

## Summary

**Future prognoses for traffic and transport have satisfactorily fulfilled their role as indicators, and this is particularly the case for the more recent scenarios, made in the 1980s and 1990s. From the prognoses made in the past, it is apparent that caution should be exercised when assuming planned policies in the prognoses. Furthermore it is important that future scenarios are based on more than one scenario and allow their prognoses a broad bandwidth.**

### Traffic and transport scenarios

The KIM Netherlands Institute for Transport Policy Analysis has analysed 42 future traffic and transport prognoses dating from the period 1970-2000. The focus was on long-term prognoses, often based on different scenarios, which were used for policy-making, irrespective of any major changes in policy. The aim of these prognoses is to indicate future problems, in order to determine whether new policy is needed, and to assess the effects of new policy.

The report's two main research questions are:

1. Did the scenarios and prognoses for traffic and transport effectively indicate future problems?
2. What can we learn from prognoses that were made in the past?

This report contains various types of indicators: Indicators of external influences on traffic and transport; traffic and transport volume indicators; and indicators for the effects of traffic and transport.

### Satisfactory performance as indicators

Scenarios must serve as a source of inspiration for policymakers. A good 'business-as-usual' scenario report for traffic and transport consists of:

1. More than one future scenario;
2. Explicit and plausible principles (demographic, economic and others);
3. Explicit descriptions of future policy suppositions used in the analysis;
4. A good model that plausibly translates the principles stated in points 2 and 3 into the desired traffic indicators (car use, traffic jams, emissions of nitrogen oxides, and others).

We can conclude, on the basis of these criteria, that the traffic and transport prognoses from the years 1970 to 1990 were satisfactory, especially the more recent prognoses dating from the 1980s and 1990s.

The only exception is the congestion prognoses, as these largely underestimated the problems faced (*Figure 1*). Since 1990, the number of lost vehicle hours (the total hours lost due to congestion) sharply increased, and yet none of the prognoses predicted this. In fact some prognoses even predicted a decrease in congestion. Over time, researchers appear to have not improved in their ability to prognosticate congestion. In 1986, McKinsey was already speaking of a "practically inexplicable phenomenon" and of a latent traffic demand manifested in the construction of new roads. This underestimation resulted from the fact that the expansion of road capacity was smaller than expected, among other factors. Moreover, other policies had congestion enhancing effects, such as tax laws relating to home-work travel,

### Learning from scenarios

- In prognoses, it is crucial that scenario-makers clearly state their suppositions regarding government policy.
- The prognoses from the 1970s reveal that a strong belief in social engineering and in people changing their behaviour has little value for prognosis.
- It can be very difficult to predict turning points, such as the large growth of the service industry, and the breakthrough of containers in goods transport.
- Alternatively, simply extrapolating growth figures also runs certain risks, as we can see in inland shipping prognoses.
- The underestimation in the congestion prognoses indicates that we must exercise caution when considering policy that is not yet fully implemented. An alternative would be to consider a less ambitious policy package as well, one that allows the policymaker to analyse the impact of a supposed, but not fully accomplished policy package.
- The trap of wishful thinking should always be examined. Policy does not always have the effect it is supposed to have, and sometimes policy implementation can take a long time.
- Expectations of the future are largely shaped by the present. If a certain indicator is currently estimated too high or low, this will affect the likelihood of the future indicator being too high or low. Furthermore, the current growth plays an important role in estimating future growth.
- Economic cycles can lead to large differences between the estimated and realised economic growth. When predictions are made there is usually a different economic perspective than in the years when these predictions should be realised.
- As many scenarios used the same model, it could be useful to use other models alongside the Dutch LMS (*Landelijk Modelsysteem*) model. . Over-dependence on the LMS can lead to certain developments being disregarded, or to the same model flaws recurring, such as flawed congestion estimations. Currently the LMS is being actualised and reassessed. A large part of this operation is aimed at improving the congestion prognoses.
- Policymakers are often tempted to interpret middle scenarios as a definite truth. There are however no indications that these middle scenarios are superior to low or high scenarios. Hence, when developing policy, it is always best to weigh up the various scenarios.

speed limit restriction regulations, and the implementation of route controls. Also, the traffic models in place were inadequately capable of predicting congestion developments.

#### **Visible improvement**

Traffic and transport prognoses are visibly improving, owing in part to a better overview of all the various developments involved. In contrast, the 1970s were marked by many turbulent cultural, economic, social, demographic and policy developments. Moreover, there is now more scientific knowledge available about traffic and transport, research models have improved, and, thanks to enhanced computing power, it is now much easier to conduct complex calculations.

#### **Social-cultural changes problematic**

It is evidently difficult to predict social-cultural changes, such as birth control in the 1960s and the wave of immigration in the 1990s, as well as economic changes. Examples of this are the breakthrough of container-use in freight transport and the rapid growth of the service sector.

In *Figure 2* we see that the prognoses have a tendency to underestimate passenger car use. This is largely due to the fact that the driving forces behind car use, such as population size, employment rates, household size and car ownership, were also underestimated. Car use was substantially underestimated in both scenarios because these scenario-makers assumed that there would be major changes in future income levels and in the way people thought about car travel. Less growth in incomes was predicted, less income disparity, a growing public sector, and greater amounts of personal income diverted to "undeveloped parts of the world". These assumptions failed to materialise, which led to the prognoses not being realised. Other cultural changes did occur, including individualisation and declining household size.

#### **Bandwidth important**

When the scenario studies for the 1980s and 1990s are compared to the year 2010, it is apparent that the results of these studies can differ from each other by tens of percentage points. These 'tens of percentage points' seem to provide a good impression of the uncertainty of future estimations for periods of 10 to 20 years. Prognoses that are based on only one scenario and no bandwidth or only a relatively small bandwidth, do ignore the high degree of uncertainty in the future. These findings could possibly mislead policymakers.

Tabel 5

Overzicht gebruikte prognoses.

Scenario:	Bronnen:
VenW 1970	Ministerie van Verkeer en Waterstaat (1970). <i>TP 2000: op weg naar 2000, een toekomstprojectie</i> . Den Haag: Staatsdrukkerij.
WRR 1977	Wetenschappelijke Raad voor het Regeringsbeleid (1977). <i>De komende vijftiengint jaar: Een toekomstverkenning voor Nederland</i> . Den Haag: Staatsuitgeverij.
Hupkes 1977	Hupkes (1977). <i>Gasgeven of afremmen: toekomstscenario's voor ons vervoerssysteem</i> . Deventer: Kluwer.
McKinsey 1986	McKinsey & Company, Ministerie van Verkeer en Waterstaat (1986). <i>Afrekenen met files, samenvatting conclusies en aanbevelingen</i> . Amsterdam: McKinsey & Company.
Broecke 1987	Van den Broecke/Social Research (1987). <i>Invloed mate van verstedelijking op rijbewijsbezit en op autobezit</i> . Den Haag: Projectbureau Integrale Verkeers- en Vervoersstudies.
RIVM 1988	Rijksinstituut voor Volksgezondheid en Milieu (1988). <i>Zorgen voor Morgen</i> . Alphen a/d Rijn: Samsom H.D. Tjeenk Willink.
Peeters 1988	Peeters, P.M. (1988). <i>Schoon op weg, naar een trendbreuk in het personenverkeer</i> . Amsterdam: Milieudefensie.
RIVM 1991	Rijksinstituut voor Volksgezondheid en Milieu (1991). <i>Nationale Milieuverkenning 2, 1990-2010</i> . Alphen a/d Rijn: Samsom H.D. Tjeenk Willink.
NS 1992	Centrum voor energiebesparing en schone technologie, Rijksinstituut voor Volksgezondheid en Milieu, TNO Inro (2000). <i>Milieuwinst op het spoor? Synthese van onderzoeken naar milieu-effecten van het goederenvervoer per spoor</i> . Delft: CE Delft.
NEA 1992	Centrum voor energiebesparing en schone technologie, Rijksinstituut voor Volksgezondheid en Milieu, TNO Inro (2000). <i>Milieuwinst op het spoor? Synthese van onderzoeken naar milieu-effecten van het goederenvervoer per spoor</i> . Delft: CE Delft.
RIVM 1993	Rijksinstituut voor Volksgezondheid en Milieuhygiëne (1993). <i>Nationale Milieuverkenning 3, 1993-2015</i> . Alphen a/d Rijn: Samsom H.D. Tjeenk Willink.
VenW 1993	Adviesdienst Verkeer en Vervoer (1993). <i>SVV-verkenning: Analyses en prognoses</i> . Rotterdam: Ministerie van Verkeer en Waterstaat.
Peeters 1993	Peeters, P.M. (1993). <i>Goed op weg, naar een trendbreuk in het goederenvervoer</i> . Amersfoort: Stichting Werkgroep '2duizend'. NEA (1993). <i>Trendbreukscenario goederenvervoer: Vervoer, verkeer en milieu in de huidige situatie en basisscenario</i> . Rijswijk: NEA.
NEI 1995	Wilbers, C.A.J., et al. (1995). <i>'De prijs van een reis', enkele scenario-berekeningen voor 2010</i> . Rotterdam: Nederlands Economisch Instituut.
VenW 1997	Adviesdienst Verkeer en Vervoer (1997). <i>Personen- en goederenmobiliteit in 2010 en 2020</i> . Den Haag: Ministerie van Verkeer en Waterstaat.
RIVM 1997	Rijksinstituut voor Volksgezondheid en Milieu (1997). <i>Nationale Milieuverkenning 4, 1997-2020</i> . Alphen a/d Rijn: Samsom H.D. Tjeenk Willink. Geurs, K.T. et al. (1998). <i>Verkeer en vervoer in de Nationale Milieuverkenning 4</i> . Bilthoven: RIVM.
CPB 1997	Centraal Planbureau (1997). <i>Economie en fysieke omgeving</i> . Den Haag: CPB.
RIVM 2000	Rijksinstituut voor Volksgezondheid en Milieu (2000). <i>Nationale Milieuverkenning 5, 2000-2030</i> . Alphen a/d Rijn: Samsom BV. Feiman, P.F.L. et al. (2000). <i>Verkeer en vervoer in de Nationale Milieuverkenning 5</i> . Bilthoven: RIVM.