

Milestones H2NODES

Milestone 18

Mobilising and engaging local and regional stakeholders



Milestone 18 Report

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1. Introduction

This Milestone report is about the mobilisation of local actors and fuel cell electric vehicle (FCEV) potential users in Pärnu during the H2NODES implementation phase.

This report focuses on local stakeholder management in order to raise the interest of FCEVs and seek for potential deployment of additional HRSs in Estonia. The stakeholder management for the most part initiated and executed by local H2NODES partners, Parox Energy OU, and partners from Latvia, LLC Trezors. Due to COVID-19 outbreak the stakeholder management was limited from Trezors side as it was not possible to attend events, schedule in-person meetings, or travel to Estonia.

Chapter 2 describes LLC Trezors stakeholder management in the initial project phase, Chapter 3 describes stakeholder management and events from local project partner and beneficiary, Parox Energy OU.

2. Engaging potential stakeholders.

2.1 The regional context of stakeholder management

The Pärnu HRS deployment was intended within the action H2NODES. Historically the former H2NODES beneficiary NT Bene OU was involved in conversations with Pärnu Public transport operator to seek for interest to test FCE-buses. Due to the commitment to deploy CNG-buses, the potential hydrogen demand in Pärnu was not secured and the original plan to deploy the HRS was not fulfilled.

In order to achieve potential hydrogen demand in Estonia, LLC Trezors managed (despite the COVID-19 pandemic) to approach two entities: AS Operail and Tallinn Public transport operator, Tallinna Linnatranspordi, to discuss the potential FCEV deployment.

2.2 AS Operail

Within the Action H2NODES, AS Operail was approached, and the possibilities of hydrogen as alternative fuel was provided along with the plans on HRS expansion on the TEN-T North Sea- Baltic corridor. After further conversations it was set that AS Operail is looking at possible options to replace its diesel-powered locomotives to reduce the GHG emission amounts in rail transportation in Estonia.

AS Operail pointed out that it may be possible to retrofit and even replace the main-line locomotives in routes where the cargo flow is not so significant. The benefit would be to use the newest technologies in order to reduce the emission amounts in railway operations in specific routes whereas the electrification is not economically viable or not possible (i.e. shunting yards).

The idea of hydrogen powered locomotives and information for actors in the field was provided. Hydrogen locomotives could be very suitable for maneuvering work as well as for transport of up to 200km. AS Operail has experience and knowledge, which have also served as a basis for future plans. AS Operail understands how to build a hydrogen locomotive.¹ Therefore the conversations have resulted in interest for AS Operail to retrofit its own locomotives that would open the pathway to create job places and new competences in field of hydrogen and fuel cell technologies.

Within the action H2NODES the concept of movable hydrogen refueling station that would be possible to refuel up to 150kg/H₂ was made and is included in H2NODES Milestone Report 12 “Pärnu HRS upscaling”². This type of hydrogen refueling station would allow users to refuel the hydrogen locomotive once. Due to its size, it would be possible to place the station close to the railway routes or at railway depot. Currently it is unknown whether the locomotive would be refueled with 350bar dispenser or 700bar dispenser, therefore the option of 350bar dispenser was used.

¹ <https://operail.com/en/news/raul-toomsalu-operails-plans-construct-hydrogen-locomotive/>

² Report available at www.h2nodes.eu

Currently AS Operail is already testing an LNG freight locomotive that is built based on the American General Electric C36 locomotive and further processes on hydrogen locomotive are ongoing.

2.3 Tallinna Linnatranspordi

Tallinna Linnatranspordi Aktsiaselts (TLT) is a public transportation company owned by the city of Tallinn (Estonia). The main activity of TLT is providing bus, tram, and trolleybus services, because of a contract with the Tallinn Transport Department. TLT is also an associated partner of action H2NODES.

Within the action H2NODES the TLT transport fleet was evaluated and the potential to deploy FCEVs was assessed³. Additionally, the concept of potential hydrogen production and refueling facility that would be able to secure the FCEVs with necessary hydrogen was developed by Trezors and included in the H2NODES Milestone report 12 “Pärnu HRS upscaling”⁴.

Currently TLT has concluded agreements for CNG-bus delivery and the zero-emission bus fleet is set as long-term goal. FCE-bus wise, for TLT it would be necessary to achieve the hydrogen availability of 3000 H₂/kg/per day to operate the 196 FCE-bus fleet that would be enough to achieve the hydrogen availability in the Region.

It is likely that TLT will apply for a government grant “Green hydrogen for public transport” which was established on June 29, 2021⁵. The grant will support consortia covering the entire value chain (hydrogen production, possible transportation of hydrogen, FCEV purchases) of green hydrogen use in the public transport sector. The grant is the first in Estonia created for supporting the hydrogen economy, it will adhere to standard EU state aid rules and as such the project’s cost for end user will be considerably higher than in the similar projects in the EU.

³ The assesment is available at www.h2nodes.eu Milestone Report 9 Annex I TLT

⁴ Available at www.h2nodes.eu

⁵ <https://www.riigiteataja.ee/akt/102072021012> (in Estonian)

3. Events for stakeholder management

Parox Energy, in cooperation with Atrado OÜ, organized small-scale demonstration projects to demonstrate hydrogen refueling and FCEV capabilities. Due to the short timeframe of project planning it was not possible to involve larger vehicles such as buses or garbage trucks. Although the projects were of small scale, they were first of such kind of in Estonia and generated interest in the hydrogen economy.

Keila

The municipality of Keila is located approximately 25 km south-west of Tallinn, in the proximity of the E67 Via Baltica highway. Recently, the city of Keila has been actively working on creating its hydrogen strategy. The former vice mayor, Timo Suslov, is now a member of the parliament and one of the active members of the hydrogen support group in the parliament. Discussions in Keila have been supported with the know-how by the embassy of the Netherlands in Estonia.

The goal of the demonstration project in Keila involved a small-scale mobile dispenser and two Toyota Mirai small FCE vehicles. Hydrogen was delivered from an industrial supplier. The goal of the project was introduction of hydrogen transport in Estonia, to show that hydrogen is a doable and safe technology that offers a sound alternative to carbon economy.

The demonstration project's goal was two-fold. First and foremost was to increase the visibility of hydrogen. At the start of the demonstration project in Keila there were no official hydrogen-specific legal acts, strategic plans or strategies, in-depth studies, grants available etc. (although several of those were in progress). Therefore, involvement of political decision-makers was crucial, as well as general visibility of hydrogen. The project was introduced at various stages to several members of the parliament and the European parliament as well as to the president of Estonia.

Concurrently representatives of media were informed about the event and as a result several articles were published by the biggest media houses in April regarding the possibilities of hydrogen in transport^{6 7}.

The users of the vehicles were mostly the Keila city council workers but for some period members of the parliament had access to use the vehicles as well. Considering the main goal of the demonstration project, it was not to gather data regarding daily use but more the exposure of various politicians and officials as well as media to the possible capabilities of hydrogen, to show the ease of use of hydrogen and to reduce possible fears about hydrogen use etc.

⁶ <https://tehnika.postimees.ee/7226085/vesiniku-unistustest-on-saanud-paljulukav-tegelikkus> (in Estonian, the biggest daily newspaper)

⁷ <https://novaator.err.ee/1608174679/teadlased-tombavad-eesit-vesinikuenergia-rongile> (in Estonian, Estonian National Broadcasting (ERR))

The span of the project was 1-30 April 2021 with official opening of the demonstration project with invited guests and media on April 7, 2021. In total, 892 kms was covered on FCE vehicles during the demonstration project.



Figure 1 Member of parliament Timo Suslov using the hydrogen refueling equipment in Keila



Figure 2 Member of the European Parliament Riho Terras at the opening of the Keila demonstration project



Figure 3 Ambassador of the Netherlands in Estonia Özlem Canel and ambassador of Estonia in the Netherlands Kaili Terras in Keila at the opening of the demonstration project.



Figure 4 President of Estonia Kersti Kaljulaid (centre) with members of parliament Timo Suslov (right) and Marko Mihkelson (left) during the Keila demonstration project.

Tallinna Linnatranspordi AS (TLT)

Tallinna Linnatranspordi AS requested a private demonstration project because of their interest in FCE vehicles in urban transport. The main aim of the demonstration project was to show capabilities of small-scale hydrogen dispensers as well as the general nature of handling hydrogen – it is not complicated.

As mentioned in the previous paragraph, TLT is considering FCE vehicles as an alternative to its fossil-based transport fleet. The opening of a national grant offers a chance to apply and plan for a pilot project later in 2021. Until this point, however, TLT had no practical experience with hydrogen whatsoever. In February 2021, in cooperation with Parox Energy and a FCE bus producer, a demonstration project was considered very seriously but various reasons it did not become viable. Therefore, TLT was still actively looking for possibilities to learn more about hydrogen transport.

A hydrogen dispenser and containers were installed on a TLT bus depot site in Tallinn on 4-5 May, 2021. During the demonstration project, several TLT officials, including members of the board had an opportunity to learn about and to try out FCE vehicle refueling, they could also use the vehicles in the urban traffic environment.

As the result of the project, the TLT officials gained first-hand experience with hydrogen. As usually is, the users point out that the use of hydrogen is not as complicated as one might expect without knowledge about hydrogen and the safety of hydrogen is not an issue if safety standards and protocols are adhered to. In total 50 km were covered during the demonstration project with both cars combined.

Tartu

A third demonstration project was planned to be held in Tartu in June 2021 concurrently with the first Estonian Hydrogen Days. Several planning activities were implemented during May and June 2021. However, due to reasons independent of Parox Energy, the public phase of the demonstration project was moved to July 2021 moving it out of the scope of the H2Nodes. Still, it should be mentioned that some general goals of the H2Nodes were achieved in Tartu. Hydrogen transport received additional public and media exposure. Also, for the first time in Estonia, hydrogen taxi was available as ride-sharing app provider Bolt added Toyota Mirai to its fleet of available vehicles in Tartu.

4. Lessons learned and Conclusion

1. The COVID-19 outbreak significantly affected the possibility to mobilise the local actors. Due to national level restrictions, it was forbidden to travel and to organise meetings and seminars. A round table discussion with potential vehicle deployers and hydrogen refueling infrastructure stakeholders should be organised to move forward and achieve the zero-emission mobility in Estonia.
2. Interest for hydrogen technology deployment in Estonia is slowly gaining momentum. The fact that the original Pärnu HRS was not deployed impacted the possibility to promote hydrogen technologies.
3. To refuel the locomotives a concept of movable hydrogen refueling station was prepared. The small-scale concept was chosen to allow the operator to seek further for possible HRS deployment site, that would be close to the railwaylines.
4. If the large-fleet operator is dedicated to deploying a FCEV fleet, the hydrogen availability can be achieved rather quickly. For TLT to secure the FCEV fleet with necessary hydrogen it would be necessary to deploy a hydrogen refueling and production station with a capacity of 3000kg/H₂ per day.
5. There is a lot of public interest in hydrogen and its applications in the transportation sector. Several stakeholders are also actively participating in promoting hydrogen. However, the financial constraints currently remain as the stumbling block restricting implementation, especially on the demand side.

