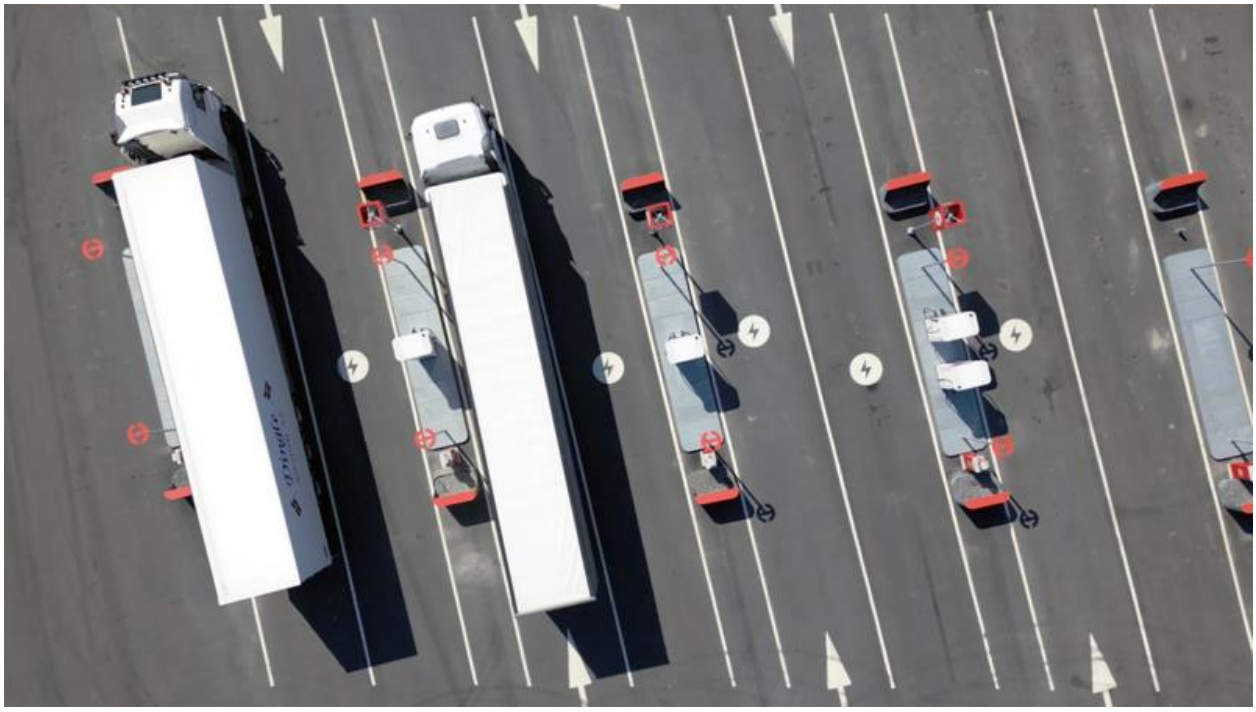
SELECT Recommendations

SELECT is exploring prerequisites for supplying electric light and heavy-duty fleets with sufficient power and energy and new digital solutions – promoting energy efficiency and a green transition in the North Sea Region.



Interreg North Sea

Co-funded by the European Union

About SELECT

The SELECT project gathers local and regional authorities together with business support organizations from the Netherlands, Belgium, Germany, Denmark, and Sweden. The overall objective is to showcase a framework for interaction between local and regional public authorities and logistics stakeholders to accelerate the electrification of commercial logistics fleets and adopt digital solutions for sharing charging infrastructure serving as best practice to other authorities in the North Sea Region (NSR).

Summary

The results of SELECT clearly show a growing interest in electric vehicles and an increasing willingness to invest in this context. However, logistics companies face significant challenges, including the limited availability of heavy-duty electric commercial vehicles, higher acquisition costs and infrastructural difficulties. These obstacles need to be overcome to ensure a smooth transition to electric mobility. A decisive factor for the successful use of electric vehicles in logistics is a well-developed charging infrastructure.

The survey results show a clear need among companies for an improved charging infrastructure, both on their premises and along their routes.

Key takeaways

Examining the operation of logistics stakeholders and their potential needs

Region Hovedstaden

At an overall level transport and logistic operators in Denmark are challenged with high prices on electric vehicles and infrastructure. There has been an almost non-existent possibilities of subsidies to buy vehicles and very limited for charging infrastructure.

As a result, the electrification in Denmark has in the past 3-4 years only been driven by "first movers" who see the need making their own experiences with electrification. Hence only very small-scale electrification has been done in electric trucks. In regards of vans there are more electrifies vehicles. The vans are used for shorter distances and the costs of buying them are closer to the price of diesel vans. It is our impression that those who are most interested in electrifying on short term are those who might be subjected to requires of electrification in tenders or and providing transport and logistic services to public entities. This indicates that requirement for electrification in procurements can make a difference in the transition period.

Though initial scepticism there are very positive experiences from the current, though limited electrification in Denmark. The current challenges are still on the price of the vehicles and charging infrastructure. The lack of reliable public charging infrastructure. As a central discussion is also the future investment in energy capacity, energy production locally and infrastructure. If the companies are renting their depots this is even tougher nut to crack.

From the beginning to the end of the SELECT project the setting in Denmark changed. Still there are limited opportunities to get subsidies. But from from 2025 there will be a kilometer-based and CO2-differentied toll for trucks of 12 tons and above. This has changed the TCO for electric trucks and together with the initial experiences we experience an increase in trucks sold in the period. Different players are now upscaling from test to actual implementations. The capital region of Denmark has developed a TCO model for accelerating the transition. In the end it is the most important tool for those who need to consider buying electrical trucks. The model is available here and also a recording where the Capital Regions own trucks have been used as a case.

Denmark is a small country with relatively short distances, flat landscape and a relatively well functioning grid which makes is ideal for electrification. We have now more than 700 registered electrical trucks in Denmark out of a total of 43.281 adding up to a little over 1,6 % (november 2024).

Hamburg

Vehicle Fleet:

- The number of commercial vehicles and electric ones in the fleet varied across companies.
- Adoption of electric cars among company fleets was limited.

Infrastructure on Company Premises:

- Parking spaces and charging infrastructure availability varied.
- Most companies expressed interest in expanding charging infrastructure by 2030.

Electrification Plans and Goals:

- Plans for electric vehicle adoption by 2030 varied.
- Challenges for electrification ranged from internal operational issues to external factors like incentives and infrastructure.

Other Information:

- Some companies had dedicated parking spaces.
- Concerns highlighted included incentives, knowledge exchange, and infrastructure improvements.

Overall, the survey indicates a gradual but incomplete integration of electric mobility into company fleets. However, there is evident interest in further developments and investments.

West Sweden

A majority of early buyers of heavy electric trucks believe that the most important measure that society should contribute to the transition to support the transition to electric logistics is investment support for the purchase of trucks and non-public charging infrastructure. Based on interviews with actors with experience from both urban and regional transport missions, there are requests for the following development of the current incentive system in order to successfully implement the largest system change in the transport system since the introduction of the combustion engine:

Long-term and predictability

The major system shift that actors are facing is not only costly in the form of investments in new vehicles and charging infrastructure, it also means that logistics actors must learn how to best manage the new conditions. Building up this experience

takes time and for smaller actors it can be difficult as the knowledge building to master the new conditions needs to take place at the same time as operations with conventional technology continue. The sales process with customers and suppliers to jointly decide on the investment in a new system with electric trucks and charging infrastructure is also long, which requires lasting conditions from the state so that the conditions are not suddenly changed.

When the state chooses to change previously agreed decisions, such as the recently announced changes in the reduction obligation, which will negatively affect the total cost calculation for electricity compared to diesel operation, it creates uncertainty in the industry. Regardless of support and regulations, the actors therefore emphasize that the most important thing is that there is perseverance and a long-term perspective from the state. Logistics actors highlight the ten-year tax exemption for biogas that was granted in 2020 as a good example that creates clarity and long-term rules of the game.

Support for vehicles

For all hauliers, cost neutrality towards fossil-fueled trucks is crucial for how quickly the transition to climate-neutral transport can be made. Today, in the early phase of the introduction of new technology, it is primarily larger hauliers and transport buyers who have the opportunity to invest. To broaden the transition to include the vast majority of hauliers, government support is required that limits the business risks. Several of the actors therefore support the national authority Trafikanalys' proposal to extend the current Climate Premium for trucks and investigate whether an increase in the current support level would be justified in order to further increase the pace of the transition. Data from actors shows that an electric truck in urban operation today costs approximately 15-25% more in total cost per kilometre without investment support. In urban traffic where the performance of electric trucks (quiet and emission-free) is highly valued, the mileage per year is relatively short and thus the investment in the vehicle constitutes the largest cost in hauliers' cost calculations. An electric truck in heavier regional operation today costs approximately 8-12% more in total cost per kilometre without investment support. As with urban electric trucks, government support is required here to ensure that hauliers are willing to invest in switching to a sustainable transport system, which becomes even more important when the reduction in the reduction obligation further disadvantages the conditions.

The introduction of electric commercial road transport is carried out on a commercial basis by commercial operators but currently requires initial support. Market players should be able to make their own plans as much as possible, act based on what is happening in the market and react

Mechelen

General conclusions from interview series with transport actors:

- They hav their own environmental goals
- They charge on own premises as there is no public charging infra foreseen
- They are subjected to peak tariffs
- They share the same challenges:
    - Weight of the vehicles/payload (3,5 ton vs 4,2 ton)
    - Business case: CAPEX and/or TCO
    - Load capacity
    - Infra and space for charging infra
    - Autonomy/range of the vehicles
    - Capacity grid mainly on peak moments
- Needed support:
    - Subsidies to compensate TCO/CAPEX
    - Regulatory framework/laws to solve f.e. weight/payload (+ driving permit B/C)
    - For vans 4,2 tons: Tachograph , OBU , max 90 km/h
- Desired extra services:
    - Fleet management and charging software (EaaS)

Mapping and analyzing power and energy requirements

Grid development plans

As part of the EU Clean Energy Package grid operators with more than 100,000 connected customers need to produce grid development plans. According to a study performed by GLOBSEC on a four-point scale, from well prepared to not prepared, countries like Sweden, France, Spain, Portugal and Austria are categorized as well prepared. Sweden ranks highly as it is judged to be a well-functioning electricity market with a high proportion of renewable electricity. Among the countries compared, Sweden has very low production of electricity from fossil fuels, little price volatility and the highest proportion of properties with smart electricity meters (100%). Challenges raised are an increasing demand for electricity until 2030, mainly due to new industrialization, as well as a relatively high incidence of negative spot prices for electricity.

Countries such as Denmark and Germany are judged to be partially prepared. Denmark has the highest proportion of installed power from renewable energy and a good ability to forecast production, but this also puts a strain on the electricity grid as it is judged that there are no functioning market signals. Germany is considered to have ambitious targets for the expansion of renewable energy, but has not sufficiently prioritized electricity grid issues in its national policy.

Germany regulates the requirement for grid development plans in the Energy Industry Act and the first plan must be drawn up no later than 31 October 2026. Scenario work and development of regional scenarios for six so-called planning regions, which become common frameworks for the distribution network companies in each region. 2030 estimated 15 million rechargeable vehicles in Germany. There are approximately 860 distribution network companies, but only 80 of these have over 100,000 connected customers, which will be covered by the requirement.

Although the law does not require a network development plan (netzausbauplan) until 2026, the electricity grid company Netze BW presented a preliminary, non-numbered plan in May this year. It is interesting to read how they reason about grid network development. Netze BW is the largest company in the EnBW Energie Baden-Württemberg group, which is the third largest energy company in Germany after Uniper and E.ON. Netze lists a large number of investment projects and highlights the importance of planning and implementing necessary network improvements, e.g. to meet the increasing demand from electric cars. Netze BW sees a potential to promote smart charging strategies, but also does not see that these can completely eliminate the need for grid investments. The increasing proportion of electric vehicles in the grid still requires a certain expansion and modernization of the electricity grid.

The Netherlands ranks, along with mainly Eastern European countries, as not prepared. This is due to the already major challenges with capacity in the electricity grid today, difficulties with new connections and a high proportion of fossil fuel use in electricity production.

From a Swedish perspective large, even though the government has supported investments in charging infrastructure, there is more support desired.

Increase the possibilities of obtaining support for charging infrastructure

In addition to support for vehicles, support for charging infrastructure is also required. For hauliers who want to scale up their electrified fleet, investment is required in, among other things, charging hardware, software and electricity grid connections. The most important part of the charging infrastructure for urban and regional transport is the non-public one at, for example, depots, logistics terminals and at goods reception points. This will be the base where most of the energy will be charged. Being able to charge the vehicles where they still have a natural stop, for example at customers in connection with unloading and loading, supports good transport efficiency and allows transporters to maintain their quality. In addition to depot charging and destination charging, a public charging infrastructure, which for example enables charging along the motorway during breaks, also needs to be in place to support the long-distance transport that will soon be a reality. For all parts of the charging infrastructure, government support will be required in the construction phase, as the utilization rate of the chargers will be limited (resulting in a long payback period for the investment) until the rolling fleet of electric trucks reaches levels that provide an acceptable business for charging operators.

Shorten lead times for applications for support for charging infrastructure

It is currently not permitted to enter into contracts or place orders until the application for any of the supports has been approved. The processing time for the financial support scheme Climate Step is often 3-4 months, this long lead time often leads to the original quotes on which the application is based expiring, which has been shown to result in delayed delivery times and price increases compared to the estimates made in the application. The same problem does not exist for the Climate Premium and a similar processing time should also be sought for the Climate Step. The actors also believe that the possibilities should be improved to be able to apply for support from charging infrastructure and vehicles within the same program that is managed by one and the same authority, similar to how it works in Germany and Austria, in order to achieve better synchronization.

Develop how the climate benefit is used as an evaluation criterion

In connection with the evaluation of the application for the Climate Step, the presentation of a climate benefit calculation is included. In connection with this, it is often required that applicants for support show historical driving records both when applying for support for electric trucks and/or charging infrastructure. In this way, the Climate Step assumes a 1:1 replacement of previous diesel trucks even if the future operation will not work in the same way. Emission calculations and climate benefits, which are requirements for support, should nevertheless be based on the mileage that the electric trucks are planned to drive to enable new operators who have not previously operated in the same flow and therefore cannot account for historical driving data to be assessed on an equal basis. Furthermore, it is permitted to state forecasts for future use in the application. Since there is a lack of validated data on how the utilization rate of charging points for heavy trucks develops over time, these forecasts naturally become a mixture of assumptions, guesses and hopes. The result is that operators who are more restrictive in their forecasts are disadvantaged compared to operators who are more progressive. A solution to the above is to primarily base themselves on the benefit created with the initial utilization rate and to provide standardized instructions for how forecast usage should be treated.

Learnings from the REEL project in Sweden

As many transport companies in REEL have stated during the project's lifespan: We are used to buy trucks, but charging infrastructure is completely new to us. With deployment of electric trucks, transport and logistics companies face the challenge of designing, acquiring and installing necessary charging infrastructure. As the number of electric trucks operating from the same logistics terminal or depot increases, so does the scale of the charging infrastructure. Charging impacts the operational cycle of the electric trucks which is why there are many trade-offs to consider when designing a charging solution to balance e.g., downtime of the trucks versus charging related costs, and size of the batteries versus loading capacity. There are different prerequisites in terms of physical space on each site which impact the choice of certain charging infrastructure design, and layout. In this report, several solutions chosen by partners in the REEL project are presented. Being some of the earliest adopters of electric trucks in Sweden, several logistics companies soon found themselves formulating expansion plans for their electric fleets and consequently the charging infrastructure. Since charging is a new phenomenon for the trucking industry, a lot of effort has been put into designing these solutions while simultaneously navigating in the new emerging landscape of suppliers including e.g., charging hardware manufacturers, energy companies, and grid operators. Charging infrastructure impacts the overall energy and power system in the logistics terminals and depots. Therefore, local energy production and energy storage solutions may become important to keep energy and power costs down while maintaining a higher level of system resilience.

Electrified logistics – Demand for new services

A brief summary of the most important findings from the workshop and what would be desired ahead.

Collaboration and Sharing: Emphasis on sharing information, risk, and successful practices among stakeholders and cities.

Investment and Incentives: High initial investments and the need for financial incentives and strategic decisions.

Infrastructure Development: Importance of developing public and semi-public charging infrastructure, addressing grid capacity issues, and planning ahead.

Technological Integration: Integration of smart charging solutions, software, and digitalization with logistics planning systems.

Legislation and Policy: Harmonization of transport legislation and increased engagement from government and cities.

Cross-Border Considerations: Need for seamless services and a pan-European perspective for cross-border transport.

The role of public actors in supporting the electric transition in logistics

The final workshop proved to be very productive and the participants were guided to sort suggested measures into push, pull and cooperative measures.

Push Measures:

- **Clear Communication of Climate Goals**: Cities like Gothenburg (GBG) have been proactive in setting clear climate goals focused on emission reductions, helping stakeholders align with long-term sustainability plans.
- **Regulatory Clarity for Long-term Planning**: Clear regulations help both public and private sectors to plan effectively, particularly regarding low and zero-emission zones (ZEZ) as seen in Stockholm, where electrified vehicles receive privileges.
- **Subsidy Programs**: In Sweden, the "Regional Electrification Pilots" subsidy program for heavy trucks has had significant success in advancing electrification efforts.
- **Conductive Charging**: Increases vehicle uptime, improves Total Cost of Ownership (TCO), and supports off-hour deliveries for better fleet management and cost efficiency.
- **Municipal Engagement**: Actively involving both large and small municipalities in the conversation about logistics and charging infrastructure brings more stakeholders aboard and aligns efforts on a regional level.
- **EU Project Funding**: Funding sourced from EU projects has enabled regions to experiment with electrification initiatives, providing critical insights for larger-scale implementation.

Pull Measures:

- **Adopting the 4 V Principle**: Encourages logistics companies to "Avoid, Shift, Change, Connect" in their electrification strategies, making the transition smoother.
- **Incentivization**: Tax reductions and subsidies on electricity for charging infrastructure are crucial incentives driving the electrification of logistics fleets.
- **Public Procurement**: Government-led procurement processes are driving demand for electric vehicles, providing businesses with the incentive to electrify their fleets.

Cooperation Measures:

- **Open Dialogue**: Continuous engagement between public and private actors is essential. Forums and roundtables facilitate policy updates and better cooperation.
- **Best Practice Sharing**: Successful models shared across different regions help build momentum. Cities and stakeholders can learn from each other, particularly in matchmaking between landowners and service providers.
- **Policy Alignment**: The private sector calls for better alignment of policies across cities, ensuring smoother transitions across regions.
- **Value Chain Engagement**: Gathering the entire value chain, including subcontractors, allows for a holistic approach to identifying possibilities for change.
- **Innovative Projects**: Projects like the eHighway field trial in Schleswig-Holstein, supported by the Federal Ministry for Economic Affairs and Climate Action, demonstrate the effectiveness of cooperation between public and private sectors. This pilot, focused on overhead trucks, brings together partners like DPDHL and HH Bode.
- **Stakeholder Cooperation**: Close collaboration with Charge Point Operators (CPOs) and market players ensures that regulations and infrastructure development meet the practical needs of the logistics sector.
- **Stakeholder Panels**: Establishing panels with market actors helps public bodies create more effective regulations and avoid unintended consequences in charging infrastructure.
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Key Insights and Contributions

1. **Public Communication and Long-Term Planning**: Clear and consistent communication of climate goals and regulations by public actors, such as cities, plays a crucial role in driving private-sector action toward electrification. Programs like Stockholm's Zero Emission Zone (ZEZ) provide clear incentives for electrified vehicles.
2. **Funding and Incentives**: Financial incentives, such as subsidies and tax reductions on charging infrastructure and electricity, are essential for reducing the financial barriers to electrification. Sweden's regional subsidy program for heavy trucks is a standout example of how such support accelerates adoption.
3. **Collaborative Governance**: Cooperation between public and private actors is vital. Forums, stakeholder engagement initiatives, and cross-sector matchmaking are needed to align interests, share best practices, and create policies that meet the real-world demands of the logistics sector.
4. **Project Trials and Best Practices**: Demonstration projects, such as the eHighway trial in Schleswig-Holstein, showcase the potential of electrification initiatives and provide valuable lessons for scaling up. Best practices need to be shared across regions and countries to foster a collective push towards electrification.
5. **Adaptation to Local Contexts**: Electrification strategies must be adaptable to the specific needs of different regions. Population density and infrastructure requirements vary significantly between, for example, southern and northern Sweden, or between the Netherlands and Lithuania. Thus, local and regional authorities must work closely with businesses to develop tailored solutions.
6. **Overcoming TCO Challenges**: Reducing the Total Cost of Ownership (TCO) for electric fleets remains a significant hurdle. Strategies such as promoting conductive charging, incentivizing off-hour deliveries, and leveraging public procurement can help alleviate this barrier.

Conclusion

The workshop emphasized the importance of public actors in creating the necessary regulatory, financial, and cooperative frameworks for electrification. From establishing long-term goals to funding pilot projects, public authorities are key to fostering an environment where electrification can thrive. By learning from both national and local initiatives, and by increasing collaboration between public and private sectors, the transition to electrified logistics can be expedited across borders and regions.

Other examples of desired support from the public actors can be exemplified from a Swedish position paper. In addition to maintaining and improving investment support, which is given the highest priority by the actors, other prioritized proposals for changes in regulations have emerged in the interview study:

- Emission-free zones – The introduction of emission-free zones in cities for commercial vehicles is considered to have the potential to strongly drive transformation and create competition on equal terms. When introducing zones, it should be communicated in good time and with clarity, and in order to function as intended, the authorities must ensure that it is complied with by everyone.
- Night deliveries in cities – Increase opportunities for night deliveries in city centers with electric vehicles, by setting requirements for municipalities, property owners and recipients of goods. Night deliveries enable better utilization of the vehicles and more efficient deliveries.
- Driving and rest time – These rules should be more flexible during a transition period until a sufficient charging network is established. It also needs to be clarified that breaks count as rest even if charging takes place in parallel.
- Kilometer and congestion tax – Emission-free commercial vehicles should have lower congestion taxes in cities compared to conventional vehicles, and when introducing a kilometer tax, differentiated fees that benefit electric trucks should be applied, similar to Germany and Denmark.

Short stories from a couple of study visits in the SELECT project

Hamburg March 27, 2024

The partners of the SELECT project met in Hamburg, visited the electric fleet of Deutsche Post AG / DHL Group and discussed the challenges and opportunities of electromobility in logistics. This appointment also provided a platform for representatives of various LIHH EU projects (SELECT, DECARBOMILE, E-Boost) to discuss the latest developments and challenges in the field of electromobility. Participants had the opportunity to view the facilities and their e-fleet. The highlight for many was the environmentally friendly test drive in the passenger seat of the various Deutsche Post AG / DHL Group distribution vehicles. They not only demonstrated the path to electrification, but also gave an insight into everyday working life during a tour of the distribution centre. It became clear that the electrification of the transport sector is gaining momentum.)

Copenhagen October 23, 2024

The partners of the SELECT group was invited to a study visit/seminar in Copenhagen together with partners from an Interreg OKS project SCALE and municipalities from the Capital Region of Denmark to visit the BEST practice example of a transport operator - Schulstad Lantemann and a buscompany Anchersen busser who has realized a local energy community sharing infrastructructure for electrified vehicles.

After the site visit there was held seminar where the dialog and presentations from relevant actors such as Ocean valley (Copenhagen Malmø Port), the local CPO Cirius/Radius and Hvidovre municipality discussing how we can approach the electriciation and energy use/consumption in a smarter way involving the operations of logistic stakeholders and their need, mapping locally how different energy needs in a specific area can lead to optimized and smart use by sharing. And last but not least – the role of public actors such as the municipalities role on this matter.