6. Bergen

6.1 Local context

6.1.1 City size and context

Bergen is the second biggest city of Norway and the Greater Bergen region serves as a major trade node of the Western coast of Norway. Located next to the North Sea, the city has a longstanding tradition of maritime industries and trade by sea. Today, both the main port and the railroad terminal are in the city centre, serving goods delivery directly into to city centre and its hinterland. Currently, the city is subject to the modern trend of transforming urban industrial zones into residential and recreational areas, pushing logistic facilities towards the hinterland.

Previously one of the most compact cities of Norway, the release of car sales to private householdings changed the terms for the city's urban development leading to urban sprawl. Since 2011 Bergen has boosted its effort to create a compact nodal city, with the help of the light rail system that has proven to be a major success in terms of replacing car traffic.

KEY FIGURES

Population: 284 000 inhabitants

Area: 465 km^2

Density: 600 inhab/km^2

NUTS level: NUTS

TEN-T corridor(s):

ULaaDS role: satellite city

6.1.2 Geography

The city is located on the Western coast of Norway in a rugged and mountainous area, reason why Bergen is called "The City between the seven mountains". The city centre, and most of

its neighbouring boroughs are situated in the narrow Bergen Valley, leaving limited room for improvements of infrastructure for logistics. The European Road E39 and E16 follow the valley floor, allowing goods transport through and to the city, but also generating challenges finding space for new infrastructure for public transport, bicyclists, and pedestrians.

The city's location next to the Atlantic Ocean makes Bergen prone to a wet and mild weather. The climate makes biking possible throughout the year – unlike in many cities on the same latitude. Thus, despite significant amounts of rainfall (a prohibiting factor for many people), there are still several thousand cyclists in the city (4% of the modal split), and the number keeps increasing.

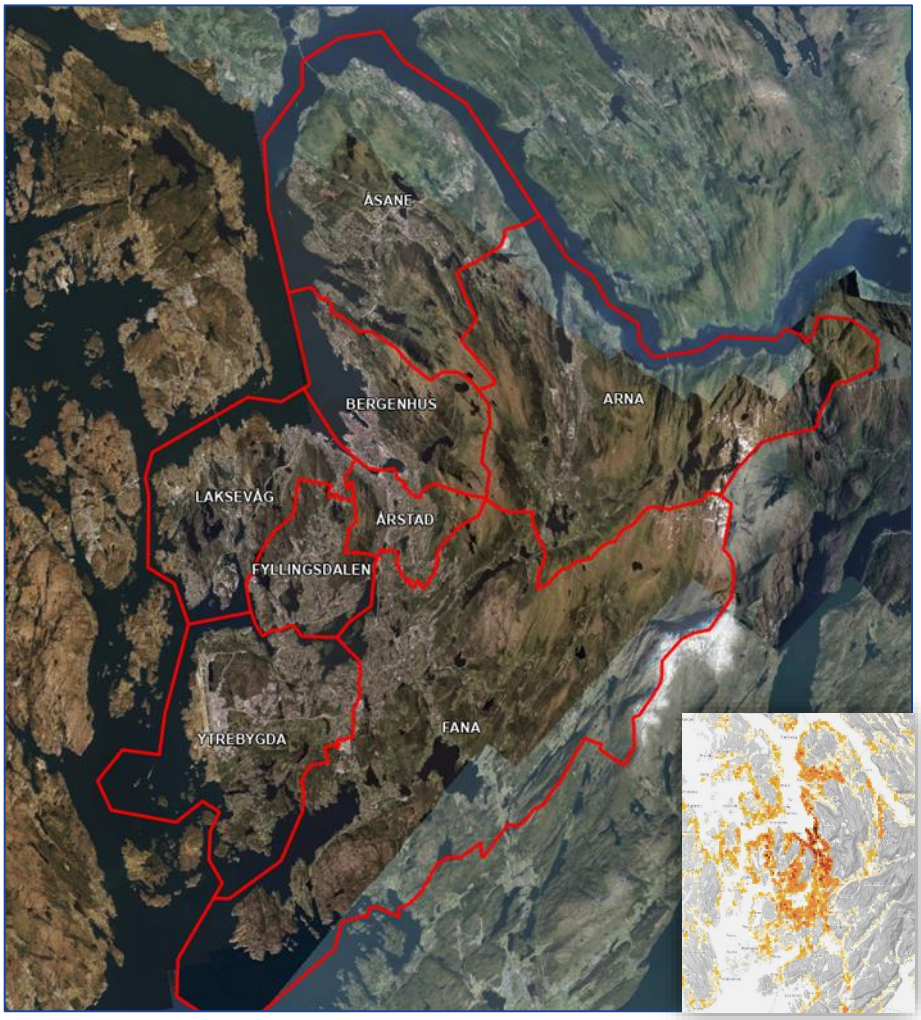


Figure 35 Map of the municipality of Bergen, and the distribution of citizens

Source: bergenskart.no and SSB.no

6.1.3 Population

The municipality of Bergen covers 465 square kilometres and has 284 000 inhabitants, with a density of about 600 people per square kilometre. The city has its own university and university college, and in total 35 000 students populate the city and add to the lively and creative environment of the city. The Greater Bergen region counts about 420 000 inhabitants.

6.1.4 Area (km^2)

The municipality of Bergen covers 465 square kilometres. The city centre is located in the borough of Bergenhus (see figure 33), which along with Årstad and the eastern parts of Laksevåg make up the inner part of the city. Åsane, Arna, Laksevåg and Fana were all municipalities of their own until 1972, and to a certain extent they are autonomous with their own nodal centres developed around big city malls today.

The city is surrounded by the municipalities of Alver, Askøy, Øygarden, Bjørnafjorden, Osterøy, Samnanger and Vaksdal whom altogether make up the Greater Bergen region.

6.1.5 Modal split

Citizen's modal split

Since 2018, a travel survey among the citizens of Bergen is performed annually. The recent data shows that 47% percent of the traffic is done by walking, cycling or using public transport. 24 % of the citizens don't own car in Bergen, while 47% have access to one car and 30 % have access to two cars or more. The City of Bergen has one of the highest electric car shares in the world, and the county which Bergen is in had the highest sales of EVs in Norway in 2020 (64,8 % in December 2020). In terms of regular bikes, 55% have access to a regular bike while 6% have access to an electric bike.

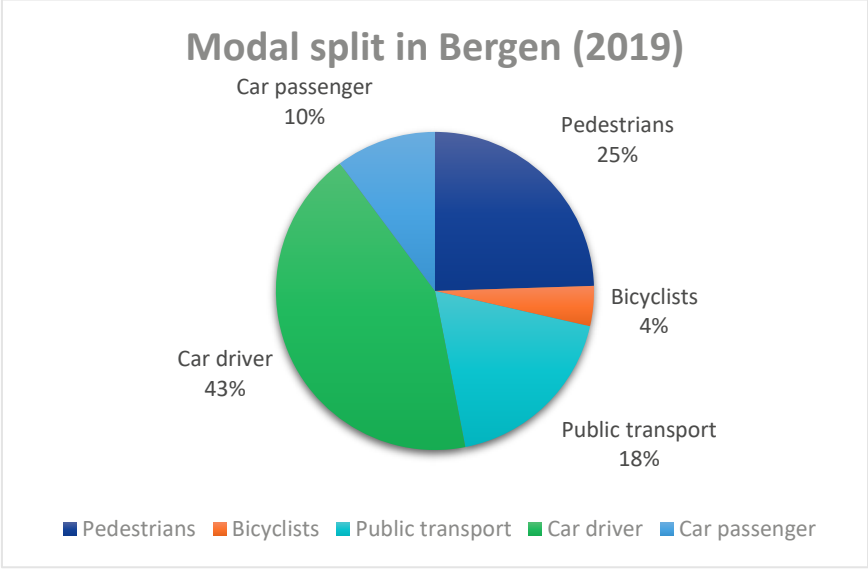
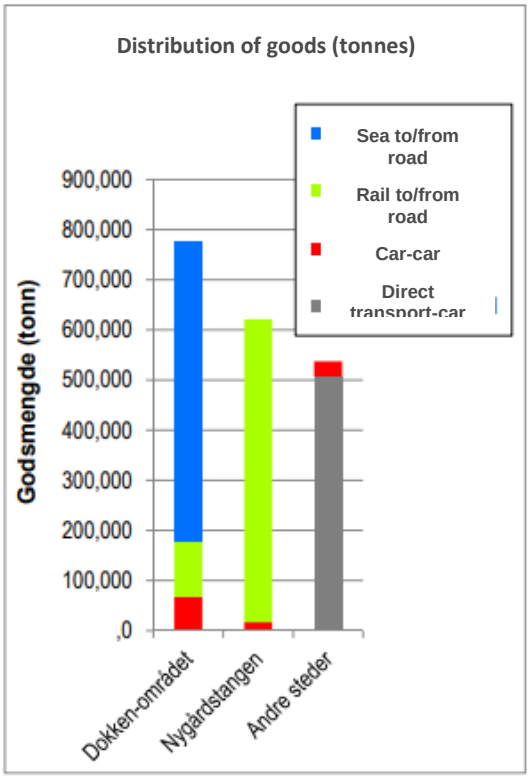


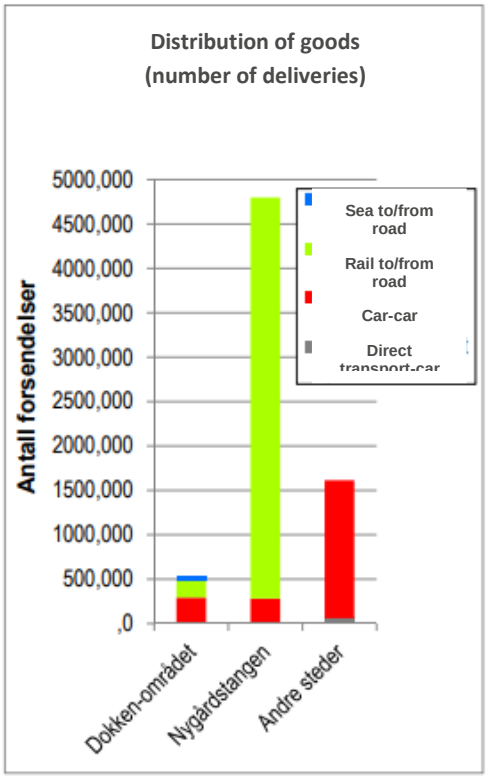
Figure 36 Travel Survey for Bergen, 2019 (RVU 2019)

Goods transport

Concerning goods transport, a thorough report on the goods flow in the Bergen region was published in 2013 (Asplan Viak, 2013). It shows that while the port (Dokken-area) has the lead in terms of total amounts of tonnes, the main share of deliveries arrives at the railroad terminal (Nygårdstangen).



Figur 14 - Fremstilling av hvor de ulike godsmengdene håndteres i Bergen. Fordeling på transport-type og omlastingssted er basert på vekt (tonn).



Figur 15 - Fremstilling av hvor de ulike godsmengdene håndteres i Bergen. Fordeling på transport-type og omlastingssted er basert på antall forsendelser

Figure 37 Bergen distribution of goods transfers

6.2 Sustainable Urban Logistics Strategies and Initiatives

6.2.1 Logistics ecosystem

Today the Port of Bergen is located near the city centre and close to the E39 highway, enabling easy access for transport of heavy goods to and from the Greater Bergen area. Many warehouses have moved their distribution centres to Eastern Norway, Sweden and The Netherlands, hence Bergen does today have a net-import balance of goods.

It has been decided that the Port of Bergen will move from its city centre location to a neighbouring municipality. This will allow an urban transformation of its current 250 000 square meter port area into housing, research and commercial activities, with the goal of creating an energetic and liveable environment for the citizens. This will also have a major impact on the goods flow of both The City Centre, The City and the whole Greater Bergen region. Great attention went into minimising traffic externalities from the new location of the port.

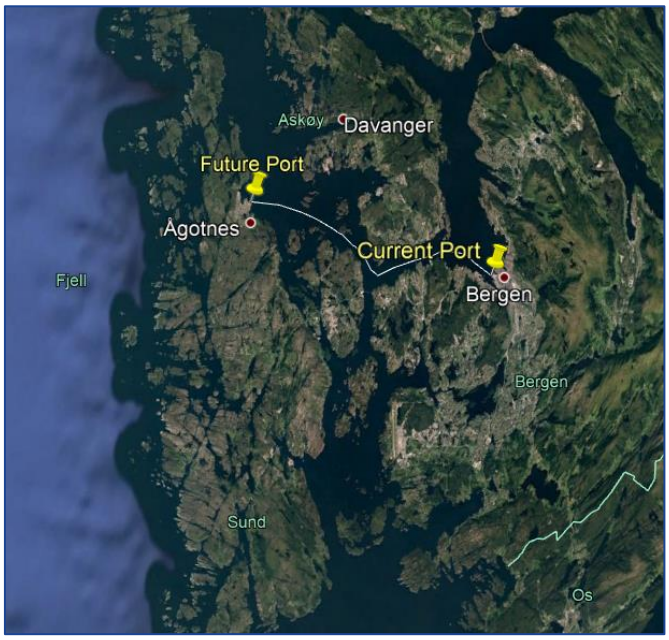


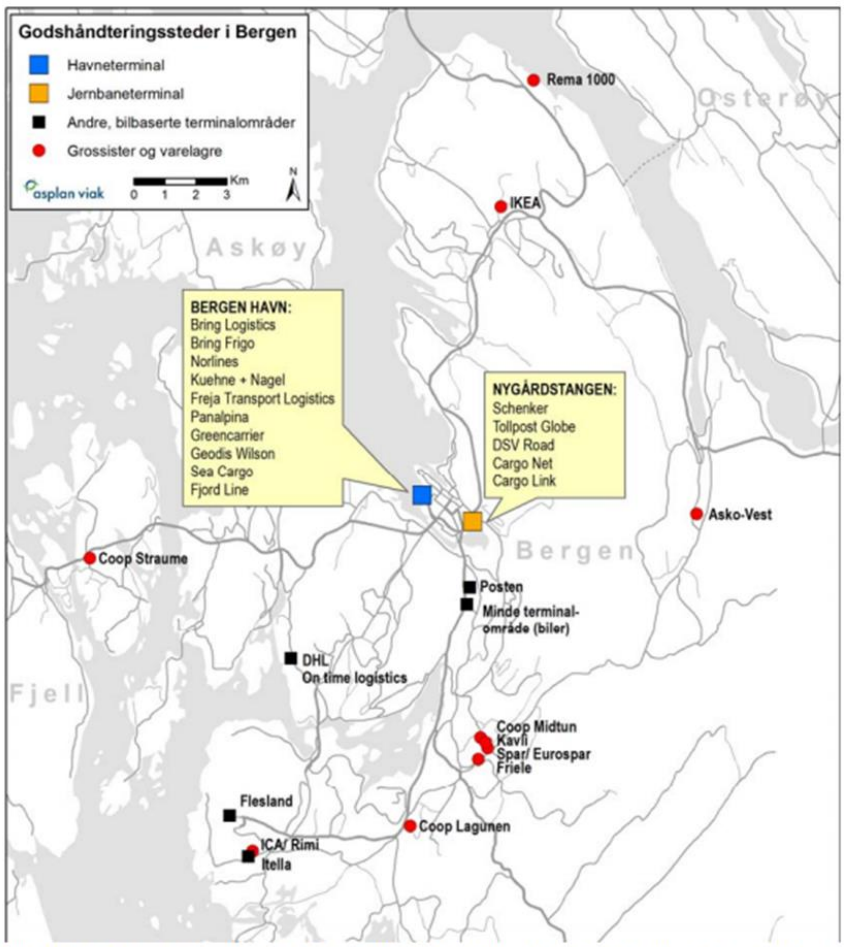
Figure 38 Current and future port locations - Bergen

The railroad goods terminal is located at the opposite side of the city centre. The railroad connects Bergen with the capital of Norway, Oslo, and further to Europe. The railroad terminal has started a modernisation process and is planning to become a zero-emission terminal by 2024.

6.2.2 Decentralised warehouse(s) / distribution centre(s) description

The major distributions centres of Bergen are located close to the city centre (Eg. Schenker and PostNord is located at the railroad terminal). Due to the aforementioned processes, all of the major companies will relocate to the area around the airport of Bergen, starting at the end of 2021. All of this together has created a spoken need for establishing smaller logistic hubs near the city centre.

The map below shows the status of goods flow change in Bergen as of 2013. The blue square signals the Port of Bergen, while the orange square is the Railroad terminal. Major changes are expected as Schenker and PostNord will move from Nygårdstangen (railroad terminal) in 2021, and the port (Bergen Havn) will move by 2025.



Figur 9 - Kart som viser lokalisering av alle aktørene i varestrømsanalysen, samt store grossister og varelagre i Bergen. Etter at datainnsamlingen var ferdig, har det skjedd endringer i bransjen. Tollpost er oppkjøpt av PostNord Logistics, og Ontime Logistics er oppkjøpt av DSV).

Figure 39 Bergen goods flow analysis performed by Asplan Viak, 2013.

6.2.3 Existing urban logistics solutions

Table 13: Existing urban logistics solutions in Bergen.

	Total	Description
Cargo bike schemes	1	The municipality offers a cargo bike rental scheme, allowing citizens to rent and test cargo bikes for free for 5 days.
Cargo bike grant	1	The municipality offers citizens to apply for a 1000€ fund support if they buy an electric cargo bike.
Mobility Hubs	6	The city of Bergen has 6 multimodal mobility hubs, and 6 more are planned to be established in 2021.
Bicycle couriers		No designated bicycle couriers, but the major delivery companies offer cargo bike delivery in the city centre.
E-vans	873 (5% of the fleet of	Electrification among delivery vehicles has seen a major boost the last couple of years. Eg. the main postal service of Bergen say they will do all deliveries by zero emission vehicles in “inner Bergen” by the first quarter of 2021.

	vans in Bergen)	
Smart Lockers		Non-existent in Bergen today, but the municipality are discussing placing parcel lockers at our mobility hubs with a company.

Source: Bergen

6.2.4 Supporting local policies for sustainable urban logistics

As of today, the City of Bergen does not have a sustainable urban mobility plan nor a sustainable urban logistics plan. One of the goals of participating in ULaaDS is to address the need of a SUMP and SULP and start the planning process.

As outlined previously in this document, both the Port of Bergen and major logistic companies are moving out of the city centre the coming years. Hence the Agency of Urban Environment in the city, along with port and railroad authorities and the actors of logistics in the city have recently started collaboration processes towards addressing the issues at hand regarding logistics in the city.

The **Green Strategy** – The Climate and Energy Action Plan of Bergen – is the main strategic document addressing policies supporting sustainable and zero emission logistic measures in the City of Bergen, enacted in 2016. The strategy was revised in 2021.

The strategy sets a clear goal of becoming a fossil fuel-free city by 2030. Zero emission logistics is highlighted as one of the main tools to achieve this goal, where implementing zero emission zones is described as one of the most important measures.

Driving a car shall not be a prerequisite for living a good life in Bergen. Pedestrians, cyclists, buses and light rail shall be prioritised ahead of private cars. The number of cars per private household is to be reduced to 1,0, and traffic is to be reduced by 20 % by 2030. As for transport and logistics, all goods transport shall be done by fossil-free light commercial vehicles by 2025. The municipality is also set to help facilitate emission free heavy goods vehicle transport and construction work.

An important tool for adjusting the numbers of polluting cars is the toll ring surrounding the city. By differentiating prices for electric and combustion engines, the city can give strong economic incentives to buy electric vehicles instead of fossil fuelled ones. This toll ring is said to be one of the most important reasons for why Bergen has the highest electric car sales in Norway.

The city is currently working to implement zero emission zones in the city, with a goal of establishing the whole city centre as emission free by 2030. As part of this work, the municipality is collaborating with transport companies to find solutions that will help increase emission free goods deliveries.

6.2.5 SUMP and SULP at a glance

Table 14: Bergen SUMP and SULP at a glance

City	BERGEN
Type of strategy	• No SUMP/SULP • The Green Strategy – The Climate and Energy Action Plan of Bergen (2016, new version in 2021, recommends SUMP implementation & ULaaDS expected to help defining a SULP)
Goals	• Become a fossil-free city by 2030 • Make the transport sector fossil-free by 2030 and ensure all fuel comes from renewables
Transport measures (with potential impacts on logistics) **Authority level specified in brackets (L = local, R = regional, N = national)**	• Reduce passenger car traffic in Bergen by at least 10% by 2020 and 20% by 2030 compared with 2013 (46.4% cars in modal split) **(L)*** • Introduce zero emission zones in parts of Bergen city centre by 2020 and make the whole city centre a zero emission zone by 2030 **(L)** • Ensure all growth in passenger traffic is in the form of walking, cycling, public transport and the use of unoccupied car seats **(L, R, N)** • Support public transport by means of an active polity to improve traffic conditions for public transport and facilitate park-and-ride facilities for cars and bicycles **(L, R, N)** • Ensure better use of the capacity of vehicles on the roads, so as to double the number of passengers per car during rush hours by 2020 **(L, R, N)** • Promote shared mobility & reduce the number of cars per household in Bergen – from 1.35 to 1 car per household by 2025 **(L, R, N)** • Provide good access to renewable fuel (charging stations, hydrogen filling stations and biofuel filling stations) for vehicles and machinery in the city **(R, N)** • Encourage people to choose environmentally friendly vehicles. Zero emission vehicles shall always have more favourable conditions than other vehicles **(L, R, N)** • All new passenger cars shall be fossil-free as of 2025 **(N)** • Promote fossil-free public transport by 2020 **(R)**
Logistics measures **Authority level specified in brackets (L = local, R = regional, N = national)**	• All goods transport by light commercial vehicles shall be fossil-free as of 2025 **(L, N)** • Facilitate fossil-free heavy goods vehicle traffic and construction from 2025 **(L, N)** • Move a greater proportion of cargo from road transport to rail or sea **(N)** • Facilitate fossil-free solutions for shipping **(L)** • Offer shoreside power to all ships by 2020 **(L, N)**

6.2.6 Supporting regional or national frameworks

Bergen is committed to an agreement with national authorities and its closest municipalities to work towards fulfilling the aforementioned Zero Growth Target. This acts as an important framework, where the city must not have an increase in private traffic to get important funding for public transport and road infrastructure.

Regarding the set-up of zero emission zones, until now the municipality has not been able to use existing law to establish first zones. This is because there are no specific laws regarding zero emission zones, but there is a possibility to ban certain types of vehicles. The use of this law lies in the power of national authorities, and both the city of Bergen and the city of Oslo are in dialogue with national authorities to gain approval for establishing such zones in their cities.

Furthermore, the legislation is not in line with the need of creating more liveable cities, where cyclists and pedestrians are prioritised.

6.3 Relevant projects

The Agency of urban environment in Bergen is to this date in discussions with several companies that offer solutions for sustainable urban logistics. These projects consist of:

- Establishing a multi-actor logistic hub near the city centre
- Run a pilot on the use of geofencing technology to alter urban logistic behaviour towards the benefits of pedestrians and cyclists. In relation to the project around the implementation of Zero Emission Zones in the City, Bergen has been looking at solutions with how to handle goods delivery that still must be performed by heavy duty trucks. Inspired by the progress in using geofencing technology to alter the use of electric scooters in Bergen, the city is investigating possibilities of using this technology to give economic incentives to only drive into the city centre with trucks when there are small amounts of pedestrians and cyclists around. On the flip-side, this can also be used to award the use of zero emission logistic vehicles. At this stage, there are still many steps ahead of the concrete implementation.
- Run a pilot on pick-up/drop-off parcel lockers at our mobility hubs

Furthermore, in January 2021, the Port of Bergen sent an application for the EU Green Deal-programme, where one of the work packages especially is linked towards connecting the port, the city and its hinterland. Urban logistic measures for freight transport to the city by the sea is a crucial part of the application.

The Norwegian School of Economics, located in Bergen, started in late 2020 a research project called *CityFreight: Freight logistics in sustainable cities* funded by the Research Council of Norway. The aim of the project is to provide public authorities with a toolbox for evaluating decisions that would make the cities more energy efficient and sustainable in terms of freight transportation.

Finally, by offering shared sustainable mobility solutions to citizens through impactful project activities in SHARE-North (Interreg project), the City of Bergen has been able to incorporate various integrated mobility solutions into local transport and city planning strategies, like mobilpunkte (mobility hubs) and bike-sharing. Bergen plans to use the project extension as an opportunity to expand the number of mobilpunkte, as well as collaborate with companies to introduce a sustainable travel plan network for employees and companies.

6.4 Success factors and enabling conditions

The success factors are the following:

- Defining a shared common goal for logistics in Bergen
- Maintaining close contact with both terminal operators at the railway terminal and the port when planning for the future solutions
- Close contact with market actors as for what are actually viable innovative solutions for logistics in the city
- Create a shared understanding among planners, politicians, citizens and commercial activities on urban logistics as an important part of the puzzle in creating liveable and attractive city areas

6.5 Challenges and barriers

To this day, Bergen has had many benefits of near-city distribution centres in regard to sustainable urban logistics. But as most of the companies and the port must move out to the hinterlands, it becomes a challenge for the companies to support compact zero-emission delivery in the city centre. For this reason, we have started collaborative processes so that the stakeholders together can address this issue and develop solutions to cope with our new reality.

The geography of Bergen also makes it difficult to establish high-standard bicycle road infrastructure in the city. The lack of such infrastructure makes cars and electric micro-vehicles (such as the Paxsters) better solutions in comparison to electric cargo bikes for many. This issue is also illustrated by the low modal share of cyclists in the city, but COVID-19 has turned out to boost such cycle traffic to a great extent. Hopefully, this is a lasting trend, enabling more to realize the benefits of the use of bikes in our city.

A challenge is also of course the lack of tools for urban access regulations. Pushing the companies to deliver with smaller vehicles in the city centre is not always a plausible solution, especially regarding delivery to grocery stores. As in many other places in Europe, there are issues regarding enabling necessary goods delivery and creating more and better pedestrianised zones.