Green Inland Ports

Good Practices

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Developing designated truck routes

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1.1 Description

Port-related truck traffic causes emissions and air pollution, noise, pollution and safety risks, particularly when trucks pass through residential areas or use roads not suited for heavy vehicles.

Designated truck routes are a practical solution to guide trucks along fast, reliable, and safer corridors. This helps to avoid congested areas, narrow streets, or bridges not designed for heavy loads. These routes are usually implemented outside port areas, where the negative impacts of truck traffic are more pronounced. Within port areas, congestion is generally lower and the infrastructure is better suited to accommodate truck traffic.

Examples of designated truck routes come mainly from the United States of America (USA) but can be applied in Europe as well. Examples include:

- Will County (USA): The lack of a contiguous system of designated truck routes in the region created quality of life and safety problems for local communities. These problems can be minimised by developing a truck routing plan (Will County, 2020). The document *Recommended Truck Routes and Restrictions* outlines how truck routes can be planned effectively (Will County, 2020).
- Houston (USA): Houston is implementing a Citywide Truck Route Plan (TRP) to establish a network that facilitates efficient truck traffic while minimising its impact on residential streets. The plan designates road segments either as designated truck routes or local truck routes, while prohibiting through truck traffic on all other roads (City of Houston, 2023b). More information and final recommendations on the TRP can be found here: https://www.letstalkhouston.org/truck-route-plan

Another example, in addition to designated truck routes, are smart traffic lights in The Netherlands: Smart traffic lights are also called 'intelligent traffic control installations and these aim to improve traffic flow.

- Smart traffic lights receive a signal from the navigation system on the number of vehicles passing by. Depending on the number of vehicles on the road, the lights jump to red or green earlier or later. This way, there is less change of standing in front of a red light while no traffic is coming from the other side. The signals from the navigation system are anonymous and immediately expire when a vehicle has passed.
- These smart traffic lights can also be used to ensure that emergency services can get through better. For example, the smart traffic lights can recognise an ambulance. The lights can then be operated remotely to allow the ambulance to pass as quickly as possible.
- Finally, reduced CO2 emissions are also a relevant benefit of smart traffic lights, as road users need to brake and accelerate less.

As of May 2024, the Netherlands had installed 1,450 smart traffic lights (Rijkswaterstaat, 2024).

1.2 The aim of designated truck routes

The aims of this good practice are to:

- create specific routes for trucks;
- prevent trucks from taking longer or busier routes; and
- prevent trucks from causing a nuisance or danger.

These objectives can be achieved by creating truck restriction zones, clearly marking permitted routes, and enhancing signage, especially closer to city centres.

In its Mobility Vision for the Citywide Truck Route Plan, the City of Houston describes that Houston's truck routes are safe for all road users and efficient for commercial vehicle travel. Houston's citywide truck route plan supports quality of life in their neighbourhoods and economic vitality throughout the city (City of Houston, 2023a).

1.3 Inland ports with designated truck routes

- Will County (USA)
- Port of Houston (USA)

1.4 Stakeholders

The following stakeholders are involved in this good practice.

- **The port authority:** when designated truck routes are implemented within the port area, the port authority is responsible. However, designated truck routes are often not relevant in the port areas themselves, but rather in the suburbs and/or near the centre of the municipalities in the vicinity of the port.

- **The municipality**: the municipality is responsible for the implementation of designated truck routes within the municipality, in close consultation with the residents, the port authority and/or other companies in the neighbourhood to which many trucks have to drive.
- **Transporting companies responsible for freight traffic**: when truck routes have been designated, truck drivers are obliged to use these routes.
- **Residents**: they are the ones who experience the nuisance, and they should have the opportunity to indicate to the municipality where freight traffic is a nuisance and dangerous.

1.5 Voluntary or mandatory

It is voluntary for the port authority and/or municipality to implement designated truck routes, possible in combination with smart traffic lights. Once the designated truck routes are developed and implemented, it will be mandatory for transport parties to use these routes.

1.6 Realised/potential impact

The potential impact of designated truck routes are:

- Increasing safety;
- Reduction of nuisance and danger to residents;
- Fast and reliable routes for truck drivers;
- Less traffic jams for other traffic participants (e.g. passenger transport); and
- Reduction of CO2 emissions, as road users need to brake and accelerate less.

1.7 Possible obstacles

Effectiveness of signage: No-truck zones already exist in many places. It is uncertain to what extent no-truck zone violations would be reduced by clearer signage. However, research by Lin, P. S., (2019) shows that in its analysis, about 56% of the reduction in commercial trucks outside of already existing no-truck zones can be achieved by designing new truck route signs. The authors explain that the combination of positive (advanced guidance) and negative (advanced prohibition) truck route signs that have been developed and implemented are very effective in communicating the message to truck drivers, which explains the large effect.

Data and costs: When a risk model needs to be built to find the best route, including time-varying network attributes (especially when truckloads contain hazardous materials), it can be difficult and expensive to obtain the data. Also, risk values can vary greatly when weather conditions are considered (Holeczek, N., 2019).

1.8 Key learnings

- Designated truck routes are mainly effective outside the port area, which is the responsibility of the municipality.
- In order to implement an effective system of truck routes, it is important that there is cooperation between the port authority, the municipality and the community.
- Even if designated truck routes have been introduced, unclear signage can lead to unintended violations.

Sources

City of Houston, 2023a. Final Recommendations Citywide Truck Route Plan, Houston.

City of Houston, 2023b. Ordinance No. 2023-1035, Houston.

Holeczek, N., 2019. Hazardous materials truck transportation problems: A classification and state of the art literature review. Transportation Research, 2019, 305-328.

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