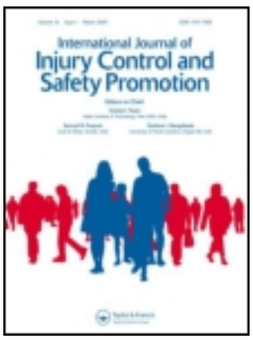

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Vision Zero – a road safety policy innovation

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The aim of this paper is to examine Sweden's Vision Zero road safety policy. In particular, the paper focuses on how safety issues were framed, which decisions were made, and what are the distinctive features of Vision Zero. The analysis reveals that the decision by the Swedish Parliament to adopt Vision Zero as Sweden's road safety policy was a radical innovation. The policy is different in kind from traditional traffic safety policy with regard to problem formulation, its view on responsibility, its requirements for the safety of road users, and the ultimate objective of road safety work. The paper briefly examines the implications of these findings for national and global road safety efforts that aspire to achieving innovative road safety policies in line with the Decade of Action for Road Safety 2011–2020, declared by the United Nations General Assembly in March 2010.

Keywords: Vision Zero; road safety; public policy; Sweden; decade of action for road safety

1. Introduction

Sweden's Vision Zero road safety policy is cited in the scientific literature and in various programmes as an example of an innovative road safety policy (Corben, Logan, Fanciulli, Farley, & Cameron, 2010; Elvebakk & Steiro, 2009; Johansson, 2009; Larsson, Dekker, & Tingvall, 2010; OECD/ITF, 2008; World Health Organization & World Bank, 2004). In Spring 1995, work on the development of a safe system approach started within what was formerly the Swedish Road Administration. The results of this development work were documented in a memorandum entitled 'Vision Zero – An idea for a road transport system without health losses' (Vägverket, 1996). This policy memorandum quickly attracted political interest, and the Minister of Transport and Communications at the time, Ines Uusmann, initiated a policy-preparation process that culminated in the Swedish Parliament giving its firm backing to the Government's proposal for adopting a new direction in traffic safety work in October 1997. This was the so called Vision Zero (Swedish Government, 1997).

What is widely known about and highlighted in Vision Zero are the policy's principles and the fact that it represents a radical departure from many other road safety policies worldwide – in that it envisions zero deaths as the ultimate road safety goal (Johansson, 2009; Larsson et al. 2010). What is less known about the policy is its political context, and especially its development as part of Swedish democratic and parliamentary practice. The aim of this article is to examine Vision Zero as an innovative road safety policy in Sweden, decided upon by the Swedish Parliament. In particular, the article focuses on how issues were framed, which decisions were made, and what are the distinctive features of Vision Zero. It is hoped that the article will provide useful information to countries that are thinking about adopting a Vision Zero, or other radical, approach to national road safety policies.

In March 2010, the United Nations General Assembly declared the Decade of Action for Road Safety 2011–2020, and UN road safety collaboration resulted in the development of a guiding document, the Plan for the Decade of Action (UN Road Safety Collaboration, 2010). Some of the leading principles in this plan are ones included in Sweden's Vision Zero. The findings presented in this article are relevant to national governments as they develop and implement plans of actions for the Decade of Action, in that they point to the importance of innovative and radical political decisions in the search for solutions to their road safety problems. This article therefore makes a contribution to road safety research by demonstrating

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that a road safety policy has several important aspects, and – in the case of Vision Zero – not only the long-term goal of eliminating deaths and serious injuries. This kind of knowledge is generally lacking in road safety research, which tends to focus on analysing the outcomes of road safety policy, such as changes in road traffic fatalities. Although this article highlights the core goal and principles of Vision Zero, its key contribution consists in showing that 'road safety is no accident' with regard to policy development.

2. Conceptual model

A public policy process can be divided into a number of steps: (1) a policy problem appears on the agenda, (2) a policy is formulated, (3) the policy is formally adopted, (4) the policy is implemented and (5) the policy is followed up and evaluated (Dunn, 1994; Premfors, 1989; Vedung, 1997). Based on this conceptual model, the decision to adopt a policy, which is the third step, can be regarded as a political decision-making process (Hogwood & Gunn, 1984). Vision Zero was formally adopted by Sweden's highest decision-making body, the Swedish Parliament, in 1997. According to Anderson (2000), however, positioning the adoption of Vision Zero at the third step would entail the acceptance of too narrow a definition of public policy. He takes the view that a public policy should be defined as: 'A purposive course of action followed by an actor or set of actors in dealing with a problem or matter of concern'. Accordingly, on Anderson's definition, Vision Zero should be positioned at both the third and fourth steps (Anderson, 2000).

Perhaps the most important reason for distinguishing between the actual adoption of a policy and its implementation is that it is Parliament that interprets the will of the people and adopts the policy, after which there are a number of other players whose task it is, in a democratic chain of events, to take practical action to implement that policy (Wilson, 1887). In implementation research, policies have an important role to play, because their adoption provides a starting point for implementation, while – at the same time – offering a reference point for future evaluations (Hill & Hupe, 2002). The focus of this article is on the political decision-making process, and how Vision Zero was framed, negotiated and expressed in the documents that served as a basis for the parliamentary decision.

Analysing a public policy involves gathering information to answer a variety of questions. Examples include: What is the primary problem that needs to be addressed and therefore requires a policy? What goals need to be achieved? In what way is the problem to be solved? A public policy, such as Vision Zero, can be looked at in terms of policy theory, programme theory, or intervention theory (Hoogerwerf, 1990; Leeuw, 2003; Mickwitz, 2003; Patton, 2002; Rossi, Lipsey, & Freeman, 2004; Vedung, 1997). For this study, we chose to use a policy theory framework in order to examine the political processes at work with regard to Vision Zero, encompassing not only the ones that led to the proposals but also to their adoption.

3. Methods

We subjected the documents available to content analysis and interpretation. Two background documents provided helpful information: the Government's proposal to Parliament (Swedish Government, 1997) and the Traffic Committee's proposal (Swedish Parliament & Committee on Transport and Communications, 1997) for a decision by Parliament. In total, the two documents comprise 90 pages. The analysis proceeded as follows: (1) the documents were read several times, (2) a number of questions were formulated on the basis of the texts and (3) the questions were answered and presented in an analysis chart. The analysis chart is based on the policy theory model (Hoogerwerf, 1990; Leeuw, 2003; Mickwitz, 2003; Patton, 2002; Rossi et al. 2004; Vedung, 1997).

The following five questions were formulated: Which problems are to be solved? What is the long-term goal? On the basis of which general principles is the goal to be achieved? Who is responsible for safety? How should the principal players direct their work to create a safe road transport system? The answers to these questions, together with expressions used by the Traffic Committee in its report, constitute a reconstruction of the theory underlying the Vision Zero policy. In the Government Bill and the subsequent report, a number of concrete questions regarding various measures are also taken up. However, these were not considered in this study since our focus was on the overall policy direction of Vision Zero. The proposals made by the Government and the Traffic Committee for various measures were regarded more as a part of the implementation of Vision Zero than its actual formulation.

4. Findings

Our findings are presented below. We begin by presenting details of the discussion and voting in the Swedish Parliament with regard to the adoption of Vision Zero and the setting of Swedeńs road safety policy. We then go on to examine the underlying logic of the principles of Vision Zero as they were discussed in the Parliament.

On 9 October 1997, the Swedish Parliament decided to adopt a new direction and a new long-term goal for safety in road traffic – Vision Zero.

'Parliament supported the Government's decision to adopt a new direction for traffic safety based on the Vision Zero framework. The goal is that no-one shall be killed or seriously injured as a consequence of accidents in road traffic. The design and function of the road transport system shall be adapted to meet the requirements that follow from Vision Zero' (Swedish Parliament & Committee on Transport and Communications, 1997).

Five month earlier, on 22 May 1997, the Social Democratic Government submitted a Bill entitled 'Vision Zero and a traffic-safe society' to the Swedish Parliament for processing. The Committee's processing of the Bill did not lead to any changes, and all the parliamentary parties voted in support of it. On the other hand, in a reservation, the Green Party objected to the decision to replace the traffic safety goal that was in force at that time. The Green Party felt that Vision Zero should include specific sub-goals which, among other things, would focus on the problems faced by children in traffic. This reservation meant that Parliament was forced to adopt a stance on two issues. Basically, all parties were for Vision Zero, but the Green Party wanted a general goal with sub-goals to be specified (Committee on Transport and Communications, 1997). Table 1 shows the outcome of the Parliamentary voting. Parliament, with a substantial majority, adopted Vision Zero as a new long-term traffic safety goal, which entailed a new direction for the safety work involved.

The policy logic of Vision Zero is presented in form of the arguments put forward by the Government and the Traffic Committee. Our content analysis generated five issues that summarise this logic. We present them in the form of the five questions in Table 2.

What is the problem to be solved by Vision Zero?

The documents portrayed Vision Zero as a departure from what the Government considered to be the focus of traditional traffic safety activities. According to the Government, the problem of traffic safety had largely been regarded as being due to the mistaken behaviours, or errors, of individual road users. Many traffic safety measures introduced in the past had focused on adapting the individual to the road transport system rather than adapting the road transport system to the individual and his/her capacities. It was this logic that the Government sought to change through Vision Zero by emphasising that the fundamental causes of the traffic safety problem lay in shortcomings in the design and function of the road transport system as it was then. According to the Government, major structural shortcomings led to road users being subjected to a form of external violence that significantly exceeded what a human being, purely physiologically, was capable of withstanding. For a number of people, one single misjudgement or one single mistake in road traffic could be a matter of life or death.

What is the long-term goal of Vision Zero?

According to the Government's proposal, the long-term goal of traffic safety should be that no-one is killed or seriously injured as a consequence of traffic collisions within the road transport system. The vision entails that, in the long term, the risk of people being killed or seriously injured is eliminated. The policy is ambitious in view of the fact that in 1996 – a year before Vision Zero was adopted – a total of 488 people were killed and 3048 seriously injured in road traffic in Sweden (police records). The Government, in proposing such a challenging goal, argued that it was ethically unacceptable for people to be killed or seriously injured due to movements undertaken within the road transport system. Politically and humanly speaking, it was difficult to stipulate any other long-term goal. However, some organisations made the comment that Vision Zero was unrealistic, and that, instead, there may be an incidence level (above zero) that is optimal in terms of number of people killed and seriously injured in road traffic even in the long run. The rationale for Vision Zero was therefore underpinned by deep ethical questions concerning an

Table 1. Outcome of the Swedish Parliament's voting on the Vision Zero proposal on 9 October 1997.

Party	Yes	No	Abstained	Absent
The Social Democratic Party	137	0	0	24
The Moderate Party, Liberal Conservatism	66	0	0	14
The Centre Party, Centrism, Agrarianism, Social Liberalism	21	0	0	4
The Liberal People's Party , Social Liberalism	19	0	0	14
The Christian Democrats, Christian Democracy	9	0	0	6
The Left Party, Socialism, Feminism	19	0	0	3
The Green Party, Green		15	0	3
Total	271	15		68

Table 2. Vision Zero programme theory.

What is the problem to be solved by Vision Zero?	What is the long-term goal of Vision Zero?	What is the basis for creating a road transport system with no people being killed or seriously injured?	How should the responsibility for safety be shared?	How should the principal players direct their work to create a safe road transport system?
The fundamental causes of the traffic safety problem can be found in shortfalls in the design and function of the present road transport system, which thereby to a large extent contributes to the risk of road users being subjected to a form of external violence that significantly exceeds what a human-being, purely physiologically, is capable of withstanding. The consequences of one single misjudgement or one single mistake in road traffic can be a matter of life and death for a number of people.	The long-term goal of traffic safety should be that no-one is killed or seriously injured as a consequence of road accidents within the road transport system (Vision Zero)	The design and structure of the road transport system should be adapted to the requirements that follow from Vision Zero. People's physical prerequisites for withstanding external violence in connection with traffic accidents should be normative in the design of a road transport system. With this as a basic point of departure, a traffic-safe society can develop in the long term.	The responsibility for traffic safety should be shared between traffic users and so-called system designers 1. The system designers have the ultimate responsibility for the design and function of the road transport system 2. The road users are responsible for complying with current traffic regulations, and showing consideration, a sense of judgment and responsibility. 3. If long-term ill-health nevertheless occurs, or there is a risk of it occurring, the system designers must take further measures.	The Swedish Road Administration, the police and local authorities should basically endeavour to ensure: 1. that the prerequisites, needs and demands of citizens are the point of departure for long-term goal-oriented traffic safety activities; 2. that decision-makers within the private and public sectors are encouraged to take greater responsibility for traffic safety; 3. that the private bodies concerned are encouraged to integrate consideration of traffic safety into all the parts of their operations that influence the design and function of the road transport system; 4. that citizens are encouraged to make demands for traffic-safe products and services; 5. that the interest of and chances for road users to comply with traffic regulations, and show consideration, a sense of judgment and responsibility in traffic are increased.

acceptable level of safety and the price decision-makers and society were willing to pay for it.

Another important basis for the ambitious vision lay in a comparison made with other forms of transport. The Government argued that it was unacceptable for the risk level within road transport to be considerably higher than within other modes of transport.

The Government's proposal for Vision Zero did not entail any attempt to eliminate all road traffic accidents. Accidents that resulted in property damage or minor personal injuries were acceptable. According to the Government, these types of road traffic accidents were a less important part of the traffic safety problem, despite the fact that, in certain cases, they can give rise to major expenses to the state, local authorities and individuals. Instead, the Government stressed the connection between Vision Zero and the adoption of a public health perspective, which directs attention towards events that lead to people being killed or seriously injured.

The Parliaments Traffic Committee shared the Government's view and supported Vision Zero. Like the Government, the Committee argued that, from an ethical point of view, it was unacceptable that people were killed and seriously injured in conjunction with movements undertaken in the road transport system.

What is the basis for creating a road transport system with no people being killed or seriously injured?

The overall solution to the road traffic safety problem was, according to the Government, to make sure that people's physical pre-requisites for withstanding exterior violence in connection with traffic accidents should be normative in the design and structure of the different parts of the road transport system. However, the Government anticipated difficulties in applying this principle, and felt therefore that the variable tolerance of human beings to external violence had to be clarified in relation to other things, such as different road user groups, age groups and types of accident. However, the Government expressed the conviction that the principle laid down the direction that the traffic-safe society should take in the long term.

The Government did not discount the fact that other sub-systems, the purposes of which are to support and help road users – such as regulations, training, information, monitoring, rescue services, care and rehabilitation – also have a role to play, and should therefore be designed and structured so that they contribute towards safe road traffic in an effective way.

The Traffic Committee, like the Government, argued that the design and structure of the road transport system should be adapted to the requirements that follow from Vision Zero. The physical pre-requisites of human beings for withstanding road accidents should be normative in designing and structuring the road transport system.

How should the responsibility for safety be shared?

The Government's ambition to eliminate deaths and serious injuries by designing the structure and function of the road transport system on the basis of people's tolerance to external violence raises an important question about who should design the road transport system and what responsibility each party involved should have to ensure the safety of the system.

According to the Government, society's prevailing division of responsibility for creating safe road traffic was unsatisfactory. Hence, Vision Zero entails a fundamentally new division of responsibility for traffic safety. The basic starting point was that practically all responsibility had previously rested on the individual road user. This is reflected, for example, in Chapter 2, Section 1 of the Traffic Ordinance:

'In order to avoid road accidents, a road user shall observe the care and caution that is required with respect to the prevailing circumstances.. . . '.

According to the Government, this one-sided allocation of responsibility was not constructive if the basic starting point is that no-one shall in the long term be killed or seriously injured. Therefore, the Government was of the view that responsibility for traffic safety should be shared between road users and system designers.

Even though the term 'system designer' is not fully clear, the Government – in its use of the term – is referring to all players who, in their professional work, have in some way influenced the design and function of the road transport system.

According to the Government, shared responsibility is, in principle, based on the following considerations. System designers should always have ultimate responsibility for the design, up-keep and use of the road transport system, and in that way be responsible for the safety level of the entire system. As before, road users are responsible for showing consideration, for having a sense of judgment and responsibility in traffic, and for complying with traffic regulations. And if road users do not shoulder their share of the responsibility – owing, for example, to a lack of knowledge, acceptance or ability – or if personal injuries occur or are at risk of occurring for other reasons, the system designers must take further measures to the extent necessary to combat the occurrence of deaths or serious injuries. Ultimately, the Government anticipated the taking on of a series of responsibilities by system designers and

road users, which both began and ended with the designers.

How should the principal players direct their work to create a safe road transport system?

Vision Zero stipulates not only a new long-term goal for the road transport system, but also aspects that are to be normative for its design and function, and for the division of responsibility between the system designer and the road user. Vision Zero also embraces a new approach to the role of citizens and road users. According to the Government, citizens are today involved in influencing developments in many different areas of society. Such involvement is rarely based on current laws and regulations, but rather on the fact that competent and interested citizens demand changes to prevailing situations. A demand for change is often based on the knowledge that alternative and more effective solutions exist but are not being used. The Government felt that traffic safety activities should be founded in people's physical, mental and social prerequisites, the need for system design to permit human error, and the willingness and capacity of the individual to impose demands on the design and function of the road transport system. According to the Government, traffic safety work should enable all individuals to have a personal vision.

The Government pointed to the support for greater public involvement that exists in, among other places, the National Association for the Promotion of Road Safety (NTF) and in its local, regional and central member organisations.

According to the Government, these organisations – partly by increasing the knowledge and insight of its members regarding possible interactions in relation to the risks of injury in traffic, and partly by supporting the demands of citizens that roads, vehicles and road transport should be safer – can contribute actively to safer road traffic.

The Government stressed that it was very important that the attitude embraced by Vision Zero should also be allowed to have an impact on the public and private bodies that generate and procure road transportation, or which in some other way influence the conditions that govern road transport. The Government pointed out, for example, that the authorities have ample opportunities to make demands to the effect that both passenger and freight transport should be operated in an environment-friendly and safe manner.

The Government also emphasised the need for co-ordination and co-operation. According to the Government, measures that are taken by authorities to increase the level of traffic safety within the framework of their normal operations should as far as possible be co-ordinated and take place in co-operation with the people concerned. It is not only just a matter of taking the right measures but also of making sure that the measures are taken at the right time and in the right way, and that they are directed at the right target group. It is not until all these criteria are fulfilled that the measures can have maximum effect.

Conditions are, of course, steered to a large extent by consumer behaviours. According to the Government, it was therefore important to support a demand for traffic-safe and environment-friendly products and services within the road transport sector. If citizens, authorities and the business community require transport services and products that meet high demands for traffic safety, they will probably be developed and become available on the market. In the same way as with public sector bodies, the business community can be stimulated to impose road safety and environmental demands in the procurement of transportation, and also to review their own transportation and business travel on the basis of these demands. While this might be done for purely aesthetic reasons, companies can in this way cut their costs by reducing their personal and property losses and operating costs, and increase their revenues by making sure that the range of products and services better matches consumers' requirements.

5. Discussion

This article examines Vision Zero as an innovative road safety policy adopted by the Swedish Parliament. The findings show that, although Vision Zero was founded in tenable ethical principles, there was a political process, involving discussion and analysis, which eventually led to a shared understanding between the Government and the Parliamentary Traffic Committee on the need to aim for zero deaths and serious injuries. The decision of the Swedish Parliament on Vision Zero as a new direction for road traffic safety work appears to emanate from a desire to create a paradigm shift (Kuhn, 1996; Nickles, 2002) in the performance of that work. Vision Zero differs from what can be considered a more traditional traffic safety policy with regard to road-safety problem formulation, its view on responsibility, its attitude to the demands of road users for safety, and the ultimate objective of road safety work. This article has examined these issues in some detail, and revealed that the parliamentary decision was enshrined in a relatively new logic regarding what constitutes road safety.

In a traditional road traffic safety policy, accidents are the problem that has to be solved. As early as in the 1930s, road users were regarded as being the

main cause of almost 90% of all road accidents (Kommunikationsdepartementet, 1940). This figure has remained more or less the same over the years. Indeed, various accident commissions of inquiry have reached the conclusion that the road user is the cause of over 90% of all road accidents (Evans, 2004). In Vision Zero, instead of accidents, the problem to be solved relates to deaths and serious injuries, which are seen as a result of the kinetic energy to which road users have been exposed and the tolerance of human beings to external violence. Studies show that deficiencies in the traffic environment and vehicle system are the main cause of approximately 63% of deaths (Stigson, Krafft, & Tingvall, 2008). This finding implies that a different road and vehicle design, which improves the tolerance of human beings to external violence, would mean that at least 63% of all deaths could be avoided. For example, it was common practice to solve safety problems at four-way intersections with the aid of traffic lights. This type of measure admittedly reduces accidents and injuries in general (Elvik & Vaa, 2004), but it can be assumed that the accidents that still occur will be the more serious as a consequence of the high speeds involved. A roundabout, on the other hand, increases the likelihood of accidents, but reduces the risk of serious accidents as a consequence of the lower speeds (Elvik & Vaa, 2004). Therefore, roundabouts are preferable from a Vision Zero perspective. Vision Zero has a scientific foundation, with a focus on kinetic energy as the real cause of deaths and serious injuries, as proposed by De Haven (2000); Haddon (1968, 1970, 1972, 1973, 1980) and Robertson (1983). The Swedish Parliament's decision on Vision Zero transformed this scientific foundation into a public policy that has guided the design of the entire road transport system in Sweden in recent years.

The distinct focus on the role of the road user in the occurrence of road accidents in traditional traffic safety policy also entailed a strong emphasis on the legal liability of road users for safety matters (Friedland, Trebilcock, & Roach, 1990). Training, information, regulation and monitoring directed at the individual road user and a strong lack of trust in the road user's ability and willingness to behave correctly have been key features of traditional traffic safety policy (Evans, 2004). In Vision Zero, emphasis is placed on the responsibility and demand for safety of citizens and users of the road transport system. The role of the traffic user has shifted from being a subject of control by Government authorities to being an agent that makes demands on all system designers and their work. The question of the role of the road user raises issues similar to those considered in research into other areas of risk management (Kohn, Corrigan, & Donaldson, 2000; Reason, 2000). This type of research emphasises the necessity for different systems and organisations to be designed to deal with the fact that individuals make mistakes that can have catastrophic consequences. Therefore, there is a need for these systems and organisations to take responsibility for preventing the catastrophes.

Finally, a traditional traffic safety policy aims at reducing risks in stages. There appears also to be – if only implicitly – a theory that there is a limit to how far safety can go. On this view, there is an optimal level of deaths and serious injuries, defined by the point at which the costs of intervention exceed the benefits (Elvik, 1999). Vision Zero has a different perspective, which emphasises the elimination of deaths and serious injuries, at least in the long term.

The study has two main methodological limitations. First, a policy might primarily be defined as a purposive course of actions rather than a politically expressed intention. In such a case, our analysis should have been directed more at concrete 'Vision Zero' actions. Our view, however, is that an analysis of this kind can be conducted in another study, focusing on the implementation of Vision Zero. Second, there was a risk of loss of details in the documents that were used to generate information. Details may be lost when preparing summary points and reporting on key decisions. This limitation might have been partly overcome by the use of interviews to complement information gathered from the documents. Despite this, we feel that the documents alone have enabled us to provide a detailed account of the political process and logic behind the adoption of Vision Zero as Swedish road safety policy in 1997.

6. Conclusion

Vision Zero as a road safety policy, adopted by the Swedish Parliament, represents an innovative and radical approach to the promotion of an alternative framework in Sweden with regard to road-safety problem formulation, views on responsibility, attitudes to the demands of road users for safety, and the ultimate objective of road safety work. Although some promising results have been reported (Johansson, 2009), there is a need for a comprehensive assessment of the implementation and outcomes of Vision Zero policy. This article has demonstrated that behind the commonly cited low road safety fatality rate in Sweden (2.8 per 100,000 inhabitants in 2010) and road safety policy (Vision Zero in particular), lies a long tradition of systematic road safety work that has involved the taking of key political decisions by the Government and Parliament.

Vision Zero entails a shift in the road safety planning paradigm. Instead of starting from an

existing problem situation, Vision Zero departs from an absolute state of the future – safe road traffic. Instead of posing the question 'What can be done?' the question is 'What must be done in order to create a safe road transport system?' As a policy, Vision Zero requires a planning model that involves what is called 'back-casting' (Kane, 2009; Roome, 1998). In this way, Vision Zero is not only a long-term goal but also becomes a means for driving the development of new measures and new approaches that may be both less expensive and more effective than those available today.

As countries develop activities for the United Nations Decade of Action for Road Safety 2011–2020, this article may be helpful in highlighting the importance of pursuing alternative and innovative road safety policies in different political contexts. While Vision Zero may not readily be replicated in different political settings, it demonstrates the need, in different jurisdictions, for players to reflect deeply on their visions and approaches to road safety policy. The goal of the global plan in the Decade of Action for Road Safety of stabilising, and then reducing, the forecast level of road traffic fatalities around the world by 2020 requires radical alternatives to those entailed by the traditional approach to road safety. This goal may not be achieved if the approach is 'businsess as usual' with regard to the implementation of effective road safety measures.

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