

TEACHING MATERIAL GUIDANCE

1) Title of the material

Urban Technology Research Programme LEFV-LOGIC: Research on light electric freight vehicles.

https://www.researchgate.net/publication/327345378_URBAN_TECHNOLOGY_RESEARCH_PROGRAMME_LEFV-LOGIC_RESEARCH_ON_LIGHT_ELECTRIC_FREIGHT_VEHICLES

2) Which section of the SUMP it is relevant to?

It is relevant to section 7.1 Create and assess long list of measures with stakeholders. It is due to a comprehensive approach including views from a logistics sector and practical assessment of both business cases for light electric freight vehicles (LEFV) and design and technology aspect of their implementation in urban supply chains.

3) Which Mobility Manager knowledge this material is the most relevant to?

It is related to logistics and urban freight management (section 4 of the Mobility Manger competences). The report has also a direct reference to Section 1, especially 1d (Development of mobility solutions meeting community challenges) and 1e (Evaluation of transport measures).

4) Problem approached and content overview

The report presents the findings of the LEFV-LOGIC project, which was a two year research into use of light electric freight vehicles in urban logistics in Netherlands. Besides several universities logistics operators, shippers, vehicle suppliers and network organisations had been involved, which provider for cross-sectoral evaluation of LEFVs.

The most notable feature of the research was its **focus on logistics concepts** and business models for LEFVs as a leverage for their adoption based on commercial feasibility for potential users. Benefiting form a participation of stakeholders from different sectors a practical framework of research has been adopted, which included:

- a) exploring the potential of LEFVs for urban freight flows,
- b) the design of new logistics concepts for LEFVs,
- c) technical design and modifications to LEFVs,
- d) policy around LEFVs,
- e) research on scalable business models involving LEFVs,
- f) practical experiments with new LEFV concepts.

Practical and market oriented approach was shown with a five real life experiments with LEFVs carried out in Amersfoort, Utrecht, Maastricht Amsterdam to test and collect knowledge on their operations and evaluate it with stakeholders. In addition, operational parameters evaluation had been carried out based on data from GPS data loggers and cameras.



TEACHING MATERIAL GUIDANCE

Collaboration with several businesses resulted in mapping out various logistics concepts with LEFV and required changes with regards to operations with standard delivery vehicles identified. As an example, several criteria determining whether goods flows are suitable for LEFV deployment were identified as a basis for business models adoption (Fig. 1).

Temperature	+ Non-refrigerated products, or products that are cooled via the load carrier are suitable for LEFVs + For temperature controlled products (hot or cold) fast transport is important; LEFVs can offer an advantage → See Access and speed of cars - There are not currently any (or many) LEFVs for transporting frozen goods
Weight	+ Limited weight transported per trip (see Chapter 2) - Excess weight does not fit into a LEFV
Volume	+ Limited transport volume per trip (see Chapter 2) - Too much volume does not fit into a LEFV
Access and speed of cars	+ Where the speed of access of motorised traffic is limited, the benefit of using LEFVs increases (for example in congested areas) - In areas where motorised traffic is allowed to drive at high speed, LEFVs lose their advantage
Number of stops	+ LEFVs are easier to park. The more stops, the more benefit LEFVs offer during parking and loading / unloading - The more stops on a route, the greater the volume → See volume / For routes with many stops, a LEFV may need to shorten its routes by using a hub → See Costs of a hub
Distance and stops	- For long distances between stops (or from starting location), in areas where vehicle speed is high, LEFVs lose their advantage → See Access and speed of cars
Costs of a hub	+ If a hub is affordable, it is possible to split routes and load goods so that the volume per route decreases - The more shipments that are bundled together at a hub, the greater the volume → See Volume"
Parking space / time	+ When a good parking place is important (nearby location), using a LEFV is beneficial - The longer you are parked at a customer's premises, the less stops are possible per trip → See Number of stops

5) Who could be interested in this material?

The report is addressed to interested in implementation of innovative solutions in urban freight management. Availability of results of experiments and cooperation with LEFVs current operators results in constructive conclusion to be user by other user. Also city authorities might be interested in the results when developing local freight policy or designing measures to support change in modal split in freight activities.

6) What is worth mentioning as an innovative factor for the reader?

- comprehensive research structure including both operational, technology and business-oriented aspects,
- clear identification of factors determining implementation of LEFVs
- thorough evaluation of experiments in five cities focusing on identification of scalable business models.



TEACHING MATERIAL GUIDANCE

7) Limitations

Some aspects of implementation of the LEFVs might be different in other countries which should be taken into consideration when analysing the results. This refers to formal aspects of their registration and classification and how they are considered in the traffic.



The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein



Co-funded by the
Erasmus+ Programme
of the European Union