

# DISSEMINATION PACKAGE SUPPORTING THE *DECLARATION OF INTENT* FOR ELECTRIC FREIGHT VEHICLES

*Author : Hans Quak, TNO ([hans.quak@tno.nl](mailto:hans.quak@tno.nl))  
version 1 (date 18-12-2016)*

## **How to use this dissemination package?**

This dissemination package includes three sections that can help you in discussing the declaration of intent with logistics operators in your city.

Section 1 provides reasons why electric freight transport is worth aiming at; so this helps in setting the context.

Section 2 discusses the issues that currently exist and that we aim at tackling with this declaration of intent.

Section 3 provides the appeal (i.e. the declaration of intent) including the example of logistics operators and shippers signing the declaration after workshops and discussions with the City of Rotterdam.

## 1. WHY AIMING AT ELECTRIC FREIGHT VEHICLES IN CITY LOGISTICS

**City logistics is essential to support the vitality and sustainability of urban life, but the current urban freight transport system contributes considerably to local and global emissions.**

City logistics, or urban freight transport, or any other name covering logistics activities in urban areas, is used for a range of different issues and interpreted differently by different stakeholders. City logistics often does not cover just one topic, but the actual topics or issues meant by it differ in time and per place. This is one of the main reasons that it seems difficult to solve the city logistics problems, where we see that many issues in city logistics are successfully dealt with. Next, we also see that city logistics itself is very often not an issue, but its unsustainable effects are for policy makers. Obviously, all agree that logistics, and especially an efficient (urban) logistics system, is very essential for cities to function as a geographical area where people, goods, services and pleasure activities come together. Depending on the city, its infrastructure, and other local circumstances the following issues are usually mentioned as important related to city logistics:

- Air quality (as vans and trucks are relatively big contributors to local emissions, such as NO<sub>x</sub> and PM), which is illustrated by the example of the emissions in Rotterdam city center (see Figure 1).
- CO<sub>2</sub> emissions, as for example urban freight transport<sup>1</sup> is responsible for about 30% of all transport-related CO<sub>2</sub> emissions in the Netherlands. Note that (for the Netherlands – but most likely for other European countries as well – the carbon footprint needs to be reduced by a factor 6 by 2050 to comply with the Paris climate agreement);
- Nuisance (or especially the reduction of it), the issues here concern urban freight transport's noise nuisance (also peak-noises during loading and unloading of the vehicles), stench (also during unloading), vibration, damage (pavement, street furniture, etc.) and visual intrusion.
- Traffic safety: especially in the cities vulnerable traffic participants (cyclist and pedestrians) share the infrastructure with vans and trucks. The increase of vans in residential areas, and the (perceived) impacts on traffic safety in these areas fits here as well;
- Improving the quality of life in the cities and / or the livability in the city by for example reducing traffic in the city center (and as a result also freight transport possibilities);
- Reducing congestion or increasing city accessibility.

Next, to these issues considered from a city perspective (which usually corresponds to that of residents as these vote for politicians), carriers consider other issues in city logistics, such as the many restrictions and regulations that even differ between different cities, making efficient logistics planning hard. Also the congestion around and in cities costs carriers time and with that money, as do for example regulations on time-windows.

---

<sup>1</sup> Urban freight transport in this study was defined as all distribution in the Netherlands from a distribution center / warehouse to a final receiver (e.g. store or consumer)

Having sketched the complexity of issues in a city concerning and affecting logistics, it is clear that there is no simple solution for all (local) issues that will resolve the ‘city logistics problem’, as under this name many different things are referred to.

Besides that, different developments influence both the (perceived) issues as well as the (proposed) solutions. For example, the fast increase in precise last mile logistics, results in many (inefficient) van trips that are often running through the neighborhoods; this issue is relatively new, whereas the improved vehicle technology results in less pressure on air quality (especially for the smaller cities in the Netherlands). In this complex system with many stakeholders, different objectives and stakes, most of the times a more or less optimal solution can be thought of, but usually realizing this is quite difficult, as it requires changes from many stakeholders, who usually have only very little to gain (if any at all) . To make matters even more complicated is that the most important logistics stakeholder-groups that can be easily identified, i.e. shippers, carriers and receivers, are very heterogonous and as a result require as well as facilitate for different (logistics) solutions.

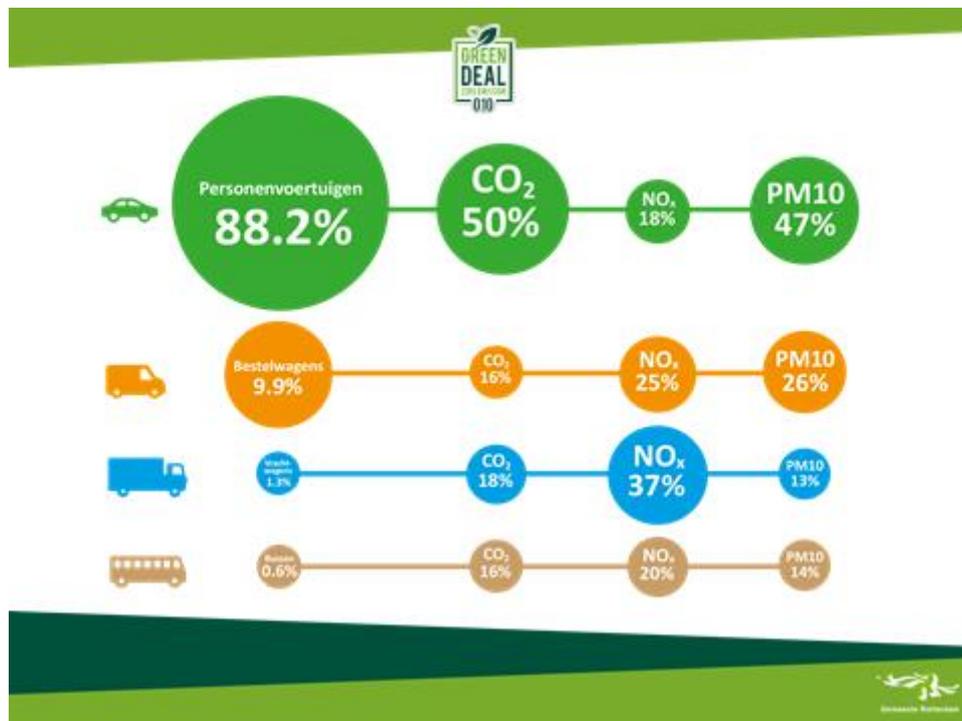


Figure 1 Share of vehicle type in Rotterdam center and corresponding emissions

## 2. TRANSITION TOWARDS ELECTRIC FREIGHT VEHICLES IN CITY LOGISTICS: THE CHALLENGE

**Electric freight vehicles have the potential to address city logistics' local air quality issues as well as to contribute to reducing the urban freight transport's carbon footprint. However, the transition towards a zero emission city logistics system, where this technological solution is implemented, does not come easily.**

One important topic in the field of city logistics is the transition towards zero emission city logistics. This is not only the aim in the EC whitepaper on transport (2011), but for example also an objective in the Rotterdam / Dutch Green Deal Zero Emission City Logistics. Although, this is already technically possible (for vans and rigid trucks) the challenge to make a transition towards zero emission city logistics is one many cities share. A big challenge in electrifying city logistics is to solve what we call chicken-egg problem: manufacturers claim they are willing to produce electric trucks on a large scale, but there is no demand for electric freight vehicles. On the other hand, logistics operators say that they are interested in procuring electric freight vehicles, but these are not offered for a feasible price. How to solve this contrast is a big challenge for the coming period.

This transition, however, is not self-evident. It requires significant changes. Many of these changes, or challenges, require actions from several stakeholders and cannot be executed by a single actor (city, government, logistics operator, or vehicle manufacturer). Issues making transition for zero emission city logistics not self-evident are (lessons from among others FREVUE):

- System transition required, not just a replacement of conventional vehicles by electric vehicles
  - New charging infrastructure required
  - No OEMs<sup>2</sup> available for large trucks or medium sized vehicles, no (price-wise feasible) tractor (for trailer) available yet. Rigid trucks (larger between 7,5 – 18 ton are available from small manufacturers<sup>3</sup> and are usually retrofitted, as are the larger vans (although some OEMs have announced first models to be produced soon now). Retrofitting often gives some specific operational problems in the first few months of operations as not all signals from the CANBUS are connected in the right way with the new e-engine.
  - Maintenance - not all servicemen are able to repair the EFVs<sup>4</sup> and especially the issues in the first months are sometimes hard and time-consuming to detect.
- Business case is not feasible yet for logistics operators (especially true for large EFVs, but also still the case for medium-sized vehicles and even for small vans). The paradox in this is that the more kilometers an EFV can make, the more feasible a business case becomes (as an EFV has a high procurement price (especially including the charging infrastructure), but the operational costs are lower (due to electricity vs. diesel costs per kilometer), but that the range of an EFV is limited, so making many kilometers is exactly what it cannot do.

---

<sup>2</sup> OEM = original equipment manufacturer, referring to large truck manufacturers.

<sup>3</sup> For example Gīnaf, Emoss and VDL announced to develop a EFV.

<sup>4</sup> EFV = Electric Freight Vehicle

- Uncertainty on residual value and battery life time
- Financial issues in procuring electric vehicles; these vary per operator:
  - Business case is negative (so extra financial support is necessary to increase the number of vehicles sold and produced), so that eventually scale advantages can occur and reduce costs per vehicle, as well as OEMs start considering producing the EFVs – procurement price is higher, and operational advantages due to lower kilometer price
  - Leasing conditions are unfavorable (risk is fully for the operator, depreciation within 3 years / buy-back demands required)
  - Loans of banks are difficult and at least high risk (so high rent percentages)
- Currently mainly demonstrations in which ICE<sup>5</sup>s are replaced by EFVs, but for larger transition other changes are required, e.g.:
  - logistics concepts have to be changed, so that limited range of EFVs won't be a problem
  - other electric options have to be developed (for example plug-in hybrid tractor trailer, that can run on diesel outside city and without emissions in city – but this is currently not in development)
  - real issues on electricity grid and required peaks due to charging will only occur if larger fleets are deployed and have to be charged during nights at the operators' depots.
- No 'real' advantages for operators using EFVs (some policy exemption pilots are trialed, and very limited number of examples do exist of where customers are demanding (and this paying slightly more for / require other service conditions) zero emission deliveries.
- City logistics is very heterogeneous, not only in vehicles – but also in type of operators. Whether operations match the EFV characteristics or not (and in that case: how to reorganize logistics organization to make electric freight vehicles in cities feasible) really depends per operation.

---

<sup>5</sup> ICE = internal combustion engine, refers to the diesel-vehicles that are used nowadays for most city logistics operations

### 3. DECLARATION OF INTENT

**Joint action is required to take tackle the chicken and egg problem and clear the existing financial hurdle.**

We have learned in FREVUE and in Rotterdam that it is not easy nor straightforward to switch to zero emission (in this case we mean battery electric) transport. There are hurdles on the technical, organisational and policy levels, but above all there is a financial hurdle. This is something we need to do together: No single city, shipper, or logistics operator can achieve this on its own. Therefore, we call up for taking joint action with respect to this financial hurdle. Therefore, we drawn up a 'declaration of intent'.

This document is intended to highlight the hidden demand for zero emission vehicles for urban logistics. We would like to ask each of you to present this statement to all relevant companies within your network, and ask them to sign it. The total number of vehicles is the most convincing picture we can produce to promote our cause. We will use this prospect of the potential market in two ways:

- 1- to support claims for subsidy schemes to bridge the period until mass production has made the cost for zero emission vehicles comparable to the conventional alternatives (either at national level or at EU level).
- 2- to persuade vehicle manufacturers to start and/or scale up the capacity of their zero emission production, sales and after sales facilities, which will reduce the price of individual vehicles.

Next, we learned in Rotterdam that by getting to know the logistics operators and their motives better, as well as to discuss the city's objectives, enables the city to connect easily to operators at time opportunities occur for logistics projects.

The idea is that we together with our local industry partners, can call on for a form of a financial (purchase) encouragement at the European level so that after the end of the FREVUE project, more electric freight vehicles can operate in European cities, in order to contribute to cleaner air. The more companies join in, the stronger this appeal will be.

In Figure 2 you can find the 'declaration of intent', modeled after the example of the city of Rotterdam. The general version is a little less specific and not as binding, but it should be more than just words: Although not formal, signing it should still mean a commitment. The idea is that the combined statements of demand, as a sum of all individual declarations of intent, contribute to realizing a financial arrangement for logistics operators who are willing to switch with zero emission vehicles. The city of Rotterdam already collected statements of shippers and carriers that represent a fleet of over 2,500 vehicles (and still increasing); so please help to increase this number, so that we can make a strong appeal!

The logos of companies that signed this declaration in Rotterdam are depicted in Figure 3.

### Joint Statement of Intent: Electric Urban Logistics

**Declaration of intent:**

As an organisation active in urban logistics we express our intent to switch to zero emission capable road transport in urban areas using (hybrid) electric trucks. Traditional urban freight transport contributes to air pollution and its associated health risks. As a responsible organisation we want to play our part in addressing this important issue.

As an organisation active in urban logistics we agree that:

- The ambition to reach zero emission urban freight logistics is achievable
- At present, electric (including fuel cell) drivetrains are the only ones that do not produce tailpipe emissions
- There is only a very limited number of (hybrid) electric trucks on the market for which a business case can be made

As individual organisations active in urban logistics we cannot on our own create the conditions to make this business case feasible. Therefore we call and count on other parties to contribute:

- Local authorities: Coherent privileges for zero emission capable trucks, e.g. priority loading
- Regional, national and/or European authorities: Financial support to procure and deploy (hybrid) electric trucks to stimulate the market
- Government to implement a concession on payload regulations for vehicles where an electric drivetrain contributes to taking gross vehicle weight over 3.5 tonnes
- Producers-OEMs: development and production of (hybrid) electric trucks that meet the requirements of urban logistics operators

Name of organisation:

Name of contact person:

Permission to publish your organisation's name:

Date:

What is the approximate number of commercial vehicles in your organisation's fleet that you could replace with zero emission capable alternatives:

Number of trucks between 3.5t and 7.5t: 

Number of trucks over 7.5t 

Additional comments:

Figure 2 Declaration of intent



Figure 3 Companies that already signed the declaration of intent in Rotterdam