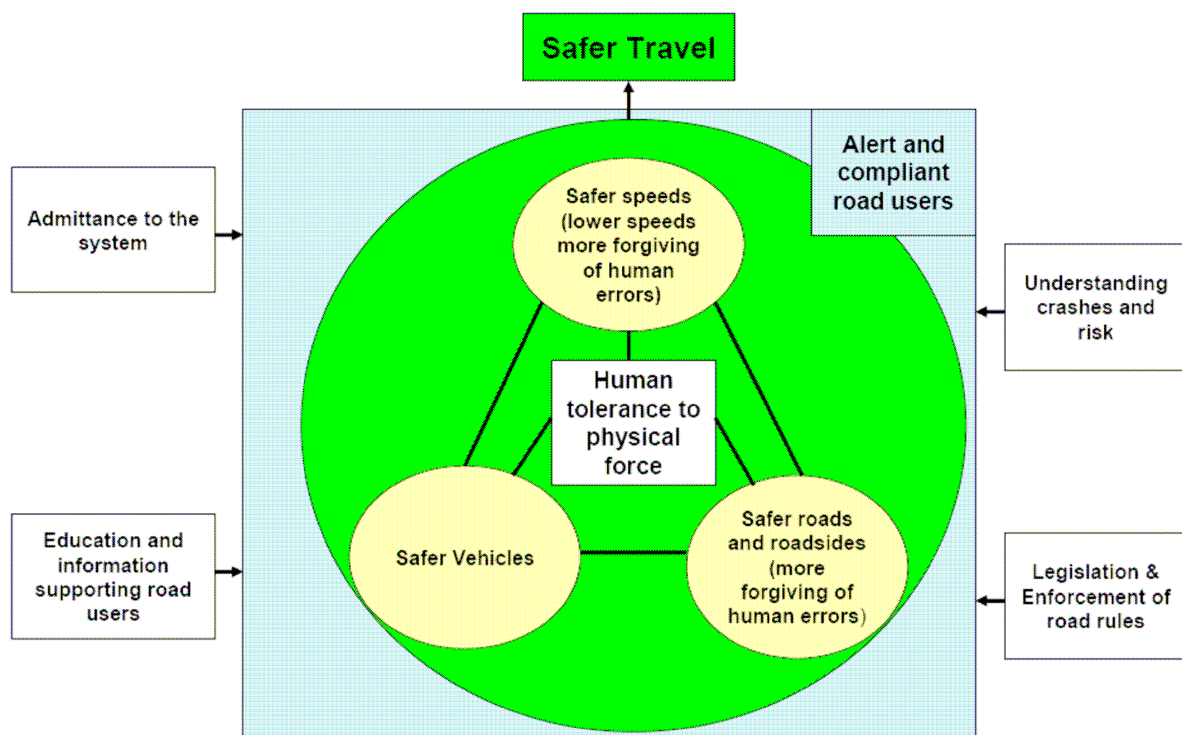


The Safe System Partnership

The Safe System Partnership is a guiding philosophy which acknowledges that the design of vehicles and road environments must be based on human limitations. It was developed in Europe where it is implemented through their national strategic plans such as vision zero (Sweden) or sustainable safety (Netherlands).

The key components of a Safe System are safer roads, safer travel speeds, safer vehicles, alert and compliant road users and the use of safer technology. This approach to road safety emphasises the way different elements of the road transport system combine and interact with human behaviour to produce an overall effect on road trauma.

Safe System



While the view of the road safety problem expanded to recognize particularly the role of vehicle and road factors, human behaviour and personal responsibility remained a critical consideration.

What is a Safe System ?

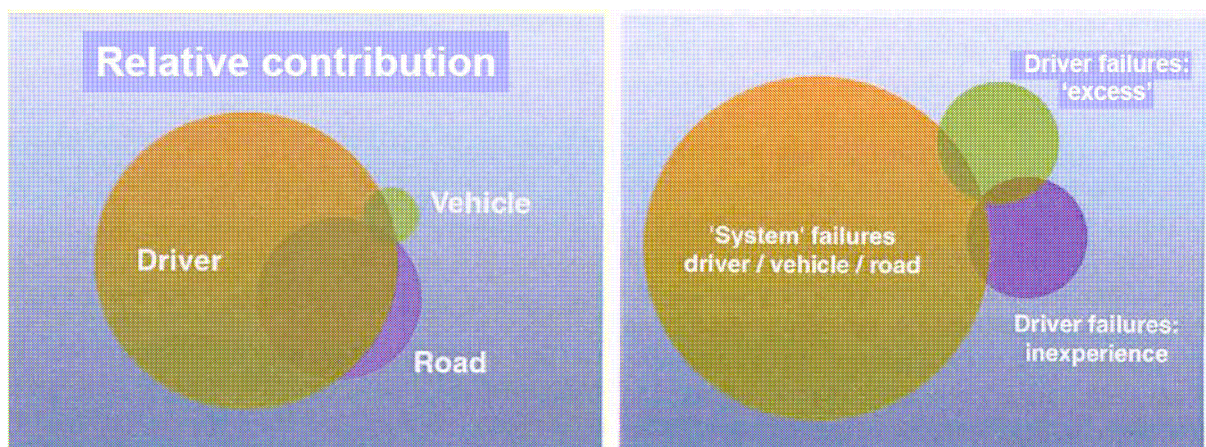
- Recognises limits of the human body.
- Is a Systematic approach.
- Recognises that crashes are going to happen even with a focus on prevention.
- Aims to minimise severity of injury.
- Based on premise that people should not die because of system failures.

Safe System approaches

Developed in Europe where its implemented through their national strategic plans such as *Vision Zero* (Sweden) or *Sustainable Safety* (Netherlands).

Works on the principle that humans are fallible and therefore road crashes are inevitable..... BUT road deaths are preventable.

Responsibility shifts from drivers to system failures in a safe system model :



Rod Kimber TRL (2003)

Key components of Safe System

- Safer Roads and Roadsides
- Safer Travel Speeds
- Safer Vehicles
- Alert and Compliant road users

Vision Zero

Vision Zero is a long-term strategy in which the system and its use are gradually integrated and where the responsibility for safety gradually becomes shared by the designer and the user of the system.

Such a system that is built on tolerating human error leads sooner or later to a changed pattern of responsibility within the automotive industry, road engineers and traffic planners.

"In a broad sense, the decision [to adopt Vision Zero] stimulates innovations and investments into the road transport system, and gives a new perspective as to how the society can handle different actors in a complicated world.

If mobility is what society wants, it can only reach that by an increased inherent safety. If safety is what society wants, it can be reached in two ways – reduce mobility or invest in safety."

Claes Tingvall, 1998

Sustainable Safety

Sustainable Safety is a road safety concept which has been developed and adopted in the Netherlands.

In Sustainable Safety, the entire traffic and transport system is adapted to human limitations.

The essence of the Sustainable Safety (SS) approach is:

« prevention is better than cure »

In Sustainable Safety...The infrastructure prevents road use involving large differences in direction, speed, and mass and directs the road user towards safe behaviour.

Vehicles are constructed to simplify the driving task and offer protection in the event of a crash.

Human tolerances to physical forces

Vehicle impact speeds and fatality thresholds for different road users and crash types.

- < 30km/h - pedestrians, cyclists, motorcyclists.
- < 40km/h - vehicle occupants in side impact crashes with trees and poles.
- < 50km/h - vehicle occupants in side impact crashes with other vehicles.
- < 70-80km/h - vehicle occupants in head on crashes



Road crashes occur when there are weaknesses or failures in each of the lines of defence, ie the Swiss cheese model.



Proportion of the target reduction

safer roads 48%

safer vehicles 25%

safer road users 23%

new technology 5%.

However it now seems that direct behavioural strategies, certainly relative to road improvement programs, have a more modest role to play in achieving further road toll reductions. Arguably, the time is ripe for a fresh approach to tackling road safety problems.

DESCRIBING A SAFE SYSTEM STRATEGY

Sweden has developed a 'Vision Zero' approach, one of the features of which strategy is to view any level of death or serious injury from the road system as unacceptable to a civilized society. The Netherlands has developed 'Sustainable Safety' as a closely related approach, with the aim of creating a traffic system in which no crash can result in serious injury or death.

Both Vision Zero and Sustainable Safety:

- not only aim to eliminate death and serious injury from their transport systems but argue that it is a moral imperative to do so;
- recognize that the efforts of education and enforcement notwithstanding, road users will remain fallible – in some cases, deliberately, even criminally so;
- aim to develop a transport system able to accommodate human error. The basic means to achieve this is through better management of crash energy, so that no individual road user will be exposed to the possibility of death or serious injury;
- incorporate any number of options to allow the management of crash forces, including the physical separation of vulnerable road users from motorized traffic. In both approaches, the road network has a predominant role;
- rely also upon appropriate posted speeds as a primary protective component in a safe system – with 'appropriate' being determined by the need for survivable, non-maiming impact speeds in the event of a crash.

Both Vision Zero and Sustainable Safety have a comparable view towards road user behaviour within the transport system. The Sustainable Safety philosophy describes the road user as the weakest link in the transport chain⁷: the individual road user is largely unpredictable and cannot be relied upon to behave safely over the long term, education and information efforts notwithstanding.

Similarly, Vision Zero does not argue against the need for educational and other programs to curb inappropriate behaviours. Nor does it argue against licensing policies aimed at ensuring only those fit to drive safely, use the roads. It does argue however, that for as long as inappropriate behaviours are likely, the system needs to strive to protect all road users from the impact of these behaviours.

Early development of Australasia's Safe System

The Austroads Council at its meeting in November 2003 accepted that at least for the immediate future, the greatest road safety gains would be achieved through adopting a Safe System approach. The description of the Safe System strategy that was

presented to the Council and has since been further developed, has close similarities to the Swedish and Dutch approaches:

- it is accepted that crashes will continue to occur, prevention efforts notwithstanding;

- the challenge for the proposed Safe System in the event of a crash, is to ensure that the impact forces released in the event of a crash are within the boundaries of human tolerance and that no fatalities will occur (and that serious injuries will be reduced);

- the key task of the Safe System is to manage vehicles, the road infrastructure and speeds in order to minimize the probability of death as a consequence of a road crash;

- as with Vision Zero and Sustainable Safety, the Safe System approach does not dismiss individual road user responsibilities and behavioural countermeasures (for example, it stipulates the need for alert and compliant road users) but explicitly points to these aspects as supporting components of the system.

It is proposed that the Safe System framework will be used to support three key road safety streams

- safer roads and especially improved road risk assessment, treatment and standards – that is:

improved risk analysis of the road network and its crash-related safety performance; identification of the most effective treatments including those offered by Intelligent Transport Systems; and a review of current safety standards (including those relating to speed limits, clear zones and roadside hazard control) to develop appropriate safety benchmarks for both new works and remedial treatments;

- safer speeds – whereby speed management is seen as a complementary measure to roadbased improvements, especially in treating high-risk sections of the road network where there are no immediate engineering options;

- safer vehicles - to be achieved especially through improved marketing of vehicles with high safety ratings, largely through a two-pronged approach involving the promotion of vehicle crashworthiness ratings to the general public and the development of safer fleet vehicle purchase policies.

As with previous major road safety advances (for example, compulsory use of seat belts, random breath testing and lowered urban speed limits), the effectiveness of the Safe System approach will depend first and foremost upon the extent of forthcoming political commitment.

6. CONCLUSIONS

Austrroads' Safe System approach represents the latest evolution in road safety strategies in Australasia. While it remains firmly linked to previous efforts - for example, both it and the Haddon matrix have as a common key plank, the better management of crash energy – Safe System also has a number of distinctive characteristics. It:

- aims to reduce all fatalities arising from road crashes and to reduce all other serious road trauma

- recognizes that prevention efforts notwithstanding, crashes will occur

- seeks to manage crash energy through the interaction of travel speed, vehicles, roads and roadsides

- identifies that road users need to be informed of and encouraged to comply with road rules.