

**How can e-commerce transports
become more sustainable?
Report from a government commission**

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Report 2020:2**

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Summary

The growth of e-commerce has been almost explosive, with turnover nearly quadrupling over 10 years, and this upward trend is continuing. Considering this and bearing in mind Swedish objectives regarding reduced climate impact, the government has tasked Transport Analysis with analysing the shipping and travel activity generated by e-commerce. The focus of this task is on analysing how such transport can be made more efficient, to contribute to greater sustainability. It also involves describing the business models and policy instruments used today to make e-commerce shipments more efficient and to promote a transition to distribution vehicles powered by renewable energy. Finally, this task also includes mapping how e-commerce shipments affect overall traffic safety and describing the working environment and conditions of the people making the shipments.

The present report constitutes the final report on this task.¹ The reported results are based largely on interviews and conversations with e-commerce companies, logistics and shipping companies, industry organisations, government agencies, municipalities, and researchers. The results have been supplemented with literature studies and an inventory of existing statistics.

Existing business models and policy instruments for more sustainable e-commerce shipments

Business models

Using interviews with e-commerce companies and logistics and shipping companies (plus supplemental literature and web searches), we have gathered examples of the measures taken by market actors to adapt their e-commerce shipments environmentally. However, we have been unable to determine how prevalent such measures are.

Several of the e-commerce companies interviewed report that they apply environmental criteria when procuring shipping services. Such criteria demand, for example, that the shipping company must have an environmental management system, that the shipments must be climate compensated, that the shipping company must provide information about the climate impact of its shipments, and that efficient vehicles or renewable fuels must be used. There are also examples of companies that exclude goods shipped to Sweden by air.

Another example is that of companies that collaborate with other cargo owners in a region to facilitate joint loading and to optimise fill rates and shipping routes. Many e-commerce companies are also working to reduce the size of their parcels to make their shipments more efficient.

E-commerce companies, mainly in the fashion industry, are also taking measures to reduce the return rates of their goods. This can be achieved by providing better information about the goods prior to purchase (e.g. in the form of clearer colour reproduction and better size rendering) or by charging for customer returns. So-called virtual dressing rooms are also being developed in which customers can see how the clothes will fit them (this technology is more advanced in the area of e-commerce for eyeglasses). There are also examples of companies that block customers with high return rates. These companies' efforts to reduce the number of returns are intended not only to reduce their environmental impact but also (and perhaps primarily) to reduce costs.

Some e-commerce companies are also working to steer their customers toward more sustainable (and for the company, more profitable) delivery options. This can entail having more environmentally friendly default

¹ A sub-report published in December 2019 describes how e-commerce goods are distributed. An analysis was also performed as to what factors influence whether e-commerce leads to reduced or increased traffic volumes as compared with shopping in brick-and-mortar stores.

delivery options (so that the customer must actively decline those options) or providing the customer with information about the environmental impacts of the various delivery options. Some companies also use price management to induce customers to opt for delivery within the same timeframe as other customers in the same neighbourhood.

Sustainability measures are also found among logistics and shipping companies that ship e-commerce goods. For example, some companies ship e-commerce goods by rail along certain routes, and companies may collaborate in delivering their respective parcels in sparsely populated areas.

Policy instruments

Few policy instruments specifically target e-commerce shipments. On the other hand, numerous policy instruments are intended to improve energy efficiency in goods shipments and personal transport in general, or to promote the use of vehicles powered by electricity or biofuels (regardless of whether they are transporting e-commerce goods).

Among the few more e-commerce-specific policy instruments are municipal measures that can be implemented in the social planning realm and are intended to promote more efficient deliveries. These may pertain to projects concerning joint loading, establishing automated package locker systems, or creating combined delivery and waste-management spaces in residential areas. The governmental level also exerts some influence at the local level through urban environment agreements, which can now be used in connection with goods-related measures, and through, for example, social planning guidelines from the Swedish National Board of Housing, Building and Planning regarding goods shipments. Another important policy instrument is funding of research and innovation to develop more sustainable e-commerce shipping and delivery solutions.

We have also identified several national and international regulatory frameworks that are significant for how e-commerce shipments develop. This includes the Universal Postal Union's provisions regarding which countries' mail-handling operations are to be subsidised, as well as rules governing VAT levels for goods obtained from third-party countries. The conditions and assumptions surrounding the universal Swedish postal service are also significant.

How can e-commerce shipments, and related travel, be made even more efficient?

The report discusses various potential measures to consider and, if necessary, further examine with a view to make e-commerce shipments, and related travel, more efficient.

Development of statistics regarding goods shipments

Reliable statistics that can be used to capture the traffic and shipping volumes attributable to e-commerce are currently lacking. Transport Analysis consequently perceives a need for continued method development to expand access to statistics regarding distribution traffic and e-commerce shipments. One possibility is to conduct, in collaboration with various selected companies, a pilot study of the potential of using market actors' own data to generate such statistics. It would also be worthwhile to investigate the feasibility of developing official postal statistics in order to derive more information about the distribution and delivery of parcels at the regional and local level.

More sustainable purchasing behaviour among customers

E-commerce customers affect how purchased goods are distributed and delivered by choosing among different delivery options. At the same time, the e-commerce customer often has limited options in terms of finding out what environmental effects these various options have. Transport Analysis consequently proposes that the government should consider and, if necessary, further study whether and how e-commerce companies could be required to offer less environmentally impactful delivery options as the first choice, and/or to provide information to customers regarding the climate effects of the various delivery

options. Another possible measure would be to task the Swedish Consumer Agency with informing e-commerce consumers about how they can conduct e-commerce more sustainably.

Increased knowledge of physical planning for efficient e-commerce deliveries

Swedish municipalities have an important role to play in designing cities and densely populated areas to enable efficient goods shipments, including e-commerce deliveries. Many municipalities perceive a need to adapt their spatial and traffic planning to enable efficient e-commerce deliveries but complain that they currently lack sufficient knowledge to implement actual measures. Desires have been expressed for a national conference in which the municipalities could acquire new knowledge and exchange relevant experience. Another idea is to create a platform where private and public actors could come together to discuss the distribution and delivery solutions that offer the best means of contributing to sustainability in the future. The platform members would also be able to collaborate in testing and demonstrating various solutions of interest, preferably combining the testing activities with follow-up research. One possibility involves arranging such a platform within the activities currently carried out by CLOSER.

Industry-wide roadmap

The aforementioned platform would be intended to *accumulate more knowledge* of sustainable distribution and delivery solutions for e-commerce. However, during this investigation we also perceived a need to coordinate industry actors around *measures* for more sustainable e-commerce shipments. One possibility is to create a roadmap similar to those presented by various industries within the government's Fossil-Free Sweden initiative. The idea is that the government would take the initiative to create the roadmap, while the e-commerce industry and parcel distributors would be invited to jointly create a plan that these actors could then collectively stand behind and implement.

Other measures

Many e-commerce deliveries are made via the regular postal service. How the universal postal service is organised and regulated is thus significant in terms of how efficiently that share of e-commerce shipments can be made. It is therefore important, in the upcoming review of postal legislation that the government has announced, to consider how such regulations can be designed to create conditions favouring the climate-efficient distribution of letters and parcels.

Finally, we can see that the e-commerce industry's problems with inefficient packaging and extensive returns (which are often managed inefficiently) have recently been paid greater attention. Transport Analysis believes that market actors will, in the long run, solve these problems as the industry matures and the focus shifts from rapid growth to longer-term profitability.

The impact of e-commerce shipments on the work environment and traffic safety

In this project we have also attempted to describe how e-commerce shipments affect traffic safety as well as the work environment and working conditions to which people carrying out the goods shipments are subject. We have focused on those goods shipments that distinguish e-commerce from brick-and-mortar commerce, i.e. goods shipments made to parcel services or homes. Such shipments are often made using vans or, in large cities, using bicycle messengers as well.

We can confirm that both government agencies and labour market parties have taken note of this issue, but that a lack of knowledge nevertheless persists in this area. Few systematic work environment studies focus on this particular type of shipment. It is also difficult to isolate this occupational group based on work environment or road traffic accident statistics. However, generally speaking, Swedish Work Environment Authority statistics do indicate that the transport industry is comparatively injury prone relative to other industries. The biggest work environment risks in the industry are associated with musculoskeletal ergonomics, the organisational and social work environment field, and traffic safety. Time pressure and overloaded vehicles also increase the risk of accidents.

At the same time, we can see that the number of road traffic accidents involving vans has not increased over the last five years, even though the number of vans in service has concurrently risen. Moreover, municipalities seldom see increased traffic safety problems that can definitely be linked to e-commerce shipments, but they do expect that such problems will increase as e-commerce grows. In our assessment, any traffic safety problems tied to e-commerce can be solved through general traffic safety initiatives, and indirectly through measures to promote more efficient e-commerce shipments, such as joint loading and lower requirements in terms of delivery times.

Occupational injuries among bicycle messengers, whose deliveries include online food orders sent to customers' homes, have increased markedly over the last six years. However, we also suspect that such injuries are severely underreported, partly due to the variable organisation of labour found in the industry. There is reason to study this reported increase in injuries in more detail, not least to find out the reasons for the increase.

The increased scope of home deliveries in recent years has led, mainly in cities, to the establishment of new actors with new types of business models in which the organisational forms sometimes challenge the traditional distinction between companies and employees. Van traffic is not as regulated or monitored as is heavy lorry traffic, and some actors in the home delivery market are operating in the new gig economy, for which official regulations and control have not always been established. In our investigation, we have seen clear indications of problems in terms of the work environment and working conditions, mainly in the home delivery market, although we lack a sufficient basis for obtaining a comprehensive overview of these problems and their scope. We conclude that more research is needed in this area. Ongoing initiatives that could provide a better basis for designing and implementing appropriate measures are the inspections by the Swedish Work Environment Authority of parcel delivery companies and gig economy actors, respectively. The state study *More effective monitoring of commercial road traffic* could also provide important knowledge in this area. In this context, Transport Analysis considers it important not to overlook the monitoring of light commercial traffic.



Transport Analysis is a Swedish agency for transport policy analysis. We analyse and evaluate proposed and implemented measures within the sphere of transport policy. We are also responsible for official statistics in the transport and communication sectors. Transport Analysis was established in 2010 with its head office in Stockholm and a branch office in Östersund.