Sustainable Road Safety: Lessons from the Netherlands

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Overview:

- Road Safety developments
- Sustainable Road Safety
- Challenges and lessons
EU Traffic fatalities 2001 – 2017
EU Traffic fatalities per million inhabitants (2017)
Percentage of vulnerable road user fatalities in urban areas (2017)
The Netherlands traffic in context

- **Cars**: 8.4 million
- **Motorways**: avg. 2,268 mv/h (max.: 5,836 mv/h)

- **Bicycles**: 22.7 million (2015)
  - 1.3 bike/inhabitant
  - 84% of population > 1 bike
  - 16% has an e-bike
Countries with the best driving experience

Here are the top countries in Waze’s first-ever “Driver Satisfaction Index”, which curates data from 50 million users and scores places based on their traffic, road infrastructure, occurrences of accidents and hazards, and access to driver resources.

<table>
<thead>
<tr>
<th>Country</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>7.90</td>
</tr>
<tr>
<td>Latvia</td>
<td>7.30</td>
</tr>
<tr>
<td>United States</td>
<td>7.20</td>
</tr>
<tr>
<td>Sweden</td>
<td>7.20</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>7.10</td>
</tr>
<tr>
<td>Belgium</td>
<td>7.00</td>
</tr>
<tr>
<td>France</td>
<td>6.90</td>
</tr>
<tr>
<td>Italy</td>
<td>6.80</td>
</tr>
<tr>
<td>Hungary</td>
<td>6.80</td>
</tr>
<tr>
<td>Slovakia</td>
<td>6.70</td>
</tr>
</tbody>
</table>

Source: Waze
Safe System approach to road safety

- Ethical imperative: no human should be killed or seriously injured as a result of a road crash (1992: the vision)

- Four principles:
  - People make mistakes → crashes & falls
  - The human body is fragile
  - Actors: responsibilities (shared & distinct)
  - Complicated problem → systematic, integral approach
“In a safe system, the road, your vehicle, and other road users protect you against big risks in traffic.”
Sustainable Road Safety measures (1)
Sustainable Safety – measures (2)
Evaluation of Sustainable Safety

- Implementation of measures: mostly good, some poor
- Individual measures: effective in preventing casualties
- Decrease in risk: stronger than before (5.8% per year compared to 2.6% per year)
- All measures together prevented 300-400 fatalities per year
- Benefit-cost ratio: very high (1.0 / 3.6 - 3.7)
- In sum: successful
National Strategic Road Safety Plan 2008 - 2020

Inleiding - Wereldkampioen blijven

Nederland is op grond van het lage aantal verkeersdoden ‘wereldkampioen verkeersveiligheid’. Die titel hebben wij te danken aan de voortdurende inzet van vele betrokkenen, zowel binnen als buiten de overheid.

TOWARDS ZERO
Ambitious Road Safety Targets and the Safe System Approach

Zero Road Deaths and Serious Injuries
Leading a Paradigm Shift to a Safe System
Research Report
Curse of success?

- Measures: no full implementation (quality / coverage)
- SRS: less effective in preventing serious road injuries
“Drifting into failure”?

“Every successful safety system should beware when:

» resources are limited (no money),
» there is a competition for goals (climate change), and
» people have high expectations of technological innovations as solutions.”
The Way Forward:
Facing challenges, exploiting opportunities
Challenge #1: ‘Implementation gap’ in infrastructure
Challenge # 2: Sufficient means (maintenance)

‘Municipalities face budget cuts...’

‘New tasks for cities may affect Road Maintenance...’

‘70% of civil servants expect lack of funding...’
Challenge #3: An aging population

![Graph showing the increase in the number of 65-plussers and 80-plussers from 1950 to 2060.](image)

- **80-plussers**
- **65-plussers**

*Bron: CBS*
Challenge #4: More traffic and diversity
Challenge #5: Behaviour
Innovations: opportunities (and some threats...)

SWOV
WETENSCHAPPELIJK ONDERZOEK VERKEERSVEILIGHEID
Wie is de bestuurder?

- De heer
- Mevrouw

Voorletters: J
Achtersnaam: Dullegen
Geboortedatum: 14 jul. 1980
Postcode: 2591XR
Huisnummer: 2
Toevoeging:
Straat: Bordewijklaan
Plaats: 'S-GRAVENHAGE
Check je eerste tripscore!
16-10-2016

Wauw, nice job, je hebt 97 gescoord voor je 1e rit!
Je bent op weg naar 20% korting op de maandpremie.
Check kroodle.nl/besparen voor tips om je volgende rit hoger te scoren.

Delen
Sustainable Road Safety 3.0

1992: the vision

2005: first actualisation

2018: second actualisation
Sustainable Road Safety 3.0
Meeting challenges from responsibilities, concrete objectives and SPI’s

- Clarity: functional roads, clear & understandable lay-out, compatible traffic
- Safe roads and cycle lanes in a safe network: not just highways, but also city streets and rural roads
- Evidence-based interventions (education, campaigns)
- Enforcement: risk-based, ‘smart’, personal, & ‘substantial’
- Seeking optimal benefits from ADAS and autonomous driving vehicles
- Learning through (new) data & research
SUSTAINABLE SAFETY
3RD EDITION
Road safety principles in 2018

Design principles →

← Organisation principles
One function per road section/junction

Flow function

Exchange function

Road network: based on these functions in an appropriate and hierarchical way
Traffic flow and road transport modes are compatible in:
- Speed
- Driving direction
- Mass
- Seize
- Protection of the road user

Supported by the road design, the vehicle and protective devices

Two-wheelers: road design and environment support the balance of the rider

(Bio)mechanic protection
Design of the road traffic system is compatible with the competences of the elderly.

- Information is:
  - Perceptable
  - Comprehensible
  - Credible
  - Relevant
  - Feasible

- Road users are: capable for performance of the task and for tuning their behaviour on task requirements (capable to drive & fitness to drive)
Responsibility among road traffic professionals

- Effective and institutionally ‘anchored’ to achieve maximal safety results
- Connected to the core business of professionals and organizations

Road users

- In principle, they know their responsibilities and they obey rules...
- However: they are not punished with severe injury for their imperfections!
Learning and Innovation

- Investigation of (causes of) crashes (= learning!)
- Find and implement effective solutions ( = innovation)
  - Plan
  - Do
  - Check / Evaluate
  - Act

- Beware of the Curse of Success!
Kans: samenwerking in verkeersveiligheidsinitiatief
New Government: “Road Safety is a National Priority”
To sum up: lessons learned in Holland

- Paradigm shift to a Safe System is feasible
- SRS’s approach is effective & cost-effective

**However:**

- Consistency *plus* sharp Monitoring & Evaluation are key for results and learning
- SPI’s: making responsibilities concrete and tangible
- Beware of ‘The Curse of Success’
- SWOV: in-depth research, simulations, naturalistic driving & cycling, big data
شُكْرًا (Merci! Thank you!)

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