

Hydrogen Logistics – Preparation Project

Public report



Project within FFI Accelerera

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Fordonsstrategisk
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Content

1. Summary	3
2. Sammanfattning på svenska	3
3. Background	4
4. Purpose, research questions and method.....	4
5. Objective	5
6. Results and deliverables	5
7. Dissemination and publications	8
7.1 Dissemination.....	8
7.2 Publications.....	9
8. Conclusions and future research	9
9. Participating parties and contact persons	9

FFI in short

FFI, Strategic Vehicle Research and Innovation, is a joint program between the state and the automotive industry running since 2009. FFI promotes and finances research and innovation to sustainable road transport.

For more information: www.ffisweden.se

1. Summary

Hydrogen as a fuel can facilitate the transition to sustainable transport. The Hydrogen Logistics Preparation Project (HyLo Prep) was conducted from January to November 2025 to prepare for a system demonstration project featuring hydrogen-powered commercial vehicles. If everything proceeds according to plan, the application to FFI Accelerate will be submitted in March 2026.

The vehicles included in HyLo will consist of trucks equipped with fuel cells or internal combustion engines from Scania and Volvo, as well as fuel cell-powered pickups from Toyota.

Through hundreds of meetings, workshops, and interviews, the planned system demonstration project has been structured in terms of participating stakeholders and the most critical issues to address to facilitate a mass market for commercial hydrogen vehicles. Interest has been very high; many actors are impatiently waiting for vehicles to hit the roads, and HyLo Prep has concluded that there is a strong willingness and readiness to collaborate in order to jointly shape an effective solution. Already in HyLo Prep, a couple of the most critical actors were partners, namely the OEMs Scania and Volvo, the hydrogen production actor Statkraft and the leading refuelling station actor Hydri. In the expanded team being involved in the application for the system demonstration, these actors are complemented with users and buyers of vehicles, authorities involved in policy, standards and regulations and more.

Thanks to extensive dialogues between stakeholders with different roles in the innovation system, HyLo Prep has already contributed to an increased understanding of what is required, thereby ensuring that stakeholders are increasingly moving in the same direction.

A key aspect linked to hydrogen is resilience. The Swedish Defence Materiel Administration (FMV), the Swedish Defence Research Agency (FOI), and the Swedish Fortifications Agency (Fortifikationsverket) have signalled a strong interest in participating in the upcoming system demonstration.

The partners in HyLo Prep have applied for and received support for an international collaboration with the world's largest demonstration project for hydrogen-powered vehicles, ARCHES in California. This project started in November and will continue through the summer of 2026. Currently, ARCHES is in a standby phase due to the withdrawal of federal funding.

2. Sammanfattning på svenska

Vätgas som drivmedel kan underlätta övergången till hållbara transporter. Hydrogen Logistics Preparation Project (HyLo Prep) genomfördes under januari till november 2025

för att förbereda för ett slagkraftigt systemdemonstrationsprojekt med vätgasdrivna kommersiella fordon. Ansökan till FFI Accelerera lämnas in i mars 2026, om allt går enligt plan.

De fordon som kommer att inkluderas i HyLo är lastbilar med bränsleceller eller förbränningsmotorer från Scania och Volvo samt bränslecellsdrivna pickups från Toyota.

Genom hundratalet möten, workshops och intervjuer har det planerade systemdemonstrationsprojektet byggts upp i termer av vilka aktörer som ska ingå och vilka frågor som är de viktigaste att arbeta med för att underlätta en massmarknad för kommersiella vätgasfordon. Intresset har varit mycket stort, många aktörer väntar otåligt på att fordon ska komma ut på vägarna, och HyLo Prep har kunnat konstatera att det finns en stor vilja och beredskap att samarbeta för att gemensamt forma en bra lösning.

Tack vare de omfattande dialogerna mellan aktörer med olika roll i innovationssystemet har HyLo Prep redan i detta skede bidragit till ökad förståelse för vad som behövs och därmed gjort att aktörerna i ökad utsträckning drar åt samma håll.

En viktig aspekt kopplad till vätgasen är resiliens. FMV, FoI och Fortverket har signalerat ett stort intresse av att vara med i den kommande systemdemonstrationen.

Partnerna i HyLo Prep har sökt och erhållit stöd, projektet Senith, för ett internationellt samarbete med världens största demonstrationsprojekt med vätgasdrivna fordon, ARCHES i Kalifornien. Projektet startade i november och pågår till och med sommaren 2026. I nuläget är ARCHES i ett vänteläge eftersom federala medel har dragits in.

3. Background

Hydrogen vehicles have a potential to complement battery-electric and other zero or low emission vehicles. Many OEMs including Scania and Volvo invest in the development and use of such vehicles. Sweden is rapidly becoming a promising place for the introduction of hydrogen-fuelled vehicles, as modern hydrogen refuelling stations are being established, offering a good coverage of many parts of the country. These refuelling stations are designed to manage both trucks and smaller vehicles. However, operational experience regarding hydrogen-powered heavy-duty vehicles remains limited.

4. Purpose, research questions and method

The purpose of HyLo Prep was to prepare for a system demonstration project (HyLo = Hydrogen Logistics) involving all relevant actors along the hydrogen value chain, from hydrogen production, via distribution, refuelling, vehicles, vehicle users and the end consumers. To achieve this, a small group of core actors applied for co-funding from FFI

Accelerate: Hydri, Scania, Statkraft Hydrogen Sweden AB, AB Volvo and Lindholmen Science Park (LSP, coordinator of the project).

The project started in January 2025 with the ambition to apply in the October 2025 call.

In the end of August, it was decided to change the date for the submission of the application to March 2026. One reason was that one of the HyLo Prep partners, Statkraft Hydrogen Sweden AB, faced a close-down of all hydrogen-related activities, a decision taken by the mother company in Norway. This impacted on its possibilities to contribute with hydrogen production. A process to sell its main hydrogen production plant in Sweden started and now, in December 2025, the successor has been selected but still some details remain to be solved before it can be communicated publicly. It is very likely that this successor will become a partner in the HyLo project.

Methods. LSP contacted and carried out meetings with a wide range of actors being relevant to the system demonstration project. The OEMs were responsible for the involvement of vehicle users. In addition, several workshops were organised. A list of meetings is provided below.

5. Objective

The objective as stated in the application was to make it possible for a system demonstration project with heavy hydrogen-fuelled vehicles to start in the beginning of 2026. This objective has been slightly modified. As explained above, the planned start is now August 2026. The scope has been expanded to include other commercial vehicles as well.

6. Results and deliverables

At the time of writing this final report (end of December 2025), we are still working with the preparations of the application to FFI Accelerate. Given the deadline in March 2026, several details are not possible to finalise until later. For example, the OEMs have not yet been able to communicate the logistic actors which will use the vehicles. These end-user actors constitute an essential part of the project, and it is not possible to define the scope of the project until they have provided input. Moreover, the number of vehicles to include in the demonstration project is not yet defined, which has a strong impact on the budget. Therefore, this final report does not include many details about the HyLo project.

We were allowed to extend the project until the end of November 2025. Since then and until the submission of the application in March, the project group works without FFI funding.

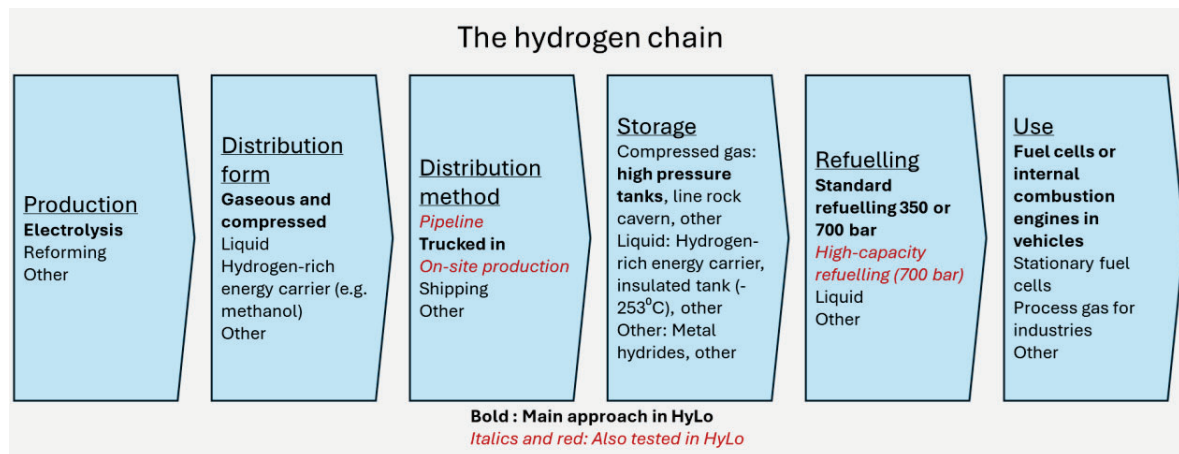


Figure 1: Selection of technologies to include in HyLo

One advantage with hydrogen is that it can be produced, distributed, stored and used in many forms. In Figure 1, some of the technologies in the hydrogen value chain are listed. The selection of technologies to be used in HyLo is indicated in **bold** and some additional approaches that also would be good to test are in *italics*.

HyLo will encompass hydrogen trucks from Scania and Volvo and pickup trucks from Toyota. Both fuel cell and internal combustion engine propulsion systems will be used.

The preparation project included the following main activities:

- More than 25 project meetings starting in January 2025 and continuing until March 2026 at least every second week with all partners in the preparation project. Two were physical lunch-to-lunch meetings, the other digital, typically lasting one hour each.
- More than 60 bilateral meetings with existing and tentative partners in the main project to discuss their participation.
- 1 full day workshop in May open for all potential partners to join. Invitations were distributed broadly using the networks of the HyLo Prep partners. 60 persons participated on site and another 10 persons joined on-line during the morning session. During the lunch, the participants inspected the Volvo fuel cell truck and talked to its driver (picture on cover page).
- 1 steering group meeting. The steering group decided to meet on demand only. One question, the change of the submission date for the application, has since then been discussed with the steering group.
- 1 in person meeting in Gothenburg in September with a high-level group coming from Toyota (Japan, Belgium and Sweden) to discuss potential demonstrations of fuel cell vehicles from Toyota in Sweden. The OEMs in Sweden shared their hydrogen activities and the planned system demonstration was outlined.
- 1 in person meeting in Brussels at Toyota's office in September to further anchor Toyota's participation in the planned system demonstration project.
- 1 on-line one-hour meeting with all potential partners in September to provide an updated timetable and present and discuss the planned actions within the preparation project.

- 3 on-line 2-hour workshops in November with 20 – 25 persons participating in each workshop, representing almost all partners to be involved in the system demonstration project. These workshops were carried out to detail and get buy-in of the content in horizontal work packages. One horizontal work package was addressed per workshop.
- 2 on-line meetings in December with an extended group of experts from the OEMs and hydrogen refuelling station operators to agree on an approach with dashboards, displaying key data from the system demonstration project.
- 44 interviews during November and December 2025 with almost all possible stakeholders in a hydrogen vehicle system demonstration project to get their views on important aspects to consider. The interviews were carried out within a separate project by a PhD student at Chalmers University of Technology, see below.

With regards to international collaboration, an application for co-funding was submitted to Future Mobility, an initiative to foster innovation collaboration between Sweden and the United States sponsored by Vinnova. The application was granted and the project with the acronym SENITH started in November 2025. TechforH2 at Chalmers University of Technology leads it with UC Davis in California as the main academic partner. The HyLo Prep partners as well as some of the partners from the Californian hydrogen hub ARCHES (currently being reorganized) also participate. SENITH's objective is to foster multi-level collaboration between individuals, academic institutions and the two planned hydrogen vehicle demonstration projects. It focuses on the market introduction of hydrogen trucks, refuelling infrastructure aspects and policy development.

Below in Table 1, actors who have responded positively to being a part of the HyLo project and who have participated in workshops and bilateral meetings are listed. Please note that we have been in contact with other actors, which are more tentative. Moreover, as explained above, the column with logistics actors is yet to be completed, as soon as the OEM's can share this information.

Table 1: Tentative partners in HyLo

OEMs	Logistic actors	Refuelling station owners/developers/operators	Hydrogen producers and distributors	Equipment	Academia, institutes and science parks	Agencies and other organizations
Scania	Maserfrakt + TRB	Hydri	Statkraft Hydrogen successor	Hymeth?	Lund U	Swedish Energy Agency
Volvo Group		PS Energi	Lhyfe	Nitiu?	KTH	Swedish Transport Administration
Toyota		Econ (+OKQ8?)	Scandinavian Horizon	Consat?	Chalmers	Swedish Transport Agency
			Strandmöllen		LSP	FMV/FOI/ForTV
						Swedish Gas Association
						Swedish Confederation of Transport Enterprises

All the activities mentioned above have led to the following results:

- A strong consortium of actors being willing to collaborate within the HyLo system demonstration project, see Table 1
- A clear idea of what questions to address within the project and associated activities to carry out
- A substantial exchange of knowledge and information between actors in the hydrogen ecosystem
- A good level of trust between actors.

The budget in cash and in kind was not sufficient to bring HyLo Prep to the planned result with a complete application submitted to FFI Accelerate. Fortunately, all partners in HyLo Prep are prepared to invest additional resources to bring the project to its goals. It should also be noted that potential actors in HyLo, whereof some are listed in Table 1, have also invested considerable resources.

One reason behind the need for additional resources, apart from the extended time frame associated with the later submission of the final application, was that all partners were willing to bring the preparations to an unexpectedly high level of quality. This will in turn make the start of the HyLo project much easier, once it gets granted.

7. Dissemination and publications

7.1 Dissemination

How are the project results planned to be used and disseminated?	Mark with X	Comment
Increase knowledge in the field	X	
Be passed on to other advanced technological development projects	X	
Be passed on to product development projects	X	
Introduced on the market	X	
Used in investigations / regulatory / licensing / political decisions	X	

The main purpose of HyLo Prep is to establish a system demonstration project that will serve as an effective tool to bring commercial hydrogen vehicles to the market. At the same time, there will be feedback loops to almost all TRL levels from academic research to national and international policy.

In the state-of-the-art report in appendix, a description of how HyLo relates to other projects is given.

7.2 Publications

One state-of-the-art report has been authored within HyLo Prep, see appendix.

HyLo Prep presents at Transportforum in January 2026. The presentation has the title “Är Sverige moget för en systemdemonstration med kommersiella vätgasfordon?”

8. Conclusions and future research

The project has confirmed that there is a strong commitment to hydrogen for transport applications. Sweden is uniquely positioned with a good network of modern hydrogen refuelling stations capable of handling heavy vehicles. Having two leading OEMs making hydrogen trucks in the country is another important advantage.

It is not yet clear how large share of the market hydrogen-fuelled vehicles will have. HyLo appears to be a very timely project to connect all parts of the hydrogen value chain and contribute with insights and actions eliminating remaining barriers.

Future research and innovation will hopefully take place within the system demonstration project. There is clearly a need for solutions within all FFI system perspectives.

9. Participating parties and contact persons

The core team of HyLo Prep was Hydri, Lindholmen Science Park, Scania, Statkraft Hydrogen Sweden AB and AB Volvo. For questions, please contact:

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In Table 1, other organisations having invested considerable efforts in HyLo Prep are listed.