

# Freight logistics in sustainable cities (CITYFREIGHT) – short project description

## Summary

Urban population growth is driving an increase in the amount of freight that goes into and out of cities. That growth poses an increasing challenge to freight transportation in smaller compact cities with difficult topology, which is typical for most Norwegian cities and numerous cities abroad. This transportation challenge is exacerbated by phenomena such as an increase in internet trade, the demand for fast delivery, and a reduction in the ownership of private cars in the city centre which could be used for shopping. The result is an increase in the total volume of freight, and more critically, in the total number of deliveries, normally managed by a large variety of transportation companies. Unless planned for and regulated, a consequence might be increased traffic, with enhanced energy consumption, that competes for available space and may affect living conditions for a growing urban population. Hence, to respond to this challenge, public authorities need to search for innovative ways to handle the substantial increase in the number of deliveries.

CITYFREIGHT provides authorities with concrete evaluation tools for regulating freight transportation in smaller cities, as there is little practical knowledge available in the literature. It makes substantial contribution through its close connection between academia and the authorities responsible for city developments and regulations. Our focus is different from much of the logistics literature, where the focus is on running a city logistics system as a business idea. Instead we focus on the role of the authorities, and we analyse real cases to the benefit of the City of Bergen and as a genuine test of the tools. Co-producing knowledge with user partners and stakeholders means that we will be able to use experiences of non-academic collaborators to improve knowledge for both science and for society.

## Project objectives

The primary objective is to provide public authorities, particularly in smaller, topologically complicated, cities and initially the City of Bergen, with a toolbox for realistically evaluating major decisions that would make a city more energy efficient and sustainable in terms of freight transportation.

Secondary goals are to 1) model freight transportation in a city at a level of detail that makes it possible to make political decisions based on a realistic understanding of how transportation companies will react to different regulations for freight logistics activities. 2) get an overview of existing legal frameworks, identify barriers and propose changes. 3) understand how citizens will react to the effects of different regulations. 4) build capacity through co-production of knowledge within relevant public and private sector organizations. 5) Bring other cities than Bergen into the discussions using the City of Bergen as a vehicle.

## Outcomes and impact

CITYFREIGHT will significantly improve the competence base for sustainable logistics operations in small and medium-sized cities, in Norway and beyond. By working closely with authorities, other user partners and stakeholders, our research will generate realistic ways to implement a more resource efficient city logistics, building bridges between that theory and realistic and context-sensitive application. The key core mechanism for ensuring that this has impact is the integration of a panel of relevant user partners in knowledge production and exchange, as well as a set of communication

activities with these partners. In addition, our actual use of the model in Bergen, performed together with the user partners, will provide a basis for making important decisions on freight in the city. The tool box generated by the project will be presented to user partners in Bergen, and to other relevant cities in Norway and beyond, including through an online portal.

## Work packages

**WP1: Mapping governance challenges for sustainable city logistics.** *Responsible: Haarstad. Collaborators: Schütz, postdoc, PhD, all user partners + invited stakeholders.* In order to map the challenges of effective and sustainable logistics from the perspectives of selected cities we will conduct workshops and interviews in three Norwegian cities – Bergen, Trondheim and Stavanger. We will involve planners and officials from municipalities, as well as selected participants from regional authorities, road authorities, business interest organisations, as well as others. Interviews will typically be in-depth semi-structured, which will be analysed through structured content analysis. In workshops, we will focus on problem-oriented group work, mixing different types of user partners and stakeholders in the same groups. Legal analysis will analyse tensions between national laws and local regulations, and uncover obstacles between legal frameworks and emerging logistics solutions. Data generated will be used to feed into the modelling work in WP3, in addition to other communication and publication outputs.

**WP2: Data collection and handling:** *Responsible: Goetz. Collaborator: Nonås, NPRA, The City of Bergen, Vestland County, Guo (Chengdu). Other: PhD and postdoc.* Here we collect data necessary for modelling (WP3). Most of the data we need for applying the model from WP 3 on Bergen is available from user partners. The most important data set is a detailed map of Bergen. Though readily available as a map, it needs to be transformed into a format suitable for optimization. We also need to locate (on the map) major terminals, warehouses and large shopping malls, as well as a reasonable description of where people live, and other relevant information supplied by user partners.

**WP3: Modelling logistics problems:** *Responsible: Wallace. Collaborators: Goetz, Nonås, Semet (Lille), Perboli (Torino), PhD, postdoc, NPRA.* This is the core module that models and analyses such as the effects of forced consolidation (complete or partial), actual traffic regulations, gains from small vehicle (bi/tri-cycles, pedestrians, autonomous robots), the access to delivery boxes, crowdsourcing, deliveries in shops. The specific problem formulations will be developed in cooperation with the user partners.

**WP4: Citizen perceptions and public opinion.** *Responsible: Tvinnerem (UiB). Collaborators: NPRA, Postdoc and PhD.* Which ones of the potential scenarios based on WP2 and WP3 will people accept, regarding traffic regulations, autonomous vehicles, public tenders for monopolistic last-mile delivery? Such views will likely in part be informed by ideology, in part by experience where respondents live. The principal infrastructure for WP4 is the Norwegian Citizen Panel, which provides high quality survey data corrected for weights based on national register data. Using the Norwegian Citizen Panel, we will investigate such as (i) public acceptance of new types of transport and freight solutions; (ii) preferences regarding local, regional or Internet shopping, tools to manage urban congestion and (iii) preferences for private or public solutions, regulated monopolies or competitive markets (in part informed by ideology) (see Tvinnereim et al., under review; Tvinnereim and Fløttum 2015).

**WP5: Administration, communication, and user partner coordination.** *Responsible: Wallace. Collaborators: Måseide, the rest of the project team.* We have organized these activities under a particular work package in order to make sure they are allocated the proper responsibilities and resources.

## **Partners**

The project involves a number of academic institutions, as well as public and private sector user partners: NHH - Norwegian School of Economics, Centre for Shipping and Logistics; University of Bergen – Centre for Climate and Energy Transformation (CET); The Norwegian Public Roads Administration; Sparebanken Vest; City of Bergen; Vestland County; Bergen Chamber of Commerce and Industry; Nordic Edge AS; Université Centrale Lille; Politecnico di Torino; Sichuan University, Chengdu.