Substantial funding should be deployed quickly for in-depth, epidemiological and biomechanical research into the mechanisms of PTW crashes and their consequences, and measures to remedy them.

Colophon

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International Transport Forum
2 rue André Pascal, F-75016 Paris
contact@itf-oecd.org
www.itf-oecd.org

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