Overnight distribution: a possible solution for urban deliveries?

Background

The idea of solving congestion problems in urban areas or at least reduce them by ensuring that deliveries take place outside peak hours is older than initially thought. In fact, Julius Caesar was the first to promulgate an edict – under the so-called Lex Iuliana Municipalis – which prohibited commercial deliveries during daytime hours in inner city areas. Today, urban logistics or urban freight services are an important aspect within town and country planning. Despite the fact that freight and delivery vans in our cities supply stores, offices, homes and construction sites and are therefore indispensible, they are mainly seen as a nuisance because of their negative impact on the environment and on urban mobility. Since the early seventies, town and country planning officers and transport economists have been examining the many challenges and problems inherent to the organisation of freight services in urban areas and have been actively seeking innovative solutions.

One of the options would be to switch to overnight distribution, which is also referred to as off-peak distribution or distribution during peripheral hours, where transport movements are shifted from peak hours to off-peak hours. The reasoning behind this idea is simple: making deliveries during off-peak hours reduces traffic congestion during peak hours and ensures that transporters can work more efficiently – and therefore more cost-effectively – as they will be spending less time in traffic, which would then reduce greenhouse gas emissions as well. Nevertheless, there are a number of potential stumbling blocks, more specifically the added noise during 'quiet' hours and the more expensive and unhealthier option of night-time work together with cumbersome stipulations regarding legal liability for the goods. Weighing up the social benefits of the shift to off-peak distribution is a very complex matter as opposing interests from the various parties involved must all be taken into account: high density of the population and strongly interwoven functions result in hybrid areas and a busy, bubbly inner city but also create conflict. Shopkeepers, for instance, prefer to receive their supplies in the morning or even in the early hours of the morning so that they can process the delivery before their first customers arrive. But local residents do not want noisy delivery vans and trucks driving up and down their streets. These vans and trucks also hinder early morning traffic and create a more dangerous situation for vulnerable road users.

Description

The research project explores whether overnight distribution is a feasible option for urban freight services in Belgium. It wants to reconcile the various demands from the interest groups concerned and gauge the overall socio-economic impact of overnight distribution. Through a literature study, a European benchmark, Internet questionnaires and in-depth interviews, the researchers have been focusing on the following elements: (i) social basis, (ii) legal context, (iii) traffic safety, (iv) potential modal shift and (v) economic impact of overnight distribution. The ultimate goal is to define a number of practical policy guidelines that will enable authorities to assess the feasibility of overnight distribution (in every aspect).

Subprojects

The project is comprised of 5 subprojects:

1. <u>Literature study and European benchmark</u>

   The concept of overnight distribution has been thoroughly researched in the past and has been implemented in several countries. This subproject examines the current status in other member states of the European Union and in Switzerland. Through contact with research teams abroad and with international bodies and administrations, current and finalised studies will be retrieved and examined with the aim to acquire as much knowledge as possible about overnight distribution and to gain insight into the various approaches implemented abroad.

Recent highly-regarded publications on overnight distribution will serve as a starting point for literature studies aimed at aligning concepts, objectives and definitions in the field of overnight distribution and at clarifying the concept based on case studies.

2. Safety aspects and legal context

Two issues are often brought up which prevent the breakthrough of overnight distribution. The aspect of safety on the one hand and legal context on the other. One would expect off-peak distribution to have a positive impact on traffic safety given that traffic conditions at night and overnight are less stressful. Nevertheless, research conducted in the United Kingdom and in Germany shows that more than 50% of fatal incidents occur during the 'dark' hours. This problem is further examined through a literature study and through an analysis of incident numbers involving trucks. The legal context of overnight deliveries will be investigated also and will include a thorough examination of the applicable legislation on working conditions, legislation and regulations on delivery times (window hours), insurance and liability issues, European policies on noise pollution, etc.

3. Social basis for overnight distribution and possible scenarios

To achieve a better implementation strategy, researchers are trying to gain insight in the response towards overnight distribution as a possible solution for urban traffic congestion. They want to gauge the basis for this concept among the general public and among those who will be implementing it. This basis can be defined as a positive, negative or neutral opinion, attitude and/or behaviour of people involved in the policy or of a social group affected by it.

Selecting the proper evaluation method depends on the familiarity of the general public with the regulations concerned. Under this project, researchers will use in-depth interviews and a brief (Internet based) questionnaire to expose any social opposition to overnight distribution. They will conduct their research primarily among local communities that are possibly affected by the deliveries and among employees of transport companies and logistics service providers. Employees at distribution centres at the ports and in the hinterland, transport companies, distribution centres and shippers will be interviewed as well.

4. Modal shift and study of effects

To find out the level of effectiveness of this policy of shifting urban freight services from peak to off-peak hours, we first need to gain insight in the potential modal shift. Researchers will list current trends and will formulate a number of operational hypotheses based thereon. Then, using the above assessment of the modal shift under the various policy options, these researchers will determine the effect of the proposed measures on traffic congestion via the model for traffic and transport in Flanders. Greenhouse gas emissions will also be reduced if the policy leads to a modal shift or to a gain in efficiency. This will also be verified by the team of researchers. In addition, any impact on cost structures of the businesses involved will be estimated based on a case study for each scenario.

5. General assessment and recommendations

The preferred method for integrating all the results (obtained from the various partners of all four subprojects) is to conduct a multi-criteria analysis (MCA). The MOSI – Transport and Logistics department at the VUB (Free University of Brussels) has already conducted this type of analysis for several projects that involved weighing up alternatives. They also developed an extended version, the so-called multi-actor multi-criteria analysis (MAMCA), which allows for various interested parties to be included in the analysis. The analysis will provide a basis for the recommendations formulated by the team of researchers on behalf of the authorities.