

Characteristics of ROAD FREIGHT TRANSPORT POLICY IN THE NETHERLANDS



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Abstract: The Netherlands has a strong logistics sector that is vital to its internationally-oriented economy. However, a short look on the map, shows the challenge it has faced for some time: the Netherlands has a still growing and very densely populated country with over 17 million inhabitants living on a relatively small piece of land; as a result a strong ‘competition’ exists between different spatial functions such as housing, infrastructure, environment and economy. The story goes that lack of space has provided the Dutch with the ability of working closely together towards a result that suits all stakeholders, called ‘poldering’ (derived from the process of poldering meant to ward off the threat from the sea by creating an overall regulating system of canals, polders, sluices and dikes). In this paper we will look to how Dutch policy and decision-making is trying to contribute to a sustainable, safe and efficient future logistics sector amid spatial constraints.

Keywords: shaping Dutch logistics -> infrastructural networks, multimodality, sustainability and smart freight transport.

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Introduction

The Netherlands has a strong logistics sector that is vital to its internationally oriented economy. In order to sustain this strong position it is essential to guarantee an efficient, safe and sustainable flow of goods in the future.

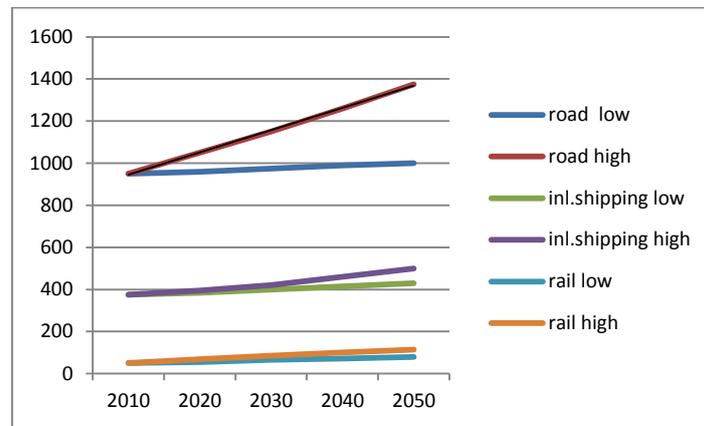
The Netherlands has a long history in freight transportation that goes back for centuries. The unique combination of a natural location at the mouth of three important rivers; Rijn (*Rhine*), Maas (*Meuse*) and Lek, a geographical location amongst heavily populated areas within Western Europe and the mainports of Rotterdam and Amsterdam. This provides a good basis for a strong Dutch logistics sector (some 8,5% of The Netherlands' GDP) that supports the internationally oriented economy that The Netherlands is today. This strong position is also reflected in its high ranking (number 4) on the Global Logistics Performance Index in 2016. Being the main gateway to Europe it is not surprising that some 67% of the freight flows have an international orientation (KIM, 2016).

Road transportation (66% of tons shipped, 2014) is the dominant transportation mode in the Netherlands which has also a relative significant contribution of inland shipping (30%). The 55% contribution of Dutch inland shipping in European inland shipping is more than considerable. Rail transport only comprises a modest 4% of tons shipped. Despite its internationally oriented economy (almost 75% of the Dutch international flow of goods go to Germany or Belgium) one would expect the international orientation of road transportation to be bigger than the relatively small 27 percent (but one has to bear in mind that an estimated 40% of foreign freight forwarders that transport goods from/to The Netherlands are not taken into account into this figure; CBS Transport en Mobiliteit, 2016). In fact, most goods via road are transported over distances up to 150 kilometers only, and even 40% of the total goods shipped (road) will remain in the provinces of *Zuid-Holland* (including Port of Rotterdam, concentration of distribution centers, concentration of transfer points to other modalities) and the Province of *Noord-Brabant* in the south (concentration of distribution centers, concentration of transfer points to other modalities). However, other modalities, and in line with multimodality goals, do have a predominantly international orientation: 91% for inland shipping (water) and 95% for rail (in tons shipped in 2016; KIM).

In a situation of unchanged transport and infrastructure policy and despite modest successes in modal shift over the last decade (towards inland shipping, and rail) a potential steep growth of Dutch road transportation until 2050 might be expected in the *high scenario* whereas inland shipping and rail transportation are expected to grow only gradually (see figure below). Such scenario should be avoided both from a sustainability, spatial planning (space constraints for further new road infrastructure works) and budget point of view. Modal shift is part of The Netherlands' transport and infrastructure policy, but no clear target are set on this.



**Figure: forecast use of freight modalities
in weight shipped (x mln. tons), 2017**



Therefore, in order to support a continuous growth of freight transport in The Netherlands, an overall vision on freight forwarding is being put in place that puts emphasis on three major focal points:

- a connection of infrastructure networks (*verbinden*);
- an improvement of sustainable freight transport (*verduurzamen*);
- a smarter freight transport (*verslimmen*).

In this paper we will focus on the context (global, European, national) that is underlying to the three chosen focal points of Dutch Freight Forwarding vision. While doing so (see paragraph *global developments*) we will translate important international trends into three effects in the field of logistics: the effect on tons shipped (1), the effect on the choice of the transportation mode used (2), and the effect on sustainability and safety within the freight transport sector (3). In paragraph *future focus within Dutch transport* we will discuss the choices (focal points) that have been made and specific instruments within the road transportation segment that are linked to that.

Finally, we touch briefly on the necessary approach and role for the Dutch administration in order to support and meet the future logistical challenges (see paragraph *approach and role*).

(Global)trends translated into logistics effects

In order to guarantee a strong logistics sector it is important to get a grip on relevant future developments. We have categorized these developments based on their logistical effects (positive or negative) without adding concrete figures to the effects.

- a. developments in tons shipped;
- b. choice of transportation mode;
- c. sustainability and safety within the freight transport sector
- d. specific trends within road transportation

a.(Global) trends: effects on tons shipped

Although future global economic development has its uncertainties we can expect that the continuation of the global economic shift towards the East will become stronger, mainly because of the growth China and the other so-called BRICS countries (Brazil, Russia, India, China and South Africa). As a result new global product flows will emerge (e.g. from Gulf states to China) and will partly replace products that were produced previously in Western Europe. As far as The Netherlands is concerned: competing neighbouring German and Belgian ports (mainly Antwerp) have, compared to Dutch mainports as Rotterdam and Amsterdam, a stronger relation with China that is heavily investing in European ports as part of their economic programme *One Belt, One Road*.

Within Europe we see a gradual shift towards East and South European countries that are growing quicker than Western European countries partly as a result of the strong growth of infrastructure networks there. This leads to a lesser economic dominance of the Ruhr Area on which the Dutch ports of Rotterdam and Amsterdam are leaning heavily as their important *hinterland*. At the same time continuation of reshoring and near shoring (moving back plants to Western Europe, The Netherlands) and efforts in promoting a circular economy will result in more traffic within Europe and over shorter distances.

The global trend of upscaling of international transport (bigger volumes), especially within sea and inland water transportation, will favour bigger ports with good accessibility as most Dutch ports have.

So-called dematerialisation will have a negative impact on freight volumes: due to the gradual ageing of Dutch (and European) population there will be more focus on services rather than physical products. Also trends such as 3D printing and the energy shift from fossil fuels towards sustainable, renewable fuels will impact the demand for freight transportation. Also a tight(er) labour market is expected due to a continuing growth of Dutch economy, a growing Dutch logistics demand and a gradually ageing of the Dutch population in the future.

b. (Global)trends: effect on choice of transportation mode

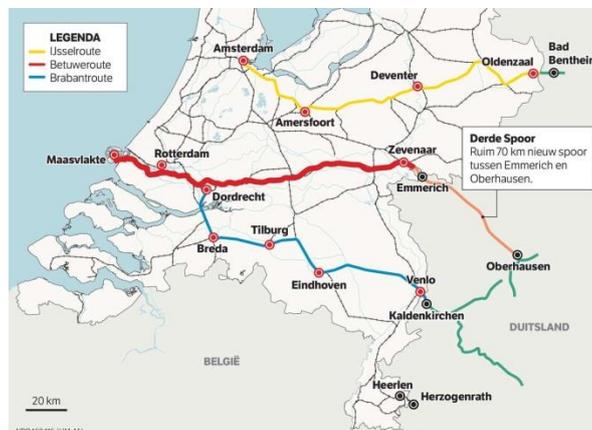
Some (global) trends and developments will have an impact on mode choice. Rail transport might increase because of the so-called Silk Route which connects China to (Western) European countries: rail lead times and rail transportation costs will become less which might have a negative impact on the use of air transportation (quicker) and sea transportation (cheaper).

Also new developments in the area of (semi)autonomous road and water vehicles might impact choice of transportation mode by freight forwarders in the future.

Also possible introduction of a different transportation calculation method in which external (societal) costs of emissions (air, noise) are incorporated into transportation costs may impact choices of transportation modes in the future (road transport might become more expensive compared to rail and inland shipping).

Quick developments within e-commerce will lead to changes in freight flows: more and smaller packages will be entering urban areas via alternative (smaller) transportation modes (with stronger emission and noise constraints).

In The Netherlands pressure on the road infrastructure and a pressure on traffic flow have been problems on most Dutch highways for some time. As, due to spatial and budget constraints, no substantial construction of new road infrastructure is foreseen this might favour other transportation modes such as inland shipping and rail. Also the foreseen connection of the (west-east bound) Dutch Betuwe Rail Route to the German rail network might favour rail transportation as a mode.



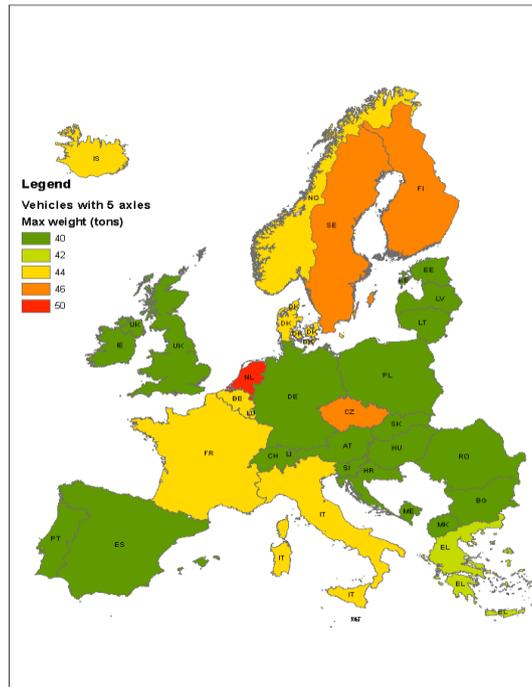
c. (Global)trends: effect on sustainability and safety

Considerable wins in emission reduction are expected by the use of different, alternative fuels (e.g. LNG, Hydrogen, biofuels) and use of other power technologies. Also electrification of transportation might contribute to sustainability within the logistics sector. Also the better use of ITS and digitalisation might lead to more efficiently ran supply chains in which more bundling of loads (including avoidance of empty driving) may be expected leading to a higher *loading factor*, and therefore less transport movements (see also experiments with (digital) *logistics platforms* – paragraph *future focus within Dutch transport*).

d. Specific trends within road transportation

Some trends are very much restricted to road transportation only.

Cross-border road transport in some cases remains a challenge from Dutch perspective, especially due to a difference in policy on vehicles weights. As shown in the figure below The Netherlands has a more liberal policy that allows higher axle weights and vehicle weights (50 tons) than in most neighbouring European countries (40/44 tons).



Also High Capacity Vehicles (60 tons), which have become more popular over the past few years, are allowed in The Netherlands, but have only limited use when carrying out cross-border operations.

Focal areas of Dutch freight transport policy

Based on the identified global, European and local (Dutch) trends and developments in the previous chapter The Netherlands has created three focal areas on which to act in order to stabilize its strong logistics position. These focal areas are:

- a. connection of infrastructure networks (Dutch: verbinden)
- b. improvement of sustainability (Dutch: verduurzamen)
- c. smarter freight transport (Dutch: verslimmen)

a. Connection of infrastructure networks

The Netherlands has an excellent infrastructure which is ranking in the top of the world and despite the fact expenditures in infrastructure are relatively small (2% of the total Dutch government budget). Most infrastructure budget is spent on maintenance of existing infrastructure (replacement) of which a substantial part (mainly bridges, tunnels) had been built in the 50s and 60s. Only limited budget is assigned to creation of new infrastructure also due to spatial constraints (The Netherlands has a population of over 17 million people on 42.000 km² only). How to balance the choices concerning spatial planning and expansion of infrastructure within a scarce public space is one of the big challenges.

For the next few years efforts on new road infrastructure will be mainly focused on the solution of major traffic bottlenecks; most new infrastructure network including terminals will be created for rail and inland shipping transportation. The Dutch rail network has a strong West-(South)East orientation towards the German and Italian hinterland (*Betuwe corridor* and *Brabant corridor*).

Adjustments to existing terminals and creation of new terminals are made to allow transshipments for rail and inland shipping (rivers, canals). In order to increase inland shipping (waterways) the Netherlands is presently looking into the feasibility of allowing four layers container ships and the impact this might have on the required adjustments on bridges.

The present Dutch transport policy has focused on optimizing possibilities of **synchro modality** for some years now (*'all three transportation modes a feasible choice for daily shipments'*) in order to take off the pressure on the use of road infrastructure. Synchro modality aims to optimize the use of all types of infrastructure (road, water and rail); optimal provision of transport and traffic information basis to freight forwarding companies on a daily is vital to make the concept of synchro modality work. In fact, supporting synchro modality within a Dutch context means changing shipments from road to either (predominantly cross border) inland shipping or rail. By doing so The Netherlands tries to increase sustainability, provide optimal (mode)choice/ flexibility to shippers and freight forwarders, and reduce costs and inconvenience caused by growing congestion on Dutch roads.

Certain progress has been made in shifting to other transportation modes than road transportation: -3,3% (road, +13,3% (inland shipping) and +10,4% (rail) in the period 2005-2014 (tons shipped, KIM, 2016). Those figures are spectacular, but one has to bear in mind that mode shifting is only possible where water and rail are indeed feasible alternatives for logistics companies – geographical spread of the water and rail infrastructure has its limitations and in many occasions specific logistics customer demands still favours road transportation in most cases because of lead-time, flexibility and costs. In this it is the role of the Dutch administration/ joint road authorities to provide an excellent set of well-developed



infrastructural networks for all modes and to persuade logistics companies to start using other transportation modes than road (choice transportation is sometimes a cultural mindset). In order to have optimal choice on a daily basis freight forwarders should have clear and precise information of the use of various transportation modes on a daily basis including traffic information (road works, traffic jams, alternative routes). The ‘persuasion’ towards alternative transportation modes includes establishing a different mindset and way of working within Dutch logistics companies as most still have a strong focus on (and culture of) road transportation.

Although synchro modality is a strong pillar of Dutch Transport Policy The Netherlands realizes that it won’t be able to meet all challenges by just that, and that road transportation will remain the dominant option as in many cases modal shift is not realistic (enough) from a logistics point of view. However, as the pressure on infrastructure budgets in the future will continue and quicker deterioration of infrastructure is expected (especially because of growth of road freight and growth of the average weight of freight vehicles) The Netherlands has to be creative and mitigate the effects of more heavier vehicles. Therefore it is investigating the possibility of coming to a network of vital freight corridors (linked to vital European corridors), thus physically concentrating/ reducing the numbers of highways where heavy traffic is allowed and where the execution of infrastructure networks such as roads and bridges is made robust enough to allow this concentration of heavy traffic. On those vital freight corridors traffic throughput is to be ‘guaranteed’ by setting clear rules on such as (axle) weight, emissions and safety. The system of ‘heavy transport vehicle corridors’ will also reduce infrastructure deterioration on other roads. The Netherlands is currently investigating the possibilities of such intelligent access system for roads and might combine this with a toll freight system. Targeting overloading and reducing the number of exceptional transport should also reduce any unwanted deterioration of road infrastructure.



As part of the connection of infrastructure networks transportation into/from cities (where most future growth will take place) should also be included (last mile deliveries). To enable the necessary transport in/from the city transshipments in distribution centers at the edge of big cities need to be supported: goods will be shifted from big freight vehicles to small freight vehicles (including use of water transportation) that will meet tougher standards on sustainability (including CO₂-reduction), noise and traffic safety.



b. Improvement of Sustainability

The Paris Climate Treaty of 2015 urges countries to put a lot of extra effort in reducing emissions such as CO₂ and NO_x. This means that a drastic CO₂ reduction for the Dutch freight sector from 11 million tons now to 2,5 million tons in 2050 is needed.

At the moment Dutch inland shipping and rail transport are more sustainable than road transportation, however, the shorter replacement factor for trucks (8 years on an average) might enable The Netherlands to make quick improvements in CO₂ reduction in the road freight forwarding segment by using alternative fuels, but also by the introduction of new transportation concepts (e.g. truck platooning). Expectations are that the use of LNG in road and water transportation will increase also due to the better spread of loading points for this new fuel. Also the use of hydrogen and electrification of road transport might contribute to the CO₂-reduction. The Netherlands is also investigating the use of pipelines and its possible contribution to sustainability improvement.

The Dutch government plays an important role in this so-called energy transition and contributes in taking away barriers for introduction of new fuels and makes sure that the right conditions are made for the introduction of alternative fuels.

In order to stimulate the use of more sustainable transportation modes and fuels the Netherlands has put a lot of effort in raising more awareness, also within the logistics sector. A good example of this is raising awareness on the effect of driving with the right tyres and the right tyre pressure; their effect can be considerable.

Another example of raising awareness is the realisation of the so-called Green Deal on Smart Construction Logistics (*Dutch: slimme bouwlogistiek*) in which all relevant stakeholders such as construction companies, the logistics industry, knowledge institutes and the Dutch government are working together to make the process of construction logistics more sustainable/efficient, safer and with less inconvenience to its surroundings.



c. Smarter freight transport

Apart from the innovation in the use of alternative fuels there is quite a range of new innovations that could make the freight forwarding sector smarter, more efficient, and as a result more sustainable.

In the future, cars are no longer only vehicles that drive on the road, but will also form an intelligent part of the traffic and logistical system. Communication between vehicles, the infrastructure and logistical processes takes a flight. Increasingly, people will use and share data. The internet we know is gradually included in the truck via intelligent systems, mobile phones and Wi-Fi connection. In order to steer all those new developments and chances in the right direction, co-operation between partners in the logistic chain, road authorities and the market is necessary; and a joint service provider in an (inter)national chain is required.

New (technical) innovations in road vehicles and ships including (semi)autonomous driving might contribute to making freight transport more efficient, more sustainable and safer in the same time. The Dutch government has, together with stakeholders in the Dutch market sector, tried to enable technical innovations (especially the ones that contribute to societal gains) to be brought to the market quicker by providing international showcases such as for truck platooning (The European Truck Platooning Challenge, Rotterdam, April 2016) and for smart shipping (Smart Shipping Challenge, Rotterdam, November 2017). Besides, Dutch government allows by law real life testing pilots on Dutch highways, and it is facilitating changes to be made to the digital and physical infrastructure in order to facilitate the introduction of new techniques such as self-driving cars. However, despite the supporting role of the Dutch administration its stance is that the market sector should be in the lead for the introduction of new innovative concepts!



One good example of a smart mobility solution is the introduction of so-called (digital) logistical platforms in The Netherlands in which various logistics stakeholders (e.g. OEMs, shippers, freight forwarders, road authorities) start sharing their logistics and traffic data in order to optimize their logistics and in order to work on a better *load factor*. By sharing the information bundling of loads becomes easier, and empty return and unnecessary shipments can be avoided. This benefits not only efficiency, but also has an immediate positive effect on sustainability (less kilometers = less CO₂). Digital logistics platforms also utilize opportunities to create better/ quicker route plannings. The development of this system is still in its infancy, but the provisional results look promising. Important in working with data sharing solutions is mutual trust between the various stakeholders together with the conviction that working together provides a *win-win* to all.

3. Approach and role

The Netherlands regards (road)freight forwarding primarily as a market activity (including bringing new innovations to the market) in which the Dutch administration is looking after setting the right conditions. This means first of all providing (and maintaining) an excellent, linked multimodal transportation network. Beside that it should also act in cases of market imperfections in which, for example, external costs are not integrated in calculations on new innovations, potentially impacting aspects such as sustainability and safety in a negative way. Also when the lead time of ‘promising innovations’ might be too long the Dutch administration might take measures to shorten lead times (especially in cases where societal gains are expected in terms of sustainability, safety and traffic throughput). Part of that is that Dutch government enables real-life testing of new innovations on public roads. Other instruments are: financial incentives (only used limited), specific investments in infrastructure, specific regulations and acting as a launching customer. Beside this instruments the Dutch government has a role in bringing stake-holders together (networking role) .

An adaptive approach is key to the effectiveness of Dutch Transport Policy as societal and technical developments (might) change quickly and sometimes unexpectedly. Dealing with such uncertainty means that a joint, flexible approach is critical to its success in which Dutch administration and the market (logistics sector, manufacturers, regional parties, knowledge institutes) work closely together, and in which the approach will be reassessed periodically.

4. Conclusions

The Dutch government is leading the preparation of the Dutch infrastructure network for the (multimodal) challenges that lay ahead in the centuries to come; connection of infrastructure networks is key in this, also to promote a bigger modal shift towards more rail and inland shipping where possible and realistic and enabling synchro modality (possibly switch modes on a daily basis).

As part of that it has to balance between a limited infrastructure budget, a big demand for replacements of (partly old) infrastructure, spatial constraints and supporting the logistics sector. Emphasis will not be on creating new road infrastructure but on a better use of existing (road) networks. While doing so the Dutch government is supporting promising mobility innovations especially the ones that contribute to sustainability, safety and traffic throughput.

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