

## Summary

# The potential of commercial use of cargo bikes

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- *Increased mobility and better parking opportunities are two of the largest motivating factors for commercial operators*
- *Cargo bikes can lead to increased productivity, but gains in productivity must be weighed against investments in measures necessary to facilitate their use*
- *Cargo bikes are often used as part of a diverse fleet of vehicles*
- *Rapid developments within the cargo bike sector and increased demand for larger, more robust models, has led to an emerging need for cities to adapt*
- *Public sector, especially municipalities, have an important role to play and must contribute influencing how competitive cargo bikes are now and will be in the future*

Cargo bikes are used for transport in many contexts and have seen growing interest in the commercial sector. They have shown especially high potential in alleviating some of the challenges faced by commercial actors operating in densely populated cities. Cargo bikes provide a mode of transport that is both fast and reliable while escaping restrictions to motorized transport. However, despite the enthusiasm and praise cargo bikes receive, there are a number of factors that must be in place for them to be both economically and socially sustainable. Though seen as an attractive solution for compact cities in the future, their limitations prevent them from being suitable for all transport needs. There is a need for greater knowledge about the conditions that give cargo bikes the potential to succeed. This report looks at the circumstances under which cargo bikes can be a preferred transport method and the potential cargo bikes have in the commercial sector.

In order to understand the circumstances that cargo bikes are best suited to, this report looks at how cargo bikes are used today and what influences different actors' willingness to invest in their use. Then, in order to evaluate the potential of cargo bikes, the report investigates which elements are critical to their success. To answer these questions, the report draws from relevant literature, interviews with actors who use and work with cargo bikes, and analyses of a survey distributed to commercial entities that received a grant from the municipality of Oslo supporting the use of electric cargo bikes commercially. The study focuses on two primary categories of commercial actors; *users* (n=6) of cargo bikes, including goods deliveries, service work, and tradespeople, and *suppliers* (n=2), that are represented in this report by a cargo bike manufacturer and a cargo bike dealer. In addition, a representative from Bymiljøetaten (the Agency of Urban Environment) in Oslo was interviewed about their cycle strategy and the role of the public sector in planning for the use of cargo bikes commercially.

The primary goal of this report is to evaluate the potential of cargo bikes as a mode of transport for commercial activities. This report highlights the need for support from the public sector in order for the commercial use of cargo bikes to succeed. Experiences from this report provide useful knowledge for commercial actors interested in using cargo bikes in their work. Additionally, the public sector can use the information and experiences from this report to improve their cycle strategy and planning.

## Applications for cargo bikes

Cargo bikes used for goods delivery are primarily used for last mile distribution in cities where customer density is high and the distances between customers are low. On the other hand, trades and service people can use cargo bikes to solve a wider range of transport goals than just goods delivery. They might use cargo bikes to transport employees to meetings or service assignments, as part of a marketing strategy, or to transport both equipment and employees. Growing interest in using cargo bikes to achieve for a variety of purposes has created growth in the market and resulted in more manufacturers developing and producing cargo bikes. This has contributed to the rapidly growing diversity of cargo bike models seen today. Cargo bikes can be roughly divided into two primary categories: heavy and light cargo bikes. Heavy cargo bikes often have 3 or 4 wheels, can carry over 100kg in cargo and can often be equipped with a lockable box to make them attractive for package delivery. Smaller and lighter cargo bikes are generally better suited to personnel transport and service work, but can be connected to a trailer allowing them to carry more weight and larger volumes. There is a great deal of variation within these two categories and new models are continually being developed and released on the market.

The target customer and the intended purpose of a cargo bike is heavily determinative of its design and it is not uncommon for a cargo bike to be developed and produced in cooperation with a customer to ensure the desired functionality is achieved. Common to the use of cargo bikes is the need to operate from a centrally located area in proximity to their customers. This means that in cases where commercial actors don't have a terminal or other location close to their customer base they must find strategies that allow for the efficient loading or transferring of goods to the cargo bikes. This can be done using either mobile or stationary elements (such as depots, terminals, hubs, or larger vehicles). By reviewing the literature, we have identified five primary strategies for using cargo bikes effectively in urban areas:

- *Microdepot*: a smaller centrally located depot where individual companies can store cargo bikes and transfer goods to cargo bikes (or other vehicles)
- *Mobile terminal*: A terminal without a set location that is moved as needed. This could be a trailer, a large truck, or a boat, as long as it fulfils the goal of providing quick access to goods and equipment for smaller vehicles.
- *On-demand, order based*: in this model, cargo bikes are distributed throughout the service area where they stand ready to fulfil orders as needed
- *City Hub*- a step up from a microdepot in size and functionality, a City Hub has greater capacity to store goods, equipment, vehicles, and employees in a centrally located area.
- *Consolidation centre*: consolidates goods from multiple commercial actors with the goal of distributing them to vehicles such that duplicate trips to the same location can be avoided. In centrally located areas, consolidated goods can be transferred to smaller vehicles such as cargo bikes.

These different strategies allow cargo bikes to be used effectively and are implemented both for goods delivery as well as by tradespeople and service providers. A city's infrastructure, topography, and the amount/size of goods, materials, or tools that need to be transported are also important to consider when choosing a strategy.

## Factors influencing the uptake of cargo bikes

### Motivating factors

This report has identified five motivating factors that positively influence commercial actors' desire and ability to invest in and use cargo bikes:

- *Climate and the environment*: cargo bikes are seen as part of the solution to develop more sustainable and environmentally friendly logistics
- *Increased accessibility*: cargo bikes solve issues of accessibility and parking in densely populated areas
- *Economic benefits and efficiency gains*: cargo bikes have the potential to save both time and money under the right conditions
- *Public support*: support from municipalities can influence the choice to purchase cargo bikes
- *Promotion and branding*: consideration for the climate and environment, including the use of cargo bikes, is considered good marketing

### Barriers

This report has identified six barriers that negatively influence commercial actors' desire and ability to invest in and use cargo bikes:

- *Lack of knowledge*: during the purchasing process it can be challenging to choose the bike best suited for the planned task and integrate it into existing operations
- *Costs*: associated with the purchase of cargo bikes, investing in new infrastructure, and developing new routines that a company must have the time, capacity, and motivation to see through
- *Demand and delivery time*: high demand for cargo bikes combined with delays in deliveries of bikes and parts has created challenges for purchase and maintenance
- *Topography*: Steep hills drain batteries faster and cause significant reductions in speed
- *Weather*: Cyclists are more exposed to poor weather which can have a variety of impacts on how jobs are carried out. wind and snow can make cargo bikes more tiring to use, reducing both speed and range.
- *Scepticism from employees*: scepticism associated with a new means of transport and different working conditions

### Support for cargo bikes from the public sector

Support for cargo bikes can be divided into three different categories:

- *Economic*: in the form of direct financial support for the purchase of cargo bikes
- *Infrastructure*: in the form of reduced accessibility for cars, improved bicycle infrastructure suitable for use year round, and better parking and charging infrastructure for cargo bikes
- *Regulatory*: in the form of placing more emphasis on using cargo bikes in tender processes and increasing the allowed levels of motor assistance

## Criteria for success

Based on the findings of this report, we have come to the conclusion that there are five criteria for success that impact the potential for cargo bikes to be used commercially.

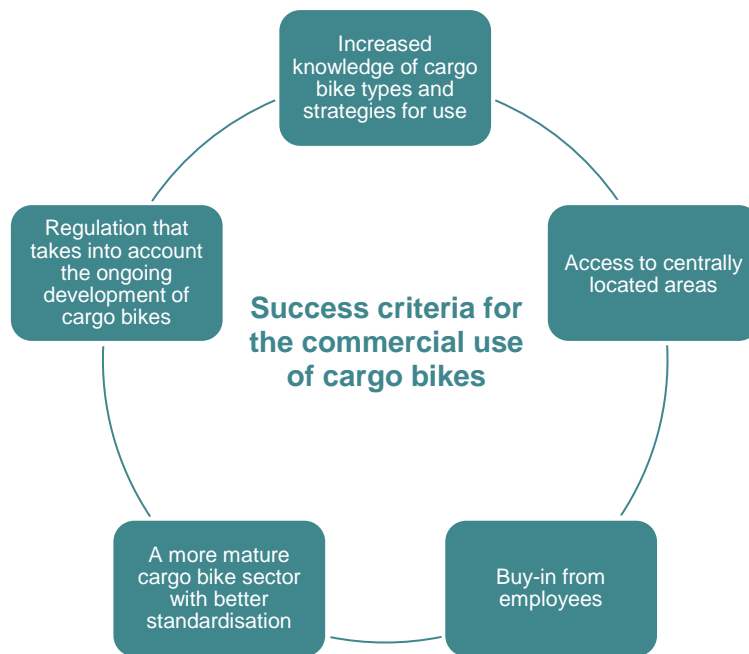


Figure S1: Success criteria for the increased use of cargo bikes commercially.

### **Increased knowledge of cargo bike types and strategies for use**

The large variety of available models can be a source of confusion for companies that wish to purchase cargo bikes. It is important that the bike's intended purpose is clearly defined before purchase both to reduce the number of choices and the chance that the wrong model will be selected. Increased knowledge about cargo bikes will enable them to be used more effectively and increase the chances that they will be used to their potential.

### **Access to centrally located areas**

The efficient use of cargo bikes requires that the distance between different tasks is relatively short. As a result, it is important for businesses using cargo bikes to have access to a location in the city centre. Such locations can be used for activities related to goods delivery, such as loading, sorting, and transshipment, as well as for storage of equipment, materials, and charging of electric vehicles. Available space and its associated costs can be a major challenge for businesses.

### **Buy-in from employees**

Scepticism must be taken seriously and it is important to get buy-in from employees by building enthusiasm about cargo bikes as a mode of transport. Just as companies need time to develop new routines and strategies to use cargo bikes effectively, so too do employees need time to grow accustomed to using a new type of vehicle. At the same time, not all sectors face the same challenges. For example, it is easier to find experienced bike messengers than to find tradespeople who are also eager cyclists, so different companies need to use different strategies to integrate cargo bikes into their operations smoothly.

### **A more mature cargo bike sector with better standardisation**

A more mature cargo bike sector can lead to the development of more standard parts and fewer solutions adapted to a single cargo bike model. Manufacturers will also gain experience over time in terms of producing models with lower maintenance needs that can

tolerate hard use on a daily basis as required by the commercial sector. Cooperation and collaboration between involved actors will be critical to reach this goal.

### **Regulation that takes into account the ongoing development of cargo bikes**

The cargo bike sector is experiencing rapid development and the demand for larger and more robust cargo bikes is steadily increasing. This carries with it the need for cities to respond and adapt to the changing conditions on city streets. Municipalities can play an important role in how large cargo bikes are received and integrated into cities and can influence their relative competitiveness when compared to more traditional transport modes.

### **Potential and criteria for success**

The findings in this report show that cargo bikes have the potential to be a suitable and preferred mode of transport for commercial actors in cities. In most cases, cargo bikes will provide the greatest utility as part of a fleet consisting of multiple vehicle types. Time savings and predictability of travel times are the biggest advantages cargo bikes provide and must be enough to cover additional costs associated with extra infrastructure or access to areas in the city centre. This report shows that delays in delivery times for both bikes and bike parts acts as a barrier for the adoption of cargo bikes and is a source of instability in the industry. There is a need for more knowledge both in the buying process as well as the integration of cargo bikes into existing operations. Although the cargo bike market is growing and becoming more mature, private actors are still undergoing a learning process that involves testing of different cargo bikes and the strategies to use them. This learning process is also helping manufacturers better understand the required characteristics to produce a cargo bike with low maintenance costs that can tolerate hard, daily use in the commercial sector. Better cargo bikes combined with the growing experience of companies and their employees creates the potential to use cargo bikes efficiently.