



# Speed limits on Dutch Motorways

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Presentation Road Speed Management

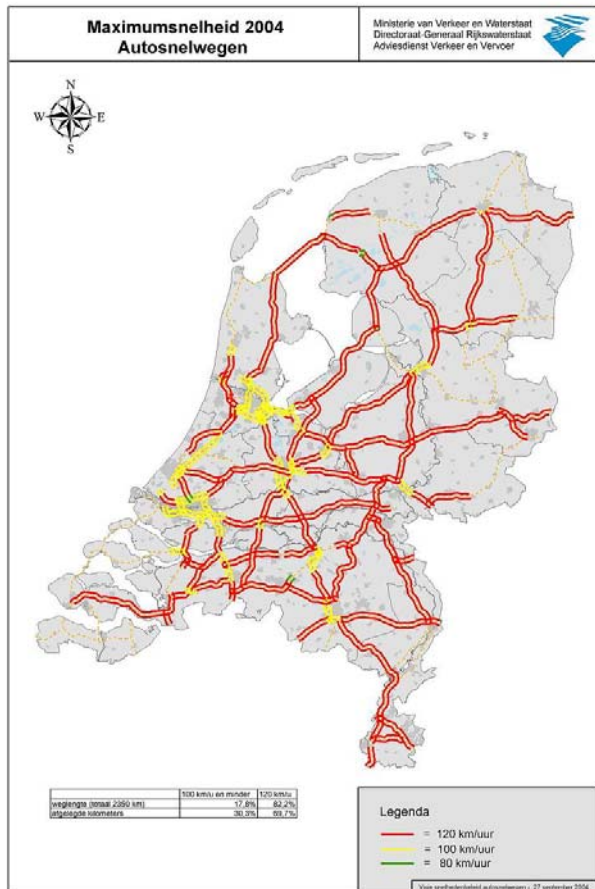
September 2007

# Speed limits on Dutch Motorways

## Agenda:

- History of current speed limits
- Reduction speed limits due to air pollution
- Strategic view on speed limits
- Actual developments dynamic limits
- Conclusions

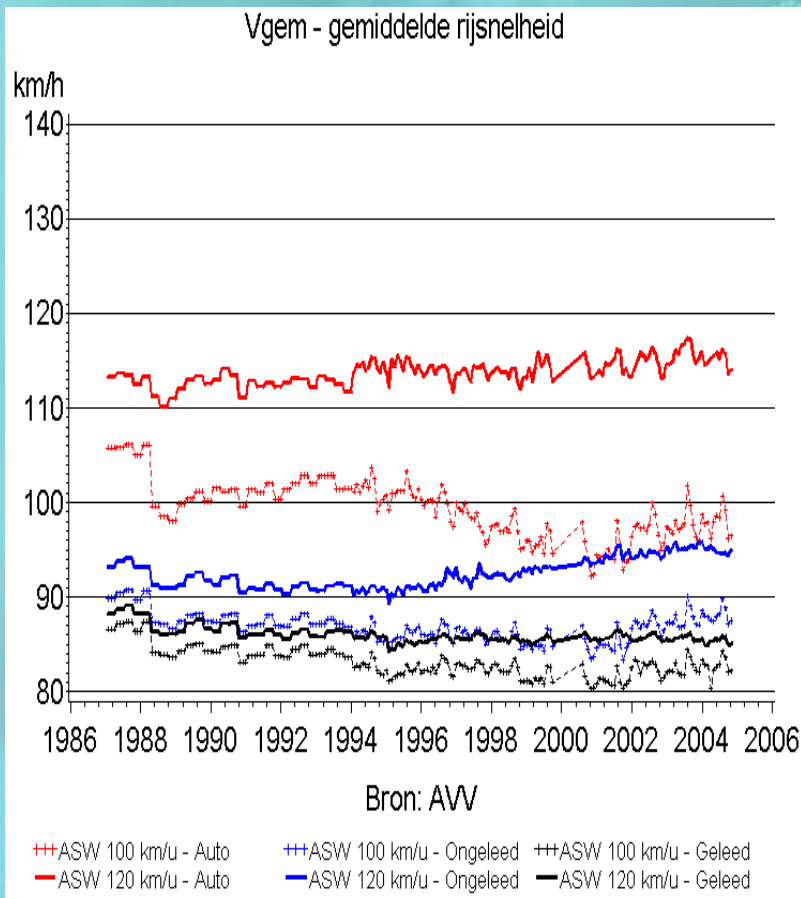
# History of current speed limits (1)



- The Dutch motorway network has been designed for a maximum speed of 120 km/u
- Due to the energy crisis in 1974 a general speed limit of 100 km/h is introduced on the whole network
- The enforcement of the limit is poor, actual speeds increase the following years until a new system of speed limits is introduced in 1988.
- The speed limit scheme of 1988 is twofold:
  - 100 km/h on links near the urban areas (18% net)
  - 120 km/h elsewhere (82% net)

The corresponding balance expressed in vehicle kilometres is: 30% (100 km/h) : 70% (120 km/h)
- Through intensified enforcement and a dedicated communications campaign the actual average speeds decrease with the introduction of the new scheme

## History of current speed limits (2)



- The speed limits on the motorway network are stable since 1988 (the 100/120 km/h proportion)
- The actual average speeds on the network are rather stable as well due to an increased enforcement over the years
- Drivers are in general of the opinion that the limits on the network can be raised; actual consequences for safety in particular contradict that however
- In 2002 speed limit reduction gets attention due to local air quality problems: pilot with 80 km/h near Overschie and a policy framework for application of 80 km/h elsewhere is introduced
- In 2004 analysis of 9 hot spots air quality and strategic review of speed limits
- In 2005 four new 80 km zones with evaluation study
- In 2006: first steps for dynamic speed limits

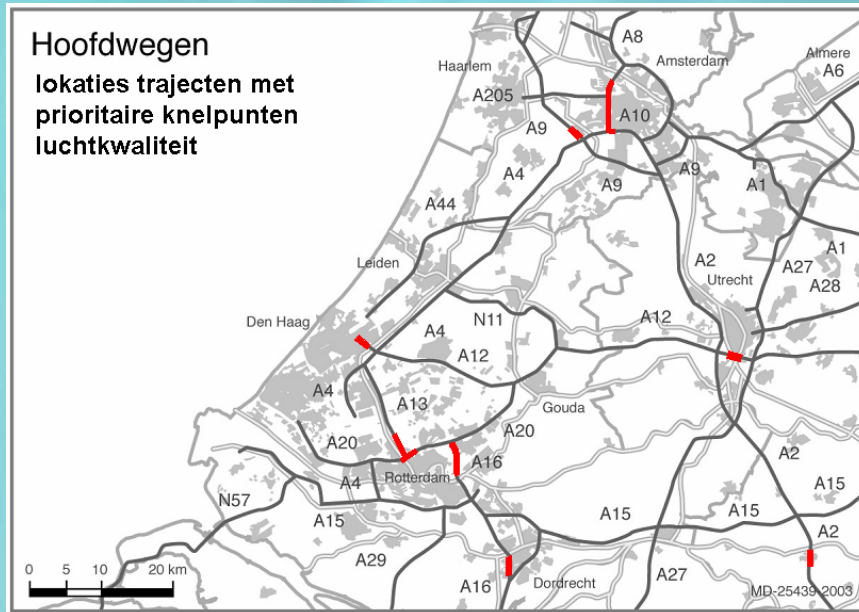


# Pilot 80 km/u on Motorway A13 near Rotterdam (Overschie) shows good results



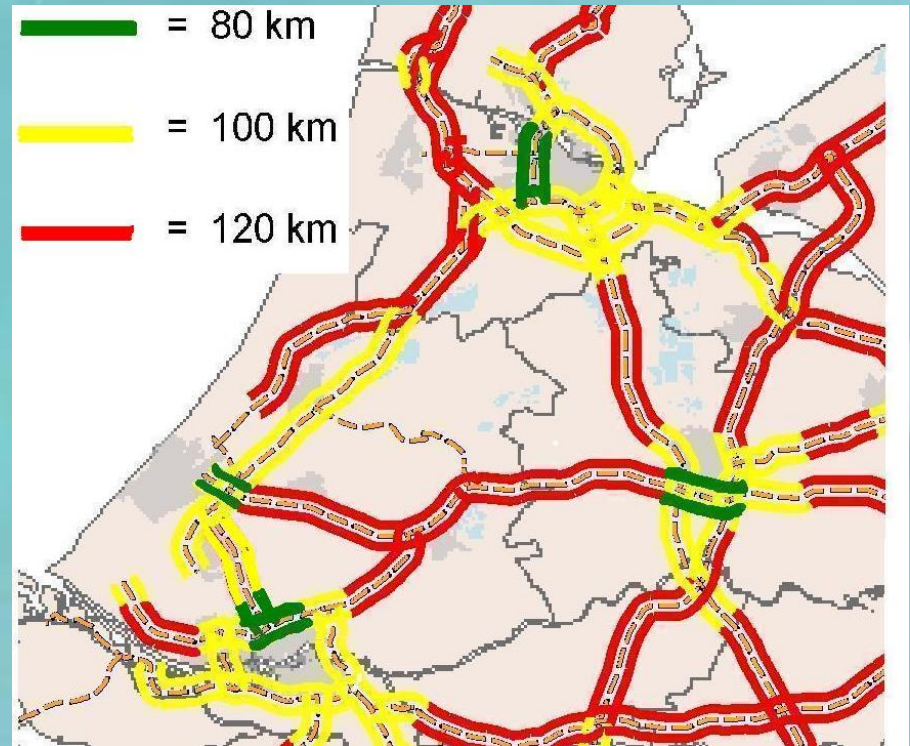
- Air quality and noise benefits
- Reduction  $\text{NO}_x$ 
  - emission traffic: minus 15-25%
  - background: minus 5-10%
- Road unsafety reduces with 50%
- Throughput increases in direction of Rotterdam (queue moves upstream)
- People living near the motorway and politicians are happy
- Speed observance is good thanks to electronic link control (enforcement)

# Hot spots local air quality



2002: 80 km/h on A 13  
Overschie-Rotterdam

2005: 4 new 80 km zones





**Rij  
schoner,  
rij 80  
in z'n 5.**



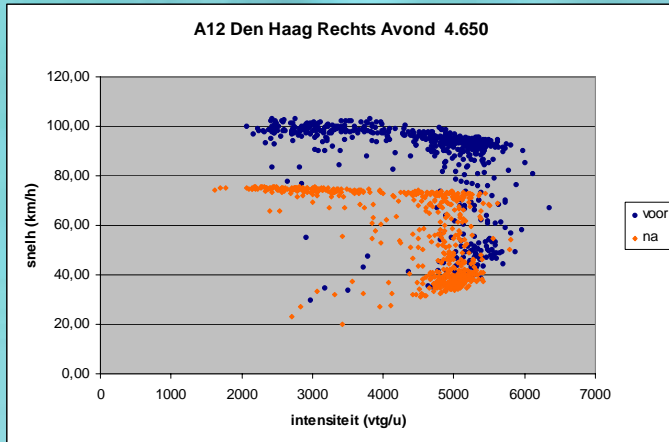
van A naar Beter

# Practical experience 80 km zones (1)

- Local air quality: improved on 3 out of 4 spots. Traffic emissions reduce with 13% on A10 Amsterdam, 8% on A12 Utrecht and 10% on A12 Voorburg.  
Exemption is A20 Rotterdam: neutral effect local air quality.
- Noise: measured reduction 0 - 1 dB(A), reduction of noise peaks with met 1,5 - 3dB(A)
- Traffic safety: Too limited time period for measurements, positive expectation based on structural effect A13 Overschie
- Througput: on three out of four 80 km zones congestion has increased. On A10 Amsterdam congestion decreased, on A12 Utrecht the congestions was caused by bottlenecks outside the 80 km zone. On A12 Voorburg congestion increases with 32%!



# Practical experience 80 km zones (2)



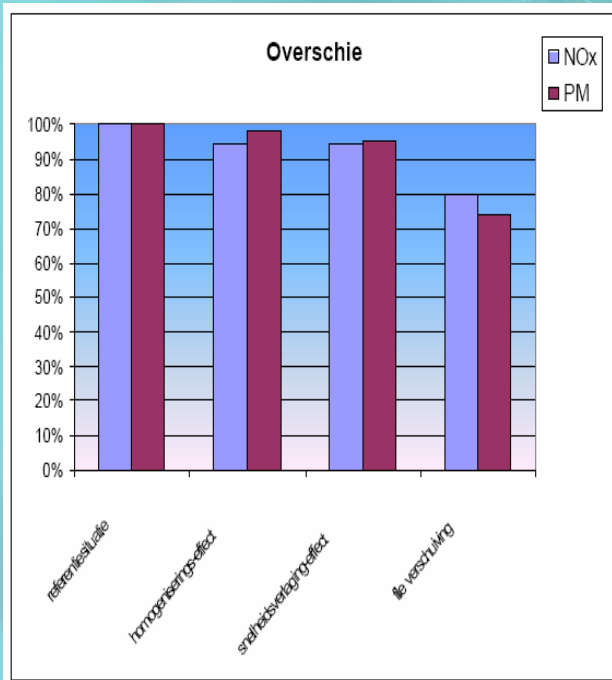
On a few zones with complex exchange of traffic the 80 km/h with section control gives a reduction of traffic capacity due to a change in driving behaviour

- Drivers: experience a higher work load, reduce speed and experience that changing lanes is more difficult
- Change of the speed limit from 80 to 100 and retaining speed control will improve the throughput on the A12 Voorburg with an increase of air quality.
- Small improvements in design and road lay-out will improve throughput

# Why performs Overschie better than the other locations investigated?

Result Overschie is effect of:

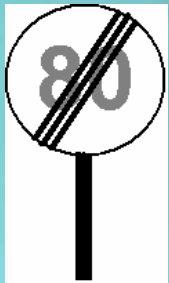
- Speed limit reduction 100 > 80 (1/4)
- Homogeneous traffic flow (1/4)
- Change of queue location (1/2)



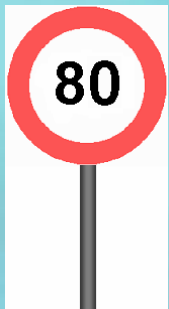
On other locations no shift of queues will appear

Effects on locations are locally dependent: composition of traffic, vehicle composition, road characteristics and road environment

# Public support for introduction speed limitation to 80 km/u is limited



- Public support 80 km/h:  
Yes: 44 %                      No: 51 %



- Confidence in effectiveness:  
Yes:                                      30 %  
only partly:                      35 %  
No:                                      32 %
- Point control:                      52 %  
Link control:                      65 %



# Strategic view

## Strategic view Dutch speed limits:

- Road design motorway network: 120 km/h (120 where possible)
- Safety and environmental considerations: 100 km/h near urban areas and ring roads around cities (100 where necessary)
- On particular problem spots: 80 km/h (80 by exemption)
- In future dynamic speed limits will appear

# Variable speed limits – The Netherlands (1)



- Current speed limits on Dutch motorway network are in principle fixed: (120,100,80)
- Variable speed limits can be useful: dependent on time of day, traffic, location, circumstances and weather
- Current experience with variable speed limits:
  - road works: 90/70
  - motorway traffic signalling (MTM): incidents: 70/50
  - test A1: DYVERS, reduction of speed limit near bottleneck location to increase throughput
  - winter conditions: 70/50 via MTM signalling
  - fog conditions: 70 via MTM
  - local air quality: 80 on specific problem locations
  - extra rush hour lanes: lower speed limit in the rush hour configuration
- A lower speed limit that is being enforced enables **compact driving** a redesign of the road carriageway with smaller lanes and one extra lane



# Benefits variable speed limits



- Adjustable to unexpected and changing situations like weather, traffic volumes, accidents and fitted to circumstances
- Possibility for road authorities to act immediately, without time demanding procedures or placing road signs
- Only when needed: no unnecessary delays for drivers
- More understandable by road user: better acceptance of speed limits



# Variable speed limits – The Netherlands (2)



- Masterplan for variable speed limits encompasses behavioural research and 4 areas for experiments
- Experiments with variable speed limits focus on:
  - safety and bad weather conditions
  - local air quality
  - throughput/reliability traffic flow
  - reduction travel time (100 > 120 km/h)
- Experiments planned for 2008
- Legislation to enable experiments and to facilitate flexible speed limits



# Do drivers understand variable speed limits?



# Dutch speed limits - conclusions



- Speed limit principles in The Netherlands are based on road network design in relation to environment: 120,100, 80
- Speed reduction in combination with link control can be an effective instrument for local air quality problems depending on local conditions but requires local analysis and design
- Dynamic speed limits dependent on actual circumstances like traffic, weather, road and environmental conditions look promising
- Effective speed behaviour becomes feasible through (link) speed control and in-car systems