

3. Infrastructure safety (John Dawson)

Key Points

- Infrastructure safety needs budgets and programmes proportionate to road crash costs.
- Managing infrastructure safety needs performance metrics.

Safer Road Investment Plans

- As the economy recovers, travel exposure is increasing. The EU target, and global UN Sustainable Development Goal 3.6 commitment, is to halve road deaths by 2020. It will not be met with 'business as usual'.
- Ministers, NGOs and engineers are motivated to save lives and trauma. But the resources needed to act require compelling investment cases and the right financial instruments. Leading countries have now established specific programmes or funds to tackle risky roads.
- The OECD urges focus on the cost of road crashes and where they fall (eg health). Around 1% - 2% of GDP is lost in road crashes. A compelling investment case to act on risky road infrastructure is now possible through generating high return *Safer Road Investment Plans*.

The Safe System

- In the 1990s, vehicle safety performance began to be measured by the New Car Assessment Programme (Euro NCAP). Euro NCAP crash tests and Star Rates new vehicles for safety. Tens of thousands of lives have already been saved through rising vehicle safety.
- The EU has adopted the *Safe System* approach to drive action. The main pillars are safer road users (belts, helmets, drink, speed); safer vehicles; and safer road infrastructure.
- As a rule of thumb, each pillar can contribute 1/3rd to overall goals. Each pillar reinforces others. For example, on motorways at 110kph, airbags and crumple zones on modern vehicles work with roadside fencing to absorb crash energies. People often drive away.
- The aim in leading countries is to make travel by road as safe as rail and air in a generation with Safe System actions, not least infrastructure safety, backed by a robust business case.

Measuring to Manage

- Proprietary Risk Mapping is widely used by authorities to measure local crash rates.
- EuroRAP colour coded Risk Mapping was designed by researchers to enable transparent benchmarking for authorities and citizens which tracks rising safety

performance over time. Results are available for most of Europe: 10 EU countries contribute new results in 2017.

- Risk Mapping quickly shows low and high risk roads. Users can face variations in risk in the same country of 50-fold or more. Motorways are typically 6 times safer than single carriageways where brutal junction impacts or roadside hazards like trees kill and maim.
- For safety investment planning, the in-built risk of roads, like cars, can now be Star Rated. The International Road Assessment Programme (iRAP), a charity funded by philanthropies with World Bank support, provides tools now applied in more than 70 countries.

Investment Goals

- The mid-term review of the UN Decade for Road Safety (A/70/386) recommends targeting the 10% of roads where 50% of deaths are typically concentrated and adopting the 3-Star iRAP benchmark for vehicle occupants, pedestrians, cyclists and motorcyclists. Special attention needs to be paid to Star Ratings for pedestrians and cyclists in towns and villages.
- Targeting travel on existing road networks is essential to achieving the safety goal. For example, on national networks: Sweden is investing to achieve 75% of travel at 3-Star or better by 2020 and near 100% by 2025; England is targeting 90% of travel by 2020; the Netherlands is 8km from achieving 100% of travel at 3-Star or more on its national network.
- At the same time, some communities suffer high risks. In England, a portfolio of the 50 most dangerous local main roads is being targeted with a new €200m *Safer Roads Fund*. Applications to the fund are supported by *Safer Road Investment Plans* with good returns.
- The safety goal for the TEN-T is currently vague: 'the best possible safety standards'. Today, just 50% of TEN-T travel in the east of Europe (Latvia to Greece) is estimated at 3-Star or better. However, the Slovakian Motorway Company demonstrated raising safety levels across more than 300km of network from 27% at 3-Star to 77% in just 2 years for €40m.
- The majority of road deaths, and travel, are concentrated on 10% of Europe's roads. This economically important, largely rural network, comprises the TEN-T, national roads and busy regional roads. Europe's safety goal requires targeting this network. It also needs development for the reliable operation of highly automated vehicles.

What is Safer Infrastructure?

- There are 90 infrastructure safety measures identified by iRAP. Some obvious - pedestrian footpaths and crossings; roundabouts; signals; protected junction turning bays; central hatching; safety fences. Some lesser known but vital like sealing road shoulders.

Recommendations for Member States

- *Consider establishing infrastructure safety performance goals for road agencies and concessions – and track progress. Encourage civil society participation in measuring and communicating infrastructure safety and developing performance goals.*
- *Consider a national Safer Roads Fund dedicated to targeting high risk roads. Consider a Safer Road Investment Programme. Would Safer Road Investment Plans with benefit cost ratios of 5 compete comfortably with other projects as well as save lives?*

Recommendations for the European Union

- *Review programme goals and financial instruments. Consider safety performance goals for the TEN-T such as 75% of travel at 3-Star or better by 2020 and 95% by 2030. Consider a Safer Road Fund or other programme instrument to deliver this. Encourage EU financial instruments (eg CEF, H2020) and institutions (eg EIB, EBRD) to follow through. Review the Road Infrastructure Safety Management Directive to focus on measured outputs and less on inputs.*
- *Support Development of Europe's Roads of Economic Importance. Consider support for development of a network of major rural roads through targeted funding to eliminate high risk roads and through regional trans-national cooperation projects.*