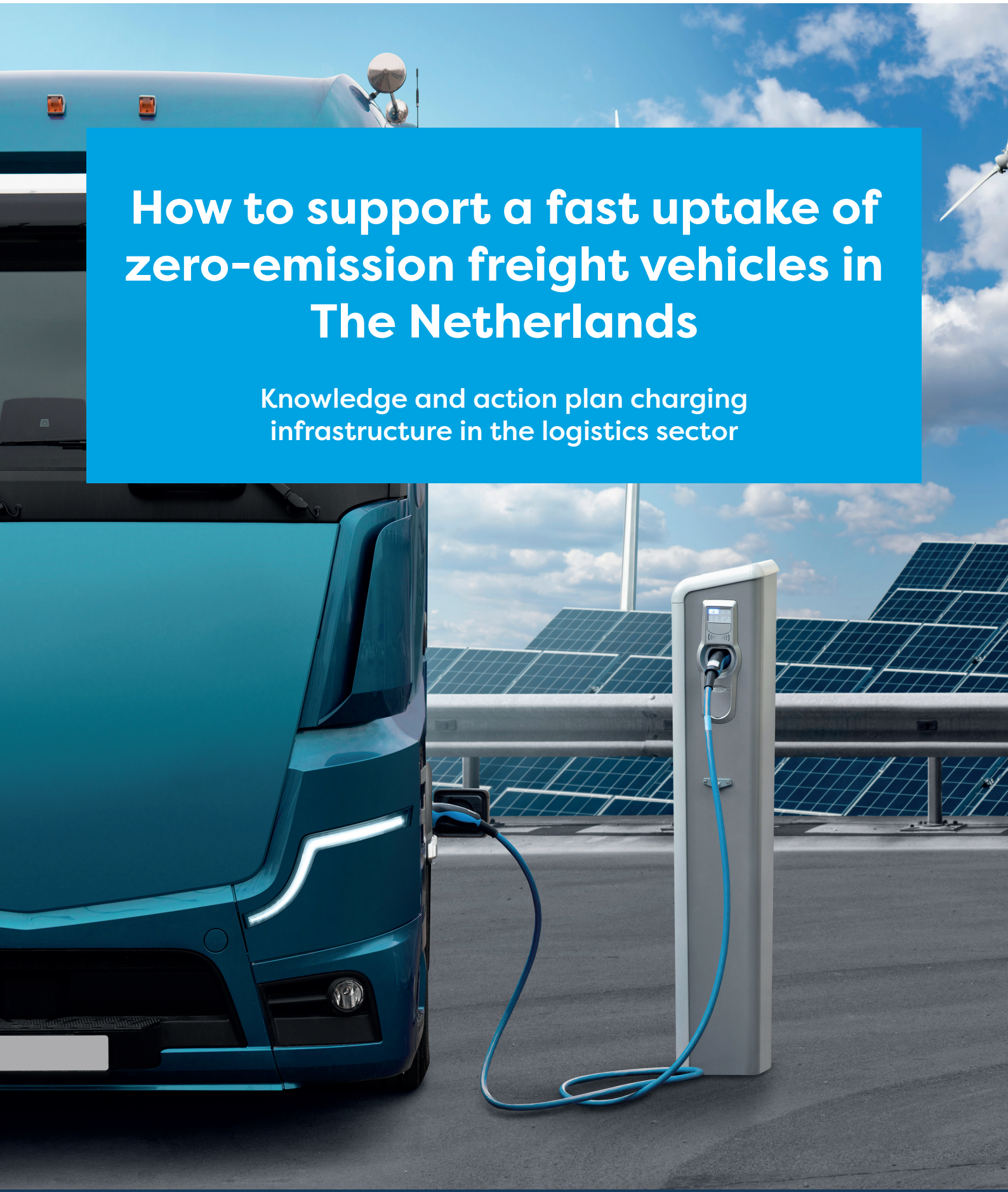
NAL Nationale agenda Laadinfrastructuur



How to support a fast uptake of zero-emission freight vehicles in The Netherlands

Knowledge and action plan charging infrastructure in the logistics sector

Nationale agenda Laadinfrastructuur

How to support a fast uptake of zero-emission freight vehicles in The Netherlands

Knowledge and action plan charging infrastructure in the logistics sector

Colophon
The National Charging Infrastructure Agenda (NAL) is a part of the Dutch Climate agreement and aims at supporting the transition of Electric Vehicles with charging infrastructure. This document is a product of the NAL working group on Logistics.

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1. Introduction

Making sure that charging infrastructure will not obstruct the fast uptake of zero emission (ZE)-freight vehicles: that is the mission of the Dutch programme on charging infrastructure for logistics. This document summarizes the challenges the logistics sector faces regarding the required charging infrastructure for ZE logistics and how these challenges differ from those faced by personal vehicles. Furthermore, it explains how this knowledge-based programme is organised and how different stakeholders contribute to the challenges ahead. This knowledge and action plan describes in detail which urgent questions need to be answered now to ensure a smooth roll-out of ZE freight vehicles in the coming years.

1.1 Motivation and background

The Netherlands is facing a major challenge when it comes to mobility. In line with the COP21 Paris agreement, a Dutch climate agreement was drawn up to reduce the national emissions of greenhouse gases to be able to achieve the climate goals. This National Climate Agreement of the Netherlands was formulated through a process of sector-specific stakeholder engagement in 2019 in which over 100 parties were involved across 5 sectors. This agreement aims to reduce greenhouse gas emissions by 49% in 2030 compared to the 1990 levels in an affordable, fair, and feasible way.

In order to stimulate ZE mobility, the National Climate Agreement included a number of the following aims:

- attain emission-free logistics mobility by 2050.
- realise a cumulative CO2 emission reduction of 35 Mton by delivery vans and trucks by 2030.
- achieve zero-emission zones for urban logistics in the 30 to 40 largest municipalities starting in 2025.

Logistic transport is an important cornerstone of Dutch economy and society. Accumulated, the logistics fleet consists of approximately 852,000 Dutch delivery vans and 140,000 trucks. By 2021 only 0.3% of the freight vehicles were electric; the majority run on diesel. More and more logistics companies are considering the transition to electric fleets. The above goals are a significant incentive for the sector to consider electric transport. This will require a major investment in the realisation of matching charging infrastructure, in a combination of publicly accessible and private charging points as well as fast charging facilities along highways and logistics corridors.

Type		Weight	Category	Numbers	Percentage electric (2022)	CO_2 emission (Mton)
	Delivery vans	<=3,500 kg	N1	852 thousand	~ 1%	4.29 (43%)
	Light-duty trucks	>3,500kg <=12,000kg	N2	62 thousand	~ 0.25 %	1.48 (18%)
	Heavy-duty trucks	>12,000 kg	N3	74 thousand	< 0.1 %	4.15 (42%)

Figure 1. Overview of vans and trucks in the Netherlands

To concentrate efforts on the required infrastructure for ZE mobility, the National Charging Infrastructure Agenda (NAL)[1] was set up as part of the Dutch Climate Agreement. The main mission of the NAL is to ensure that charging infrastructure does not form a barrier to the transition toward electric mobility. The NAL is made up of six working groups which cover the most significant challenges regarding charging infrastructure:

1. Communication
2. Safety and cyber security
3. Logistics
4. Open protocols and standards
5. Smart charging
6. Process Acceleration

For every working group, a plan of action was set up that describes the particular challenges per theme, including the type of actions envisioned to lower barriers for realising effective and matching charging infrastructure for ZE vehicles. The objectives of the NAL fall under the responsibility of the Ministry of Infrastructure and Water Management delegated to the NAL steering group with representatives of all working groups involved. The execution of the NAL is carried out in six working groups consisting of representatives of the most important stakeholders including national, regional, and local governments, industry associations, grid operators and NGOs.

1.2 NAL working group on Logistics

In the past, the Netherlands has been relatively successful in realising a publicly accessible charging infrastructure for electric vehicles. Since around 2010, a public network for chargers of passenger cars was rolled out, initiated by a combination of grid operators, local authorities and (financially) stimulated with national subsidies. By 2020, the Netherlands has one of the most densely operated public charging networks in the world including, amongst other things, high levels of interoperability (allowing all EV users to use the charging network). The development of this network illustrates the importance of collaboration between the relevant stakeholders and a form of coordination and programme planning, for instance, to achieve full interoperability between the network and the use of open protocols (allowing all EV users to be able to charge at all public charging stations).

With the ambitions laid out in the Dutch Climate Agreement, a similar assignment is laid out to create a suitable charging infrastructure for logistics. As a result, there is a lot to be learned from the experiences in developing charging infrastructure for passenger vehicles. At the same time, the logistics sector has other requirements, such as standardisation, required charging speed, appropriate charging locations, and impact on the network and available space. The realisation of suitable and effective charging infrastructure for the logistics sector calls for a joint effort by, among other things, the logistics sector, local and national governments, network operators, NGOs, and industry.

Given the particular challenges regarding charging infrastructure for logistics the working group comprises five taskforces linked to five substantive themes that were distinguished in discussions with the sector. Figure 2 shows the structure of the working group on Logistics (dated July 2021).

[1] agendalaadinfrastructuur.nl

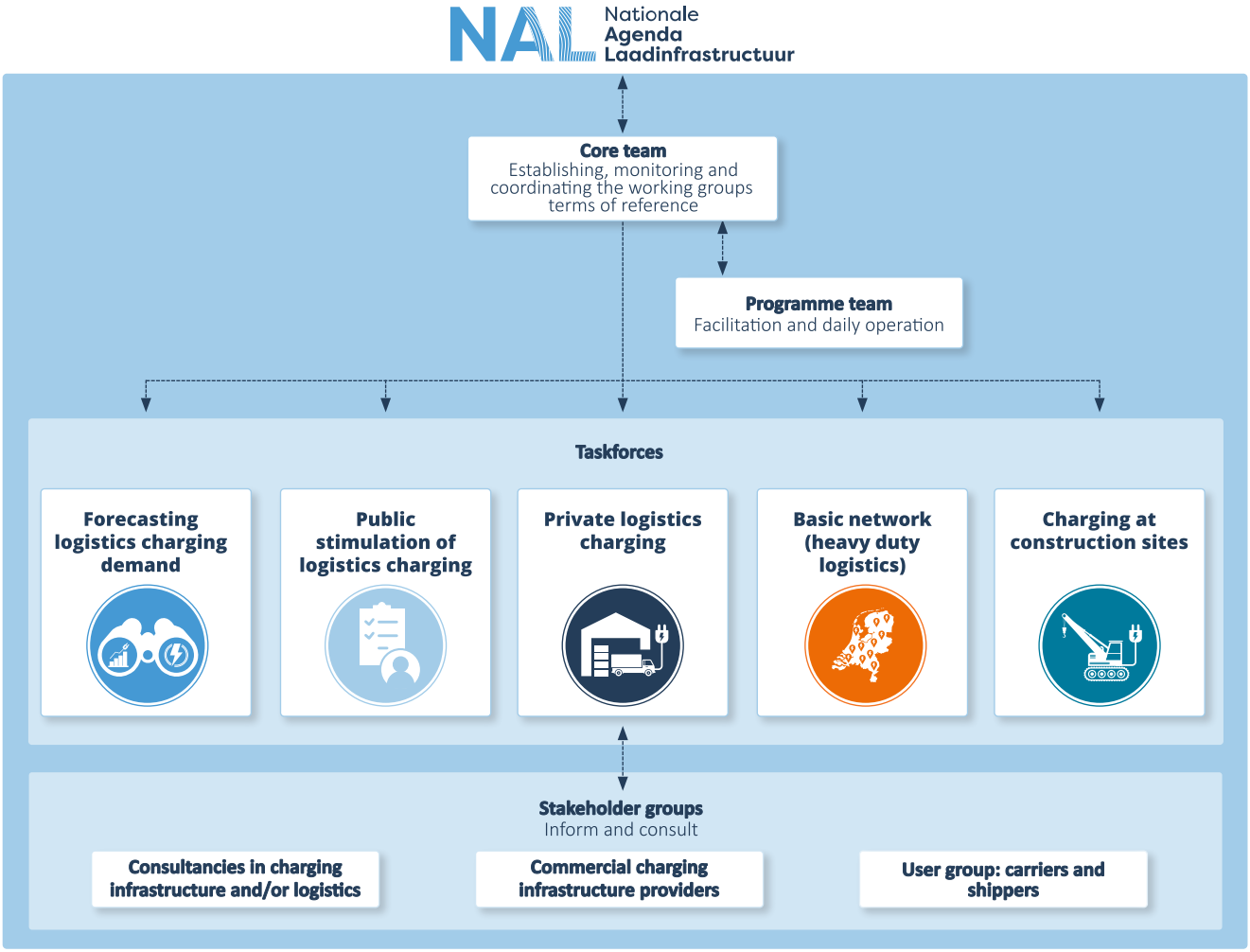

Figure 2. Structure of the working group on Logistics (dated July 2021)

The **taskforces** are responsible for collecting relevant research questions, putting urgent topics on the agenda, and contributing to implementing the overall plan.

They consist of non-commercial parties to safeguard a level playing field for all parties involved in setting up and carrying out the agenda. In order to review and validate elements of the knowledge and action plan, so-called **stakeholder groups** have been introduced to utilise the knowledge and experience of commercial parties. The stakeholder groups are informed and consulted twice a year.

A **programme team** monitors the daily affairs of the working group on Logistics and monitors the progress of the various taskforces. The programme team is the main point of contact for interested parties related to the working group on Logistics.

It plays a coordinating role between the taskforces, it plays an intermediary role in allocating new themes and topics to different taskforces, it prepares the definition of further research to be carried out and ensures sufficient communication and knowledge dissemination both to all taskforces as to external stakeholders.

The programme team consists of the chairman, a secretary, a research manager, and representatives of the Ministry of Infrastructure and Water Management, the Directorate-General for Public Works and Water Management and the Netherlands Enterprise Agency. The research manager for 'Charging for Logistics' is responsible for the relevant research questions and processing information from these various sources into specific research projects and ensuring that these matters are addressed.

Finally, representatives from each taskforce meet twice a year to evaluate the progress and set the course for the coming period.

1.3 Cooperation NAL regions

The Netherlands is divided into six so-called NAL regions for cooperation to execute the National Agenda for charging infrastructure. Municipalities within these regions work together to enable an integrated charging infrastructure on a regional level. Regional NAL-project offices monitor progress.

The working group on Logistics partners with the NAL regions to ensure proper alignment, coordinate priorities in research projects, and share results with regions and municipalities. The NAL regions are represented in all taskforces, ensuring that questions from the regions are sufficiently included, and that best practices are collected nationally at the working group level.

1.4 Knowledge and action plan: working principles

Figure 3 shows the process of creating the current knowledge and action plan, how research projects are selected, who is responsible for what and how the knowledge plan is updated.

The knowledge and action plan results from discussions in the programme team and taskforces, considering current topics and conversations with stakeholder groups. The programme team and taskforces continuously assess results from research, actual case studies and discussions with industries, potential sources of topical subjects and specific discussions with sectors concerning cleaning vehicles, inland shipping, and target group transport.

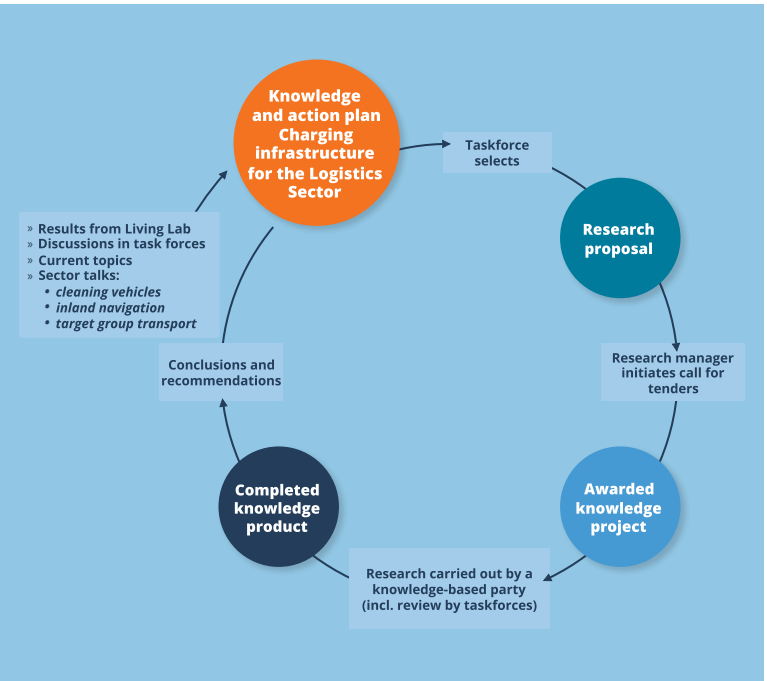

Figure 3. Process of creating the current knowledge and action plan

This translates into renewing and keeping the knowledge and action agenda up to date and re-prioritizing urgent topics to be further investigated twice a year.

Taskforces select priority subjects for further research from the knowledge and action plan and draw up an annual list (including budget) of projects to be carried out (research proposal). The programme team checks the proposals for possible duplication, ambition, and available budgets. If necessary, the research manager (sometimes together with the programme team) conducts a preliminary study to determine the scope of the call for proposals. This process results in a knowledge project being awarded.

For example, the research manager initiates the call for tenders for consultancy firms. The contract is awarded to the party with the most favourable offer in terms of quality and economics. The research manager acts as a principal towards the consultancies, while taskforces have a review and advisory role in the research projects resulting in a finished **knowledge product**.

Each research study should deliver mandatory conclusions and recommendations, using harmonised terminology as much as possible. This set of recommendations can be the first step in a follow-up or new research project (whereby the process starts all over again from step 1).

There are two types of knowledge projects:

1. Research projects that aim to obtain substantive information further explore a knowledge question.
2. Tools, manuals, handbooks etc., to support public and private parties in their transition to ZE-logistics.

Especially the latter calls for active communication and a responsible party to implement updates and answer any questions about the documents.

1.5 Five main themes for logistics charging infrastructure

The NAL working group on Logistics was established to address and remove obstacles relating to the charging infrastructure for delivery vans and trucks. One of the main drivers in this first phase towards ZE logistics includes realising zero-emission zones (ZE-zones) for freight starting by 2025 and fully operational by 2030.

For the transition period between 2025-2030 some exemptions are made for EURO V and EURO VI vans and EURO VI trucks (see figure 4).

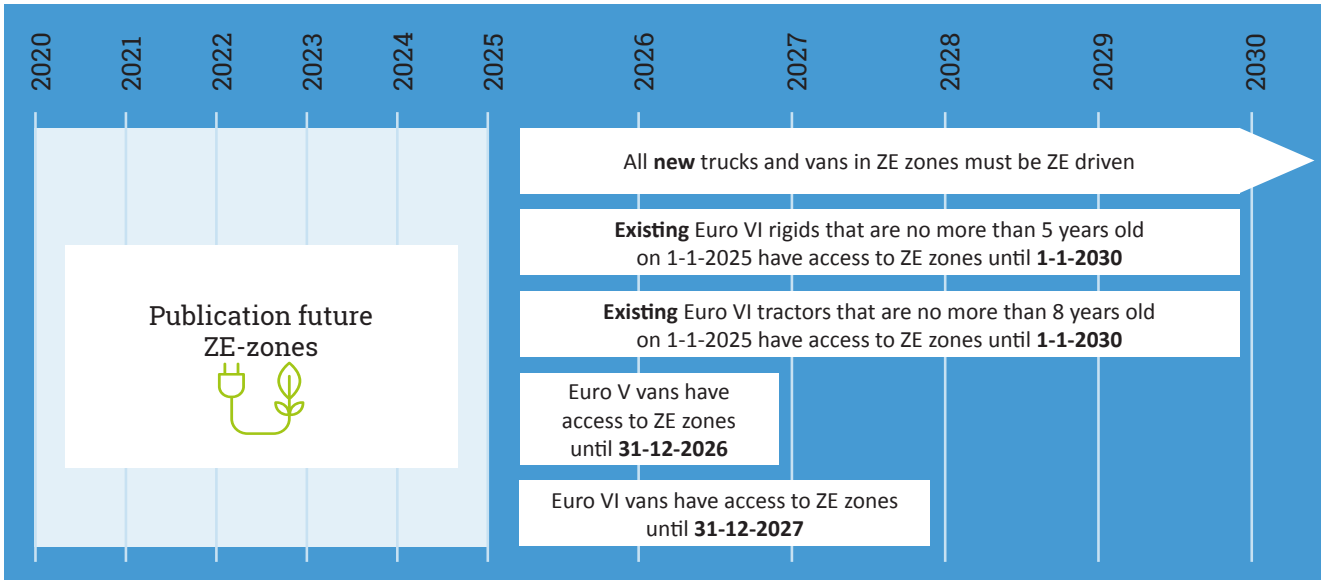

Figure 4. Exemptions made for EURO V and EURO VI vans and EURO VI trucks, source: opwegnaarzes.nl

The introduction of ZE-zones will have a significant impact on hundreds of thousands of vans and city trucks that enter these cities on a daily basis. The urgency to switch to electric drivetrains will increase year by year for logistics entrepreneurs. In the meantime, charging infrastructure should go hand in hand with this transition, which leads to major challenges for providing suitable charging infrastructure on public grounds, along highways, close to ZE zones and on private terrain (for instance, business and industry parks).
To identify the main themes and challenges, the working group held extensive discussions with relevant stakeholders in the supply chain of logistics and charging infrastructure, and investigated the growing number of current studies and best practices to establish the main barriers to suitable charging infrastructure for logistics The five main themes identified as follows:

1. **Forecasting logistics charging demand:** Where and when can we expect to see a demand for logistics charging? And what will be the impact on the grid, both at public and private locations?
2. **Public stimulation of logistics charging:** What support from local authorities do we need to facilitate logistics charging in both public and private domains?
3. **Private logistics charging:** What about standards, interoperability, safety, impact on the grid and basic requirements for logistics parties concerning private charging solutions?
4. **Basic network:** How do we create a publicly accessible basic network of charging facilities for delivery vans and heavy-duty trucks?
5. **Charging at construction sites:** How do we realise more mobile charging solutions on construction sites (e.g., heavy construction transport and electric vehicles for civil engineering)?

For each of the themes a taskforce was set up with concrete objectives and scope. Each taskforce includes members that are directly affected or who are experts on that theme. Below we will dive deeper into each of the themes and the operation of the taskforces.

2. Theme 1: Forecasting logistics charging demand

2.1 Problem definition

Municipalities, grid operators and logistics partners lack insight into where, when and what type of charging facilities (e.g., in capacity) to expect. This can lead to ad hoc installation of logistics charging infrastructure or sub-optimal planning (too late or too early) with the consequent risk that any network upgrades will not be completed in time.

Public parties (municipalities, provinces), grid operators, and logistics companies must know the expected demand for charging infrastructure due to increasing electric freight transport in public and private domains. This insight could be provided in the form of a forecast or planning chart showing the geographical distribution of the charging demand.

An essential condition for developing functional forecast and planning charts is the availability of detailed data (e.g., data of business parks, trip details, driving and charging behaviour within various logistics sectors). In the Netherlands, there are several ongoing initiatives to collect relevant data, including those by ElaadNL (Outlooks) and by the Central Bureau of Statistics. At the same time, it is a fact that developing forecast and planning charts and collecting the relevant data is time-consuming. It demands a lot from frontrunner companies, and the availability of comprehensive trip details is limited (also due to privacy concerns).

The challenge lies in working with the industry to see how to contribute to adequate and detailed forecasts as to where and when to charge due to the electrification of logistics.

Power demand forecast for depot charging per neighbourhood (mid-scenario 2035)

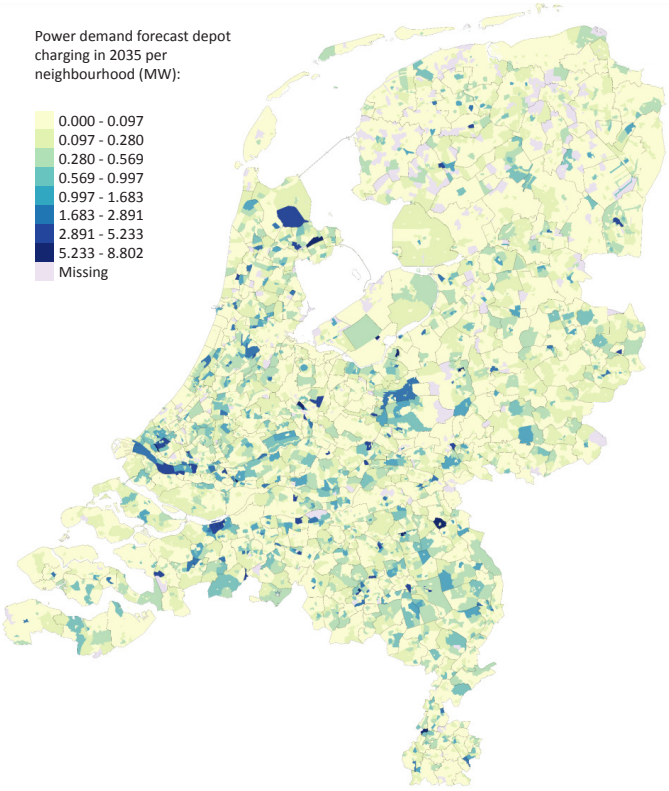

Figure 5. Illustration for forecasts of power demand per neighbourhood on business parks (source; ElaadNL, 2020)

2.2 Taskforce assignment

The taskforce's assignment for this theme is to contribute to the realisation of more detailed forecast and planning charts, for example geographical location, peak charging times, capacity needed and others. The objective is to enable grid operators, municipalities, and logistics parties to start as soon as possible to prepare locations for required charging facilities and any grid reinforcements, as these changes to the grid can take up to 5 or 6 years from planning to implementation due to the intensive process of reinforcing the power grid and in particular because high power involves long lead times.

Scope

- The taskforce investigates both private charging infrastructure (business parks) and public charging infrastructure for the logistics sector. Given the expected grid load, providing forecasts for private charging infrastructure at business parks will be a priority.
- There are various initiatives to develop forecast or planning charts, each with a specific purpose and target group. There are currently no known initiatives for a national forecast chart for logistics charging infrastructure. The taskforce focuses primarily on filling this gap, but explicitly aims to connect with related initiatives.
- There are also various initiatives concerning the development of forecast charts that are broader than mobility (Regional Energy Strategy, industrial clusters, grid operators). To develop the national forecast chart for logistics, the taskforce will attempt to connect to and unify these initiatives to facilitate correct integration.
- The level of detail in forecast or planning charts may differ. It is up to the taskforce to determine the appropriate level of detail and decide on a step-by-step improvement of the forecast's quality and level of detail to planning charts.
- The taskforce maintains a timeline of 2030, in line with the introduction of the ZE-zones. This includes looking ahead to 2035 and considering restrictions on vans as from 2028. This is achieved by incorporating these steps in the growth scenarios in the long run. The baseline is 2030; consequences for 2027 and 2035 are included.
- The taskforce will explore the possibility of including inland shipping at a later stage. Currently, the ElaadNL Outlooks for inland shipping are state-of-the-art and there is little reason to update them.
- In addition, the taskforce focuses on the impact of ZE-logistics at our national energy grid capacity
- The taskforce sets an agenda, especially in N1 (> 3,5 tonnes) vehicles, with existing planning charts for passenger transport.

2.3 Goals

2021

- Goals for 2021 include an exploration to assess a valid methodology for developing a national forecast chart for logistics charging infrastructure at business parks. Furthermore, work will be carried out to draw attention to light-duty vehicles (N1) and vehicles (e.g., vans, service logistics) in current planning charts for passenger transport. Lastly, prepare a basic document on Logistics Forecasts for NAL regions/municipalities.

2022

- In 2022 a national forecast chart for logistics at business parks, based on 2030 will be published. These forecasts will be validated through discussions with e.g., industry associations (TLN, Evofenedex) and grid operators. Also, insights into the impact of the demand for logistics charging on public and private terrain due to ZE-zones (2030) will be obtained.

2023

- In 2023 a detailed planning chart of logistics charging hotspots on a national level will be published. Activities include: drawing up usable tools/templates for NAL regions and ZE zones to include logistics in planning, vision and policy concerning logistics charging, identifying opportunities and limitations for the use of existing public charging infrastructure for logistics charging and identifying possibilities for shared charging at depots, for example, for semi-public use.

Furthermore, opportunities and obstacles will be identified for strategic locations and develop a roll-out strategy, such as rapid charging locations (study of service stations by the Directorate-General for Public Works and Water Management) and public and shared depot charging. These are broken down into charging heavy-duty (referring to vehicles with a weight above 3,5 tonnes) and lighter vehicles below 3,5 tonnes.

Finally, a transition strategy will be developed for gas stations: what will the future network of gas/charging/hydrogen filling stations look like?

2.4 Actions

Action 1: Create preconditions for national charging forecasts for logistics

- Position current initiatives and identify possible contributions of the envisaged forecast and planning charts. Maintain the contacts with relevant initiatives and position the taskforce's required role.
- Draw up a plan of action stating how realistic and useful forecast and planning charts can be developed, determine what information is required and how to obtain it (e.g., with the taskforce members).
- Assess the charging mix: what are the trends? Is this in line with the expected situation, and if not, what needs to be adjusted?

Action 2: develop forecast charts regarding logistics charging demand at business parks

- The main focus is on business parks and not on companies' individual connections at these parks. As several companies will be transitioning to electric vehicles, the primary demand and focus will be on the aggregated charging demand at business parks. Activities include:
- Draw up a usable working method for realising a national forecast chart for logistics at business parks
- Scale up the method to develop a national forecast logistics on a larger scale, which can be used to timely involve grid operators (e.g., to carry out a net assessment).
- Increase the level of detail in the national forecast logistics for example by including business parks' autonomous growth, validation of indicators and assumptions (e.g., via case studies). This can also be achieved by incorporating more dynamics; knowledge of a limited capacity at a business park can lead to other zoning plans or relocation.
- Provide long-term grid impact studies based on charging forecasts, including studies into heavy transport.

Action 3: develop forecast charts regarding logistics charging demand in public areas

- In addition to business parks, there will also be a demand for charging in the public domain, both in neighbourhoods by delivery vans (that drivers park at/near their home), and at rapid charging stations located along highways.
- Identify existing knowledge and the taskforce's role to draw up forecasts for public charging sites. Charging locations for the logistics sector are likely to differ from those for electric passenger vehicles. Forecasting the charging demand for the logistics sector requires other indicators. It should be noted that municipalities particularly need integral planning charts (rather than separate public and private charts). The integrality is further explored in this action.

2.5 Taskforce members

The taskforce consists of representatives from the national utility companies, the National Knowledge Institute on Charging for Electric Vehicles, the trade union for logistic providers, the departments of Public Works and Water Management and other relevant organisations.

3. Theme 2: public stimulation of logistics charging

3.1 Problem definition

Realising charging infrastructure for the logistics sector is challenging for many road authorities (municipalities, provinces, Department of Public Works, and Water Management). Where should this public charging infrastructure be located? How do you translate logistics charging into implementation plans and tenders? Which (basic) requirements should you include in tenders? And how can municipalities encourage charging at depots and rapid charging, and what role should they play? How does it fit into urban planning?

There are a lot of questions about how to include logistics in planning, implementation, and tendering. The risk here is that every municipality and region might have to reinvent the wheel.

3.2 Taskforce assignment

This taskforce's assignment is to ensure that NAL regions, and municipalities (including ZE zones and provinces) make progress in the field of logistics charging infrastructure (public, semi-public and private). This can be achieved by providing them with the right knowledge, network, and expertise in the best possible way. Within the taskforce, the focus will initially be on ZE-zones and long-distance transit (logistics) traffic, including the service areas and related charging stations on the main highway network.

3.3 Goals

2021

- All ZE zones and NAL regions are aware of the possible roles they can play and actions they can take regarding stimulating the implementation of logistical charging2022: The 40 biggest cities and NAL regions have more concrete tools to include logistics charging in their charging visions, installation policies and tenders.

2023

- All road authorities (including the Department of Public Works and Water Management) have developed a vision and concrete policy for achieving the charging infrastructure for the logistics sector.

3.4 Actions

Action 1: Shaping vision and policy on logistics charging infrastructure (charging visions)

- Municipalities are responsible for developing charging policy strategies. Currently strategies for charging logistics are still only marginally included. It is relevant to establish the roles the municipality, the province, and the national government play in realising logistics charging infrastructure. This applies to both public settings - in districts and on the highway (rapid charging) - and to private settings (at depots).
- The main objective is to establish sufficient infrastructure for charging on the go and in the public domain. This raises various questions. What role can municipalities play in facilitating charging infrastructure on private property? What is the role of municipalities, provinces and the Directorate-General of Public Works and Water Management in developing charging infrastructure at gas stations? And what is the vision on the transition of gas stations and service stations?
- Activities include drawing up usable tools/ templates for NAL regions and ZE zones to include logistics in planning, vision and policy concerning logistics charging, identifying opportunities and limitations for the use of existing public charging infrastructure for logistics charging and identifying possibilities for shared charging at depots, for example, for semi-public use. Furthermore, identify opportunities and obstacles for strategic locations and develop a roll-out strategy, such as rapid charging locations (study of service stations by the Directorate-General for Public Works and Water Management) and public and shared depot[2] charging. Broken down into heavy-duty (N2/N3; vehicles over 3.5 .tonnes charging and delivery van (N1; vehicles over 3.5 tonnes).
- Develop a transition strategy for gas stations: what will the future network of gas/charging/ hydrogen filling stations look like?

[2] The planning of charging plazas could be looked into. The same planning can possibly also be used for charging infrastructure.

Action 2: Contributing to placement policy & realisation of public charging infrastructure for the logistics sector

- Develop concrete guidelines about including the demand for logistics charging in tenders (e.g., in the form of basic logistics requirements).
- Arrange for a predictable and straightforward application process for public charging stations for the logistics sector at municipalities.
- Evaluate and share best practices on how to successfully facilitate logistics charging.

Action 3: Contributing to the realisation of private charging infrastructure

- Establish a connection between regional and local policy makers related to charging infrastructure by establishing a regional charging infrastructure information point and representatives of business parks to prepare and set up urban planning and realisation processes for private charging infrastructure.
- Evaluate and share best practices on how municipalities can encourage depot charging.
- Determine what supportive role municipalities can play in realising charging infrastructure at (small and medium-sized) businesses on private property.

3.5 Taskforce members

The taskforce consists of representatives from the Municipalities , NKL, NAL regions, grid operators, NVDE, (and the Ministry of Infrastructure and Water Management.


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4. Theme 3: Private logistics charging

4.1 Problem definition

Logistics companies are faced with challenges in switching to electric, urging these companies to invest in knowledge in both ZE drivetrains as well as charging infrastructure. Charging at business parks (or depots) is crucial for achieving emission-free logistics. It is expected that depot charging will meet almost 80% of the electric charging demand of trucks and 40% of delivery vans in a few years' time. As a result, most of the charging infrastructure necessary for the logistics sector must be set up at or near private business locations.

For individual businesses, it is complex to realise an electric charging infrastructure on their premises and could lead to many issues. Besides the individual challenges, there are also issues at business parks where multiple businesses will be charging their vehicles.

4.2 Taskforce assignment

This taskforce supports companies in the logistics sector in realising suitable charging facilities. The objective is to ensure that the introduction of charging infrastructure at businesses (distribution centres, offices, depots, ports) does not hinder the rollout of emission-free freight vehicles.

The taskforce gathers and disseminates knowledge about developments, possibilities and possible barriers related to realising charging infrastructure for freight vehicles, from delivery vans to trucks and inland shipping. In addition, the taskforce initiates and coordinates the necessary actions to activate the sector.

4.3 Goals

2021

- Realisation of a Guide to Depot Charging for Logistics Companies with an overview of technical, financial, fiscal, legal, and operational questions about private logistics charging infrastructure (including best practices). This guide will be available in 2022 on the NAL website.

2022

- Concrete guidelines and basic requirements have been drawn up for standardisation, safety, shared use, interoperability.

2023

- Realisation of an ecosystem where maximum learning is gained from best practices and knowledge is shared with logistics companies that are considering a transition or are in the process of doing so.

4.4 Actions

Action 1: Resolving operational challenges related to logistics charging solutions

- First, safety issues related to high power and vehicle charging in/near hazardous materials and digital safety will be identified. In addition, companies will be encouraged to take a collective rather than an individual approach. Also, market insights will be continuously updated, e.g., with price developments, capacities, technological solutions, and market developments. Model partnership agreements and contracts for shared charging at each other's business premises will be made available.

Action line 2: Facilitate standards and interoperability

- To ensure interoperability, standards, plugs, protocols, payment systems, shared charging, reservation systems and supporting ICT architecture will be developed. Through different instruments, standard charging on private premises is encouraged. The same goes for standardising spatial layout requirements and charging infrastructure for shipping and inland waterways. These standards will continuously be monitored and evaluated. Next to these, minimum international requirements will be promoted. Also, basic requirements for charging infrastructure for the logistic sector will be developed. Communication standards and a platform for information about the charging location to ensure interoperability and roaming functionalities will be developed to enhance the knowledge between countries and networks.

Action line 3: Identify the impact & implications of charging on the grind connection

- Lead times for upgrading grid connections and determining consequences for logistics companies will be identified through analysis. This includes system solutions for buffer batteries and sustainable energy generation to avoid peak loads, including implications for logistics companies. Opportunities for more innovative measures such as energy hubs and cable pooling at business parks will be explored. Through collaborations, the impact of electrification of a fleet of freight vehicles on the grid can be minimized, including buses to the logistics sector. A net assessment portal will be opened where logistics companies can get advice/net assessment from grid operators to unlock this knowledge conveniently.

Action line 4: Examine financial challenges

- In this action line, the effectiveness of different financial instruments will be explored in addition to current laws and regulations, e.g., which incentives, subsidies, or other forms of financing are there to facilitate the private charging infrastructure? Charging for Logistics include SME dependence on public infrastructure. The business case tool to estimate needed investment for logistic sector will be further developed.

4.5 Taskforce members

The taskforce consists of, among others, representatives from NKL, NAL regions, Evofenedex, national utility companies the Ministry of Infrastructure and Water Management and several sector associations (TLN, DOET, RAI and Evofenedex).

5. Theme 4: Primary network of public chargers (for heavy duty freight vehicles)

5.1 Problem definition

Many entrepreneurs are hesitant to purchase an electric vehicle if charging infrastructure is not available. At the same time, charging infrastructure is not profitable if there are no electric vehicles yet - the classic chicken-and-egg problem. It is essential that charging infrastructure is put in place to solve this problem, even though the business case may not be entirely conclusive.

Central to this theme is designing, constructing, and financing a basic network. This taskforce focuses on developing a public basic network of rapid chargers where delivery vans and heavy goods vehicles can charge. Initially, the locations will be focused on and around ZE zones, ensuring certainty of charging for the sector. It is unclear which financing mix (public, private, otherwise) would be most promising. There is also a lack of direction to develop and accelerate such a basic network at a national level.

In early 2021, grid operator Enexis and trade association ElaadNL launched the project "LoLa[3]", which is intended to lay the groundwork for a basic network for freight vehicles. It is important to develop such a network in close cooperation with other initiatives related to alternative fuel infrastructure, such as the Dutch programme called Clean Energy Hubs (taking a more multifuel approach). The Department of Public Works and Water Management can also contribute by using service stations for logistics charging.

In addition, market initiatives are emerging, such as the cooperation between Volvo, Daimler Truck and the Traton group to jointly roll out a European network for a logistics charging infrastructure. Existing rapid-charging operators, such as Dutch company Fastned, have also indicated that they are exploring logistical locations. In short, various initiatives add up to a basic network.

It is desirable to consider where the charging needs of logistics traffic will arise and, based on this, explore which initiative can contribute to this in which timeframe. The LoLa network is intended to stimulate the network's 'white spots' to create a robust basic network. The task group currently functions as an advisory board to the LoLa project. At the same time, it is explored whether it can play a more active role in stimulating the development of the LoLa network.

5.2 Taskforce assignment

This taskforce's assignment is to design, direct and accelerate the realisation of a basic network for logistics, including determining the appropriate financing mix with public and private parties. This involves a public basic network and a network of (semi-) private charging solutions at business locations that can contribute to the basic network.

5.3 Goals

The various phases of the transition (basic network, upscaling, young adult market) have an appropriate financing mix. The objective is to minimise government support for a mature market.

2021

- Planning and agreement of intent for basic public and private charging network, including locations, process, financing.

2021/2022

- Establishment of a legal entity to stimulate the basic network.

2022

- Start of the stimulation and realisation process for the public basic network.

2022

- Agreement with public, private parties to realise a comprehensive basic network for heavy-duty (N2/N3).

[3] LoLa stands for Logistics Charging (or Laden in Dutch)

5.4 Actions

Action 1: Realise a basic network of public rapid charging points around and for ZE zones

An essential condition for logistics parties to transition to electric vehicles is that charging en route is guaranteed. For ZE zones it is crucial to realise a network of dozens of (rapid) charging facilities.

Activities include:

- Determine ambition level, timing, locations of a public basic network for the logistics sector (planning).
- Translate a basic network into investment needs for logistics charging
- Create an overview of usable financial instruments (public subsidy, levy, and revolving and private investments) and a white spot analysis of the most suitable, necessary, and possible instruments per step (including division of roles, leverage, and risk distribution).
- Explore possibilities for realising a basic network: e.g., concession versus permit model.
- Investigate a no regret charging infrastructure fund before starting the rollout.
- Investigate public-private partnership form for realisation (e.g., Green Deal).
- Stimulate an active role of the Department of Public Works and Water Management in the basic network of service stations for logistics charging infrastructure.

5.5 Taskforce members

The taskforce consists of among others, representatives from the Department of Public Works and Water Management, national utility companies, the Ministry of Infrastructure and Water Management and several trade associations.

6. Theme 5: Charging at construction sites

6.1 Problem definition

Charging battery-operated equipment and vehicles in the construction sector is increasingly important. There are various initiatives in the sector, such as De Groene Koers (DGK) and Emission-free Network Infra (ENI), aimed at achieving a clean and emission-free construction sites. The government and the construction sector are also currently working together on the Roadmap for Clean and Emission-Free Construction to achieve the objectives of the Nitrogen Action Plan, the Climate Agreement, and the Clean Air Agreement. These initiatives actively encourage the use of zero-emission construction equipment.

The use of battery-operated tools and vehicles is dependent on with the practical realisation of safe charging facilities. To this end, we can build on knowledge and activities from other sectors. For example, charging construction freight vehicles, on the road or at the depot, is comparable to charging other freight vehicles. But charging or powering mobile equipment (e.g., excavators, pumps, or asphalt pavers) or vehicles at construction sites poses specific challenges. Construction projects are temporary in nature and operating and charging battery-operated electric equipment must be integrated into the construction process, often involving many different parties.

Therefore, the NAL Taskforce Charging at Construction Sites primarily focuses on charging mobile equipment and vehicles on construction sites. Charging logistics construction vehicles at depots or in transit is comparable with charging freight vehicles from other sectors and is therefore assigned to the other taskforces of the NAL Taskforce on Charging Logistics.

6.2 Taskforce assignment

The NAL Taskforce Charging at Construction Sites contributes to the effective realisation of safe charging facilities for battery-operated electrical equipment at construction sites. These can be either civil or utility construction sites or civil engineering sites.

This taskforce supports companies and authorities in these sectors by bringing them together, ensuring that knowledge is shared both in the sector and with other sectors, and helping to identify and eliminate bottlenecks.

6.3 Goals

2021

- In 2021, the main issues around the implementation of charging facilities for battery-operated equipment and vehicles at construction sites will be translated into an action plan. Also, two consultancy assignments will be launched. The first is aimed at the technical aspects of realising the charging infrastructure. The second at the process and division of responsibilities around realising the charging infrastructure.

2022

- In 2022 insights to construction companies, clients, and other relevant stakeholders will be communicated, and a guide 'Basic requirements for charging at construction sites' for standardisation, safety, protocols, interoperability) will be published. Practical projects provide continuous insights and lessons.

2023

- Sufficient tools to effectively implement charging facilities at construction sites are available

6.4 Actions

To achieve the above results, the taskforce must focus on the following actions:

Action 1: Charging infrastructure and availability of our national energy network

There are various ways of powering battery-operated construction machines. For example, using a charging facility or battery swapping system combined with a grid connection, battery container or hydrogen generator. It depends on the power demand, location, and grid capacity which solution would be suitable. Currently, the possibilities and their advantages and disadvantages are being identified. Below is an initial outline.

- How and to what extent can the energy demand at construction sites be met within (limited) existing grid capacity?
- Which infrastructural facilities, necessary for charging at construction sites, can be put to use in the final situation after the construction project has been completed?
- Which solution is the most energy- and cost-efficient per use case? The intention is to develop a guide for commissioning/ tendering authorities, project developers and construction companies.

Action 2: Clarifying process and roles

- Currently, after a project has been awarded, the contractor orders the power supply at a construction site (the 'construction connection') from the grid operator. This is a relatively simple process, as the power demand is limited in the current situation (without electrical construction equipment).
- However, the use of electrical construction equipment will lead to a higher demand for power. Moreover, research by the grid operators (ElaadNL)[4] shows that the power demand of electric construction equipment is highest during the first stage of the building process, preparing for construction.
- As a result, the maximum charging capacity will need to be available at the start of a construction project. This complicates the application procedure and the timely realisation of a (high power) grid connection at construction sites.

Activities of this action are:

- Conduct research into an effective process and allocation of roles for the timely realisation of (high-) power charging infrastructure.
- Communicate insights to construction companies and other relevant stakeholders.

Action 3: Stimulating standardisation

Standardisation plays a vital role in the effective development of (facilities for) charging battery-operated mobile machines.

This includes, for example, standardising plugs, data protocols and safety instructions for the use of battery-operated vehicles and charging infrastructure at construction sites. In this respect, it is advisable to align this, as much as possible, with existing standards for charging infrastructure, particularly from the logistics sector, such as standards for high-performance charging.
The initial objective is to develop a guide titled 'Basic requirements for charging at construction sites' in 2022, which will cover issues such as standardisation, safety, and data protocols and interoperability.

Action 4: Learning from practical projects

In 2022, several real-life projects are expected to be carried out to gain experience in the use of zero-emission construction equipment. These projects are an excellent opportunity to gain knowledge and experience, for example, about the actual energy consumption of battery-operated machines. In the upcoming period, it will be further determined which specific questions can be answered based on practical experience and how this process can be further developed.

Action 5: facilitating safety

The taskforce pays attention to safe working practices with battery-operated electric vehicles and charging infrastructure. In coordination with Emission-free infrastructure network (EIN), the taskforce also determines what other points of attention there are concerning the safe operation of electric charging infrastructure on building sites. This will be further elaborated in the coming period.

6.5 Taskforce members

The taskforce consists of, among others, representatives from the trade association for Building and infrastructure companies, the Netherlands Enterprise Agency, Emission- free infrastructure network, Ministry of Infrastructure and Water Management, the Municipality of Utrecht, and national utility companies.

[4] ElaadNL, 2021. Outlook Elektrisch bouwen: De ontwikkeling van de elektrische bouwplaats in Nederland t/m 2035 (The development of the electric construction site in the Netherlands through 2035.

7. Future approach

In the coming years, the logistics sector will face considerable challenges in transitioning to electric driving. A transitioning process where passenger vehicles are already more advanced and from which we can learn lessons. At the same time, the logistics sector's dynamics, structure, and driving behaviour require a specific approach to realise appropriate and timely charging infrastructure for the sector. These characteristics are business parks, high powers, national coverage, and integration in the electricity network.

To meet these challenges, we will need all parties in the chain: from transporters and shippers to technology providers and from policymakers and knowledge institutions to grid operators. This knowledge and action plan is the starting point for questions and actions that can be set up and developed to anticipate the growth of electrically driven logistics. The goal is to work with the sector to create a suitable charging infrastructure for the logistics sector.

7.1 Further reading:

Also, the working group used the Roadmap for Charging Infrastructure for the Logistics Sector as a reference.

This document was specifically compiled based on the action list carried out by the Logistics Working group (until January 2021) and a set of approximately twenty research projects (Research Programme on Logistics Charging, APPM, 2020).

For more information and relevant documents go to: NKL Nederland | NAL Logistiek