Business LAHTI REGION

LAHTI GEM+

Korkia Consulting Oy & Rejlers Oy

Heavy-duty vehicles charging infrastructure

Needs and opportunities in Päijät-Häme

Executive Summary, Jan 2023

SUMMARY OF GOALS AND METHODOLOGY

The project examined planning and construction opportunities of high-power charging infrastructure, related funding and business opportunities for Päijät-Häme region

PART 1:
Data collection and analysis

PART 2:
Collaboration, conclusions and finishing

1.0 KICK OFF
Creating a common view of the project's detailed goals, work methods and project progress.

1.1 CURRENT STATUS AND AREA OVERVIEW
Clarifying the current status and development of alternative fuels, collecting data on heavy-duty vehicle traffic flows and the current urban structure in relation to heavy-duty vehicle traffic flows and centralizations, mapping the location of high-power charging points

1.2 FUNDING OPPORTUNITIES
Collecting information about funding opportunities for planning and executing high-power charging stations

1.3 SURVEY FOR COMPANIES
Gathering understanding of companies needs and expectations regarding the utilization of alternative fuels, as well as companies need for support concerning the alternative fuels distribution network

1.4 INTERVIEWS
Deepen understanding the needs of planning and construction of charging infrastructure, such as business needs and land use planning requirements. In addition, mapping the need for cooperation between areas next to Päijät-Häme region.

1.5. ANALYSIS AND SYNTHESIS
The collected material is put together and preliminary conclusions and recommendations are formed from them (incl. charging locations). In addition, identified business opportunities are listed and preliminary proposals for piloting are outlined.

2.1 COLLABORATION - PILOTS AND DEVELOPMENT PLATFORM
In the workshop, the results of phase 1 will be reviewed, as well as preliminary conclusions. The workshop focuses on collaboration to create potential pilots and a development platform.

2.2 PROCESSING AND PRESENTATION OF FINAL REPORT
The written final report will be finalized and the most potential high-power charging locations, their locations and preliminary descriptions will be presented to the client in the closing workshop of the project

Desktop · Interviews · Workshop or meeting · Survey · Report or presentation

In the project Korkia with Rejlers as partner examined the future of distribution infrastructure of alternative fuels serving heavy-duty vehicles in the Päijät-Häme region, focusing on high-power charging infrastructure. The goal was to produce information to support the decision-making and planning in Päijät-Häme and Lahti region.

Various methods were used in the project:

- Geospatial analysis provided a picture of the area's current infrastructure, which was complemented by expert interviews.
- The views of business life were collected both through interviews and a survey. Through interviews, information was collected from a total of 12 companies that order or offer transportation services. Additionally, 10 companies responded to the survey.
- Of the possible locations in the area, a few potential ones were selected for closer review, for which separate location cards and accessibility analyzes were created using the data from Monitoring system of Urban Structure (YKR)
- In common follow-up meetings with the client almost on a weekly basis, preliminary findings and possible questions were discussed together for further actions.

CURRENT STATUS AND AREA OVERVIEW

National emission reduction targets and legislation are key drivers of electrification. In addition, companies' own emission reduction goals are reflected to fleet decisions

According to the WAM policy scenario in the Road map to fossil-free transport, carbon dioxide emissions from road transport will drop by approx. 51% by 2030 and by approx. 97.5% by 2045 (comparison year 2005).

Tightening regulation is an important driver for businesses in reducing emissions. This includes both legislation and various incentives such as taxation.

The companies interviewed in this project have already committed or are in the process of committing to responsibility and emission reduction goals at the company or group level. These are reflected in the companies' transport-related decisions. However, regarding the electrification of heavy-duty vehicles, only a few have completely clear road maps for the alternative fuels transition.

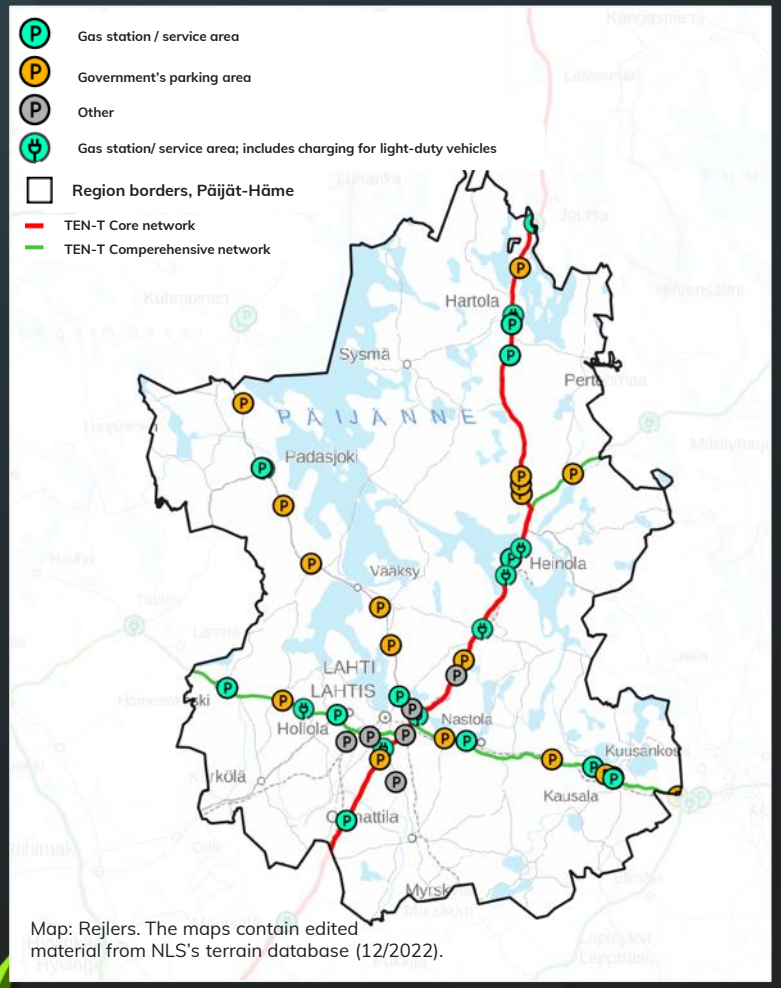
The biggest challenges in the alternative fuels transition regarding the electrification of heavy traffic are the short operating distance of the electric vehicles, high purchase costs, and the weight limitations. However, companies' willingness to experiment and pilot is high and the development in the market is actively monitored.

In terms of charging infrastructure, own terminals are the first-choice locations for charging. Terminal charging is complemented by public charging, as well as the possibility to charge vehicles during loading and unloading at the customer's facilities.

Alternative solutions to charging such as battery-as-a-service, where instead of charging the battery is replaced with a new one, is also attracting interest, even though such an ecosystem does not yet exist.

CURRENT STATUS AND AREA OVERVIEW

There are many potential locations in the region for development of charging infrastructure



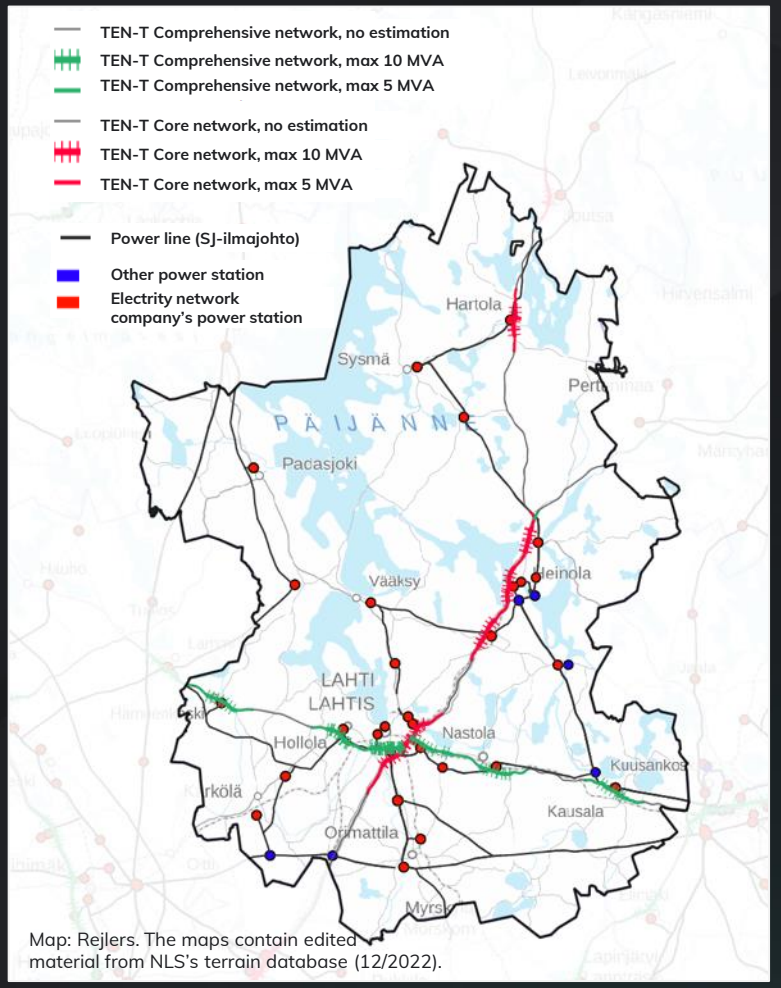
Picture 1: Gas stations, parking areas and other potential parking areas along the main roads.

The existing parking areas provide a good base for the locations of the electric fuel distribution infrastructure. The map in Picture 1 shows the current parking areas in the region.

The suitability of the parking area for heavy-duty vehicles distribution infrastructure is determined by e.g. available services, as well as available space for vehicles.

A heavy-duty vehicle needs higher charging power than light-duty vehicles. Picture 2 shows the locations of the current power stations as well as the outlined areas for the best locations of charging pools on the TEN-T network in relation to the locations of the current power stations.

Electricity networks are constantly being developed, which means that the current situation is not static. When planning the potential locations, it is important to contact the electricity network company responsible for the area.



Picture 2: Based on the location of the power stations, an assessment of the charging field's connectivity to the current electricity network.

FUNDING OPPORTUNITIES

There are funding opportunities for the planning and building charging infrastructure, but receiving grants requires good planning

FUNDING OPPORTUNITIES

Public support is available for the building of charging points, of which the most relevant are the EU's Transport Alternative Fuels Infrastructure Facility (AFIF grant) and the Energy Agency's (Energiavirasto) transport infrastructure funding examined in this project.

EU TRANSPORT ALTERNATIVE FUEL INFRASTRUCTURE FACILITY (AFIF)

- The goal of AFIF is to promote the alternative fuel infrastructure and contribute to the reduction of traffic carbon dioxide emissions in the TEN-T network.
- The funding is provided as unit contributions, i.e. the grant compensates a fixed amount per unit based on unit costs. For charging points with at least 350 kW, the support is €40,000.
- A precondition for receiving the grant is a loan from one of the commission's implementing partner (IP) or another commercial bank: the minimum amount of financing from an IP/commercial bank is 10% of the project's total costs.
- A characteristic feature of AFIF is its suitability for large-scale national or EU-wide projects. The European Commission has urged applicants to submit applications for projects with a total EU funding of at least 1 million euros.
- The duration of the project can be a maximum of 36 months calculated from the application deadline (cut-off date).

ENERGY AUTHORITY'S TRAFFIC INFRASTRUCTURE FUNDING

- In Finland, The Energy Authority (Energiavirasto) can provide funding for charging points. The process is tender-based where most economical projects will receive the funding.
- In the process, each application will be given a calculated comparison number, which will rank the applications. The calculation of the comparison number is influenced by, for example, the location of the charging points on the TEN-T network, the number of charging points, the minimum power of the charging point, the total charging power, and the possibility of payment by card.
- In the case of high-power charging points, the share of the funding can be a maximum of 35 percent of the acceptable costs. The funded property must be put into use within 20 months of the funding decision.
- Although the application process for the funding is lighter than in AFIF and the funding is more suitable for individual projects, the support is not suitable for financing projects in the early development phase. Since the schedule is tight, the project must be well planned even before the application is sent.

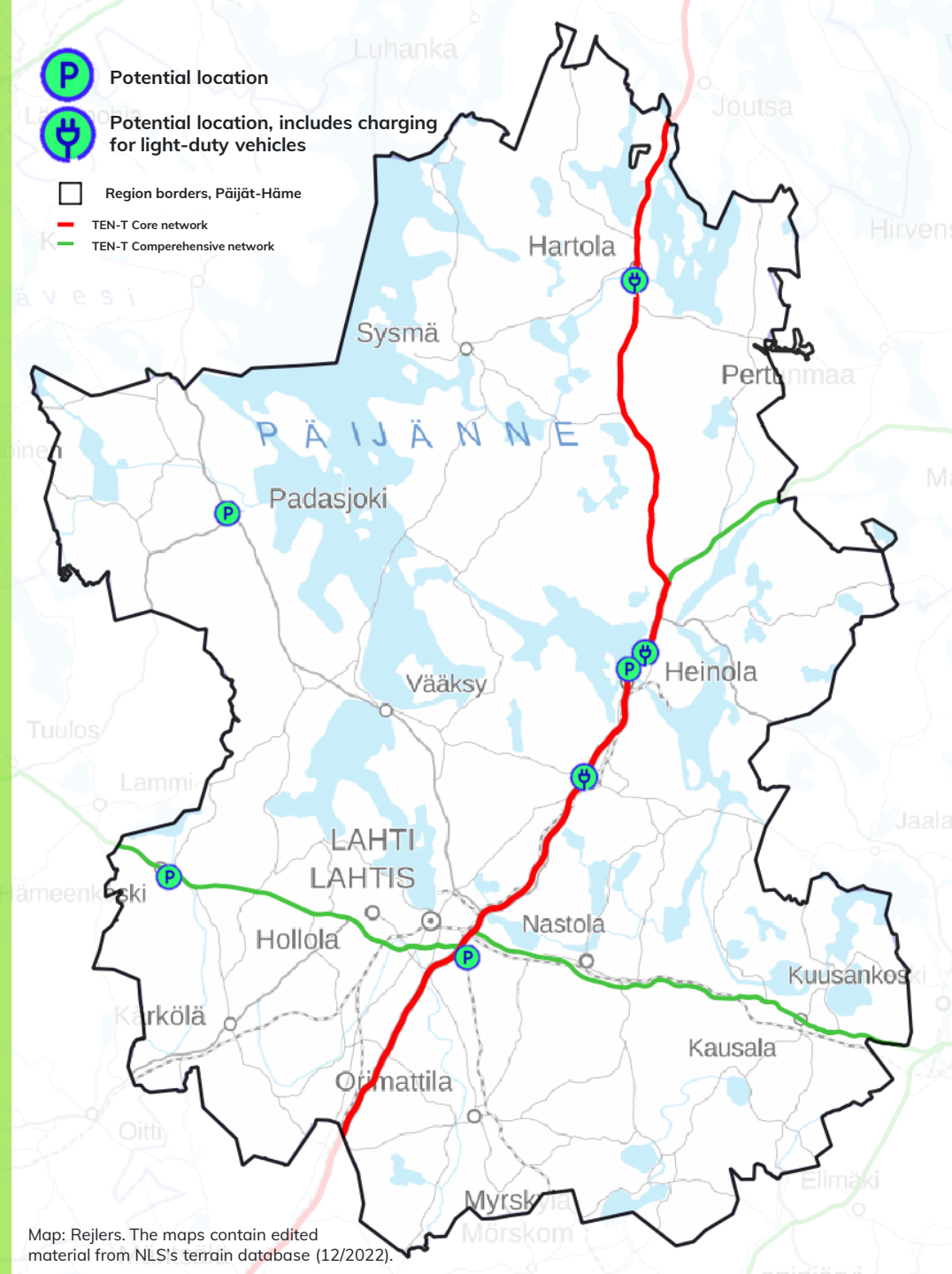
It is possible to apply for both of the above-mentioned fundings, but both cannot be received for the same project.

CHARGING INFRASTRUCTURE DEVELOPMENT

Heavy-duty vehicle charging infrastructure development requires cooperation

+ Based on our analysis, some potential locations for charging infrastructure were identified for more detailed analysis (see map on the right)
+ Going forward with the development should be taken forwards with the following steps

- Bring together private and public sector organizations who should be involved in the development
- Plan further the service concept, capacity and space requirements of the potential changing pool and mirror them with the current status and limitations of the location (e.g. electricity network & city planning)
- Reach a joint decision on next steps
- Make a detailed project plan for taking the development further (e.g. funding applications)



Map: Rejlers. The maps contain edited material from NLS's terrain database (12/2022).

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CONCLUSIONS

Ladec and Lahti GEM can raise the profile of the entire Päijät-Häme region as a promoter of electric heavy-duty transportation

Based on the research work, our recommendation is to make electric heavy-duty transport and logistics a strategic focus-area and to continue the work in four areas

Strengthening the network

+ Bringing potential partners together facilitates the joint development of the charging infrastructure
+ By bringing together the entities that serve the electric transportation industry, it is possible to promote innovativeness and development of new service concepts
+ The electricity network companies wish to get information about the charging infrastructure construction plans for developing the network. Involving these operators in the development early on can speed up the construction projects
+ The legislation will oblige public actors in particular to develop the infrastructure, in which case it is important to involve them in the process

From plans to practice in infrastructure solutions

+ The opportunities identified in the project could be implemented to practice with two different models:

1. As individual projects, in which case development can be more agile, but funding would potentially only remain at the national level
2. Collect ideas into one larger project, in which case it could be possible to also get EU-level AFIF project support, but decision-making could become challenging. In addition to this, competition legislation may cause challenges for development

+ In order to increase credibility, it would be important to find the responsible parties and determine timetables

Increasing electric heavy-duty vehicles in the area

+ Many of the large companies interviewed in this project see Helsinki, Tampere and Turku regions as the primary pilot cities. However, Lahti region's investments in electric transport are not unnoticed
+ It would therefore be important to establish a connection with larger transportation service buyers and providers, focusing on companies that need urban distribution, and to convince them of the attractiveness of Lahti area as a piloting environment
+ The increasing number of pilots also drives the development of the charging infrastructure forward

Increasing visibility also outside of Päijät-Häme

+ Presenting the results of the study to municipalities and regions outside the Päijät-Häme would bring positive visibility to Lahti GEM as the promoter of electric transport
+ Increased visibility would attract new members to the network and encourage other regions to take action and promote the development of charging infrastructure
+ Broader promotion of the charging infrastructure would make an impact to the society

Green Electrification of Mobility Cluster

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