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# Outline of Stakeholders

Pilots in Skåne , Leine-Weser, Drenthe.

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## Stakeholder overview in Skåne

\*Participants of the dialogue meeting and stakeholders contacted individually

### Höganäs AB\*

Höganäs AB has a 33% share of world metal powder production. Hydrogen is used in production processes and produced on site by methane reforming. Company has a climate goal of zero emissions in 2030. Climatic ambitions are driving company to seek solutions to natural gas and considerations of switching to biogas or to electrolyses, neither of which is within the reach in the closest future. All locally produced biogas is currently heavily prebook by transportation companies and switching to electrolyses is limited by the limitations in electricity grid capacity.

### Sjöbohem AB and their solution Hydrobust

A municipality owned real estate and housing company has invested in self-sufficient small scale energy system with hydrogen in focus. Investment in solar cell and wind turbine made it possible to decouple from the widely known problem of the grid capacity and invest in hydrogen production.

### Trelleborgs Energi

A municipality owned energy company has ambitions to drive development towards hydrogen production on a level of initially 50-200 MW what corresponds to ca 5000- 20 000 tons H<sub>2</sub> /year. Production is coupled to investment in own off shore wind production. Use of hydrogen was planned to be coupled to ammonia production and connection to the planned pipelines connection to the northwest hydrogen cluster. A recent feasibility study points to H<sub>2</sub> of 500-1000 MW would be interesting. There is however no decision made in which scale the development will take.

### Öresundskraft\*

A multi-municipality owned utility company with focus on heat and power production. It has an ambition to invest in production of hydrogen for industrial customers and specifically to produce e-fuels. Production of hydrogen for transportation is deemed to be connected to larger investment in infrastructure (compressors, distribution) and therefore not prioritised. The company has an ambition to invest in ca 800 MW plant in Helsingborg. As the company is actively producing heat through combustion, CCU is deemed to be very interesting on the heat production site, coupled to production of green methane.

Links to relevant background information (website/documents, etc.)

### Kraftringen\*

A multi-municipality owned utility company. Interested in investing in robust local systems. One example will be an investment in small scale solar and wind production coupled to hydrogen. In such smaller scale project where hydrogen is going to be produced via electrolyses and heat used in a low temperature heating net used for heating of houses.

### Uniper\*

Energy and utility company that is generally driving couple of projects connected to hydrogen, all of them located in northern Sweden. Company has however ambitions to invest in hydrogen in Skåne, however there are for the moment limited by the current low capacity of electricity grid and/or lack of local energy production.

### Lhyfe\*

A private company with ambitions to establish a hydrogen production facility in Trelleborg. The company has got state funding in the summer of 2024 for a production facility. The company is currently in the process of obtaining

production permit. The company is aiming for a 10 MW production facility, which corresponds to 4.4 tons of H<sub>2</sub> per day, or approximately 1,253 tons per year. As there is an ongoing issue with grid capacity in general and even topped with insufficient local energy production, the project is coupled to the ones of Trelleborg energy and aims to source electricity from local wind turbines, which are expected to produce 15 GWh annually. Produced hydrogen will be partially used to supply local hydrogen refuelling station, among others.

### Trelleborg Energi

A municipality owned energy company has ambitions to drive development towards hydrogen production on a level of initially 50-200 MW what corresponds to ca 5000- 20 000 tons H<sub>2</sub> /year. Production is coupled to investment in own off shore wind production. Use of hydrogen was planned to be coupled to ammonia production and connection to the planned pipelines connection to the northwest hydrogen cluster. A recent feasibility study points to H<sub>2</sub> of 500-1000 MW would be interesting. There is however no decision made in which scale the development will take. Energy company is also deeply involved in further developments in the municipality.

### Municipality of Trelleborg

Municipality has developed a plan for city development where hydrogen plays a vital role. There are several ongoing development projects in different quarters of city, where solar energy will be used in small scale hydrogen production and the heat generated will be used in a local district heating system. The Port of Trelleborg is also a vital part of plan. Municipality is even a vital player in building professional competencies- running own education program for future hydrogen technicians.

### Sjöbohem AB and their solution Hydrobust

A municipality owned property company has invested in self-sufficient small scale energy system with hydrogen in focus. Investment includes solar cells and wind turbine to produce electricity, excess is converted into hydrogen.

The solution has made it possible to decouple from the widely known problem of the grid capacity and invest in hydrogen production.

### Municipality of Ängelholm

A municipal property company, Ängelholmshem, is interested in developing a small scale energy solution. About a year and a half ago, Ängelholmshem got in touch with suppliers and arranged study visits, but safety concerns have halted the development, and it is still on hold. One of the activities will be to explore the possibilities, particularly for housing companies that could use hydrogen to produce heat. Getting over the safety issues will be very important to make project running.

Also, there is an ongoing work on climate and energy plan for the whole of municipality in place, and hydrogen will be addressed in some way within it. The municipal fleet, about 40% of which is already fossil-free, is considering the potential to use hydrogen in some of the vehicles.

### Municipality of Hässleholm

A municipality owned waste water management company is deeply interested in hydrogen solutions. The hydrogen project however has not yet received any official decision from municipality to move forward; it is a bottom-up initiative. The development project will be carried out in four phases between 2018 and 2030, with the goal of producing renewable energy and hydrogen on-site. The project includes 300 kW of solar panels at the facility, solar panels floating on water reservoirs, and battery storage at the facility. The goal is to use energy to produce clean water. The facility aims at 1.2 gigabytes of annual production. Large machinery and trucks will run on electricity; the only question is how this will be designed during 2026. Electricity from solar panels should be used for water treatment, replacing the machines currently in use. Heating will also be utilized. Currently the facility does not

acquire additional capacity as it is not available in the grid, so the project is a partially a answer to the constrained market situation.

Investment costs: 3-5 million SEK for solar panels, with an additional 8-10 million SEK for further solar panel installation. Since EON cannot supply more electricity, this is very urgent. In the future, trucks will run on hydrogen, electricity, or HVO (hydrotreated vegetable oil).

What needs does the project manager see? Networking, study visits, knowledge exchange, and sharing expertise.

### ECSAB Group

A private consulting company created by a consortium of stakeholders with the overall focus on energy systems in buildings, where core lays in making the possibility in using excess electric energy to produce hydrogen, where even and IT solutions are important for secure operations. Solutions proposed by company are tailor-made and all energy streams play together for innovative, reliable and resilient energy solutions.

### Kemira AB

Kemira AB is a chemical company that produces and then uses hydrogen in own industrial processes for production of hydrogen peroxide.

### Stakeholder overview in Skåne

\*Participants of the dialogue meeting and stakeholders contacted individually

Höganäs AB*	Major producer of metal powder production with a 33% share of world metal powder production.
Sjöbohem AB Hydrobust	A municipality owned real estate and housing company has invested in self-sufficient small scale energy system with hydrogen in focus
Trelleborgs Energi	A municipality owned energy company has ambitions to drive development towards hydrogen production on a level of initially 50-200 MW what corresponds to ca 5000- 20 000 tons H2 /year.
Öresundskraft*	A multi-municipality owned utility company with focus on heat and power production. It has an ambition to invest in production of hydrogen for industrial customers and specifically to produce e-fuels.
Kraftringen*	A multi-municipality owned utility company. Interested in investing in robust local systems. One example will be an investment in small scale solar and wind production coupled to hydrogen.
Uniper*	Energy and utility company that is generally driving couple of projects connected to hydrogen, all of them located in northern Sweden.
Lhyfe*	A private company establishing a hydrogen production facility in Trelleborg. The company is currently in the process of obtaining production permit; it is aiming for a 10 MW production facility.

Municipality of Trelleborg	Municipality has developed a plan for city development where hydrogen plays a vital role I several districts: solar energy will be used in small scale hydrogen production and the heat generated will be used in a local district heating system.
Municipality of Ängelholm	A municipal real estate and housing company, Ängelholmhem, is interested in developing a small scale energy solution for housing .
Municipality of Hässleholm	A municipality owned waste water management company is deeply interested in hydrogen solutions.
ECSAB Group	A private consulting company created by a consortium of stakeholders with the overall focus on energy systems in buildings
Kemira AB	Kemira AB is a chemical company that produces and then uses hydrogen in own industrial processes for production of hydrogen peroxide

## Stakeholder overview in Leine-Weser

### List of involved Stakeholders in Leine-Weser

#### Hannover Meeting 28. – 29.02.2024

- (1) Aspens GmbH
- (2) Enginius GmbH (FAUN Group)
- (3) Gemeinde Emmerthal
- (4) H2-Allianz Südniedersachsen
- (5) H2-Region Schaumburg
- (6) HannoverImpuls
- (7) Hochschule Weserbergland
- (8) Industrie- und Handelskammer Hannover
- (9) Ingenion GmbH
- (10) INYO Mobility GmbH
- (11) Klimaschutzagentur Mittelweser
- (12) Landkreis Hameln-Pyrmont
- (13) Landkreis Diepholz
- (14) Landkreis Nienburg
- (15) Niedersächsisches Ministerium für Wirtschaft, Verkehr, Bauen und Digitalisierung
- (16) Niedersächsisches Wasserstoffnetzwerk
- (17) Samtgemeinde Leinebergland
- (18) Stadt Nienburg/ Weser
- (19) Stadt Rehburg Loccum
- (20) Stadtwerke Nienburg
- (21) VAWT Engineering

#### Malmö Meeting 17. – 18.04.2024

- (1) INYO Mobility GmbH
- (2) Niedersächsisches Ministerium für Wirtschaft, Verkehr, Bauen und Digitalisierung

#### Hannover Conference “Climate X – The change is now” 01.10.2024

- (1) Stadt Hemmingen
- (2) Aconium GmbH
- (3) Agentur für Arbeit Hildesheim
- (4) ARSU GmbH
- (5) Samtgemeinde Leinebergland
- (6) Niedersächsische Investitionsbank (NBank)
- (7) Bundesagentur für Arbeit
- (8) Gemeinde Diekhöfen
- (9) Gemeinde Emmerthal
- (10) Dieter Meyer Consulting GmbH
- (11) Energieagentur Schaumburg
- (12) Niedersachsen.next GmbH
- (13) Flecken Coppenbrügge

- (14) Gemeinde Algermissen
- (15) Geoinformation und Landesvermessung Niedersachsen (LGLN)
- (16) Handwerkskammer Hannover
- (17) Industrie- und Handelskammer Hannover
- (18) Institut für ökonomische Bildung
- (19) Interessen im Fluss
- (20) Janus Consultants e.V.
- (21) LEADER-Region Westliches Weserbergland
- (22) Landkreis Hameln-Pyrmont
- (23) Landkreis Holzminden
- (24) LEADER-Regionalmanagement Stadt Hessisch-Oldendorf
- (25) Metropolregion Hannover Braunschweig Göttingen Wolfsburg GmbH
- (26) Klimaschutzagentur Region Hannover GmbH
- (27) LIAG-Institut für Angewandte Geophysik
- (28) mensch und region GbR
- (29) Niedersächsisches Ministerium für Umwelt, Klimaschutz und Energie
- (30) Niedersächsischer Städte- und Gemeindebund - Projektmanufaktur
- (31) Nefino GmbH
- (32) Niedersächsische Landgesellschaft mbH
- (33) Northern Institute of thinking
- (34) Landkreis Schaumburg
- (35) Hochschule Weserbergland
- (36) Hochschule für Angewandte Wissenschaft und Kunst HAWK
- (37) Region Hannover
- (38) Deutscher Gewerkschaftsbund
- (39) Bertelsmann Stiftung
- (40) Stadt Rinteln
- (41) Landesamt für Bergbau, Energie und Geologie (LBEG)
- (42) Caritasverband Diözese Hildesheim
- (43) Samtgemeinde Eschershausen-Stadtoldendorf
- (44) Samtgemeinde Rodenberg
- (45) Stadt Alfeld
- (46) Stadt Gehrden
- (47) Stadt Laatzen
- (48) Stadt Pattensen
- (49) Stadt Sarstedt
- (50) Stadt Springe
- (51) Stadt Wunstorf
- (52) SüdniedersachsenStiftung
- (53) Sweco GmbH
- (54) Unternehmerverbände Niedersachsen UVN
- (55) Volt Niedersachsen
- (56) Wirtschaftsförderung Stadt Seelze
- (57) Wirtschaftsförderung Stadt Holzminden
- (58) Wirtschaftsförderung Stadthagen
- (59) Zukunfts(T)raum Holzminden
- (60) Landkreis Verden
- (61) Zukunftsregion WBL+
- (62) Klimaschutzagentur Mittelweser
- (63) Universität Hildesheim

(64) Stadt Langenhagen

### **Assen Meeting 21. – 23.10.2024**

- (1) Gemeinde Emmerthal
- (2) Hochschule Hannover
- (3) Hochschule Weserbergland



## Stakeholder overview of Drenthe

Exploring the option of Hydrogen for the Nedersaksen line.

The research into the application of hydrogen for the Nedersaksen line is important in order not to just transform the mobility infrastructure but also to stimulate positive advancements in the regional hydrogen economy. There are various parties and stakeholders that play a role in the implementation of hydrogen in the Northeast of the Netherlands (Groningen, Drenthe, and Overijssel). This stakeholder analysis aims to provide an in-depth insight into the various actors/parties involved in the implementation of hydrogen technology into the 'Nedersaksenlijn' and its surrounding area.

Through a comprehension of the project's dynamics, we aim to identify the interests, influences, expectations, and interrelationships of key stakeholders. The information can be used to develop strategies to optimize collaboration and address potential challenges effectively. In conclusion, this analysis will enhance our understanding of the potential of hydrogen within the 'Nedersaksenlijn' as part of project EHRIN.

## Overview stakeholders

- Provinces of Groningen, Drenthe, and Overijssel
- ProRail: Oversees the railway network in the Netherlands, acting as the railway manager and is, therefore, responsible for the construction, maintenance, management, and safety of the railway (ProRail, 2024b).
- Arriva: Functions as the provider of passenger transport on regional railway lines in the Netherlands, including the 'Nedersaksenlijn', which integrates into the regional railway network in the Northern Netherlands (Arriva, 2024).
- The Ministry of Infrastructure and Water Management: Focuses on a well-organized, clean, and safe environment. Its focus extends to developing connections across road, rail, water, and air (Ministry of Infrastructure and Water Management, 2024).
- NAM (Nederlandse Aardolie Maatschappij – Dutch Oil Company): Explores the utilization of existing gas infrastructure for future sustainable solutions, considering pipelines and locations. Additionally, it explores possibilities regarding blue hydrogen for a rapid transition to hydrogen (NAM, 2024).
- Hynetwork Services: A 100% subsidiary of N.V. Nederlandse Gasunie. It aims to develop and manage a large-scale hydrogen infrastructure in the short term. Existing gas transport networks are repurposed, and new pipelines are installed where the current network proves unsuitable. The primary focus is on establishing the hydrogen network in Drenthe and Overijssel (Hynetwork Services, 2024).
- The Ministry of Economic Affairs and Climate: Responsible for coordinating decisions and permits related to hydrogen, aiming to achieve a climate-neutral society while providing clean, reliable, and affordable energy (Ministry of Economic Affairs and Climate, 2024).
- Alstom: An international company dedicated to sustainability in the transportation sector, specializing in the production of hydrogen trains that contribute to the sustainable development of mobility in Europe (Alstom, 2024). In 2020, Groningen conducted test runs with this type of hydrogen train (ProRail, 2024a). Ultimately, in November 2022, the province initiated a procurement process for four additional hydrogen trains (Province of Groningen, 2022).
- Engie: An energy supplier actively participating in the green hydrogen chain in the Northern Netherlands (HydroNetherlands). Engie is involved in hydrogen production and has expertise in hydrogen refueling stations, playing a role in the introduction of the first hydrogen train in the Netherlands (Engie, 2024).

- Municipality of Emmen: Emmen holds a strategic position in the 'Nedersaksenlijn' given its significant industry, including the gas purification plant (GZI Emmen). The 'GZI Next' project aims to explore sustainable activities for this location, potentially including hydrogen production and a hydrogen filling station (GZI Next, 2024).
- Interreg: A European financing instrument with a focus on pioneering and environmentally friendly solutions for regional challenges in Europe (Interreg, 2024).
- Oost NL: The regional development agency (ROM) in Overijssel. The ROM strengthens the regional economy by innovating in sustainability, investing in fast-growing businesses, and attracting and retaining foreign companies in the region (Oost NL, 2024).
- NOM: The regional development agency for Groningen, Drenthe, and Friesland. It strengthens the regional economy by innovating in sustainability, investing in fast-growing businesses, and attracting and retaining foreign companies in the region (NOM, 2024).
- New Energy Coalition (NEC): A network of knowledge institutions and businesses collaborating to accelerate the energy transition for a sustainable future. While its primary focus is on Groningen, Drenthe, and Friesland, the network also engages in (inter)national partnerships with regions and countries (New Energy Coalition, 2024).
- Holthausen Clean Technology: A company located in Hoogeveen, primarily dedicated to converting vehicles into hydrogen vehicles. This entity has extensive knowledge of the use of hydrogen in mobility and is additionally responsible for hydrogen refueling stations (Holthausen Energy Points, 2024).
- Residents of Groningen, Drenthe, and Overijssel.
- Environmental Organizations

In conducting the analysis, it is initially crucial to differentiate between primary and secondary stakeholders. Primary stakeholders, being the key contributors, also align most closely with the project's interests. Their influence is often important and plays a significant role in the project's success. On the other hand, secondary stakeholders are relatively further removed from the project but share common interests. Importantly, it does not imply that the influence of these stakeholders is less compared to the primary stakeholders. The secondary stakeholders are not actively engaged in the day-to-day execution or decision-making of the project (Currie, Seaton & Wesley, 2009).

Below, the primary stakeholders are listed, considering their interests and influence (power) on the project.

## Primary Stakeholders

### Province of Groningen, Drenthe, and Overijssel

The development of the 'Nedersaksenlijn' and the determination of the type of train that will be operational are initiatives led by the Provinces of Groningen, Drenthe, and Overijssel (Province of Groningen, Drenthe & Overijssel, 2024). The interests of these stakeholders primarily revolve around regional mobility improvement, sustainability, and positive economic developments in the region. The provinces influence local infrastructure and actively participate in decisions related to mobility.

### ProRail

This stakeholder is responsible for the construction of the railway track and implementing necessary adjustments (ProRail, 2024). The primary interest lies in efficient railway management. When introducing hydrogen, considerations must be made for a heavier vehicle than usual (adjustment of the soil), potentially involving detours to refueling stations. ProRail's task is to ensure and manage safety, therefore, the influence of ProRail is crucial in decisions related to the railway infrastructure.

### Arriva

In its role as the service provider, Arriva holds responsibility for operating a train on this regional railway line. Arriva has a direct interest in the successful implementation of a hydrogen train, aligning with its commitment to promoting sustainability and green passenger transport. Furthermore, it can enhance its reputation as a sustainable transportation company. The influence of Arriva is moderate and depends on the policy decisions made by the provinces and ProRail. This influence is exercised through discussions and collaborations.

### Ministry of Infrastructure and Water Management

As a department within the Dutch government, the Ministry of Infrastructure and Water Management plays a significant role in national mobility policy and infrastructure. Sustainability is an important consideration in its interests. This department holds influence over the policymaking of national infrastructure projects.

### Ministry of Economic Affairs and Climate

The department, specifically orientated toward achieving a climate-neutral society with a strong an open economy concentrated on coordinating economic policies in connection with sustainability. Concerning the potential of a hydrogen train on this railway, this stakeholder holds a policy influence. Additionally, it manages permits that have implications for the implementation of a hydrogen train.

### NAM (Nederlandse Aardolie Maatschappij – Dutch Oil Company)

This national institution has historically supplied energy to society and industry, primarily through natural gas. Since the cessation of natural gas, the focus has shifted, and the current emphasis for the NAM is on the implementation of hydrogen as an alternative energy source (NAM, 2024). The interest of the NAM revolves around ensuring safe and efficient storage and transport of hydrogen. In a project like the 'Nedersaksenlijn', where the potential of hydrogen is explored, the influence of the NAM primarily lies in its involvement in hydrogen logistics and infrastructure.

### Hynetwork Services

A subsidiary of Gasunie responsible for establishing a hydrogen network in the Netherlands, Hynetwork Services' main interest lies in the development of hydrogen infrastructure and its impact on the regional economy. The focus includes considering the possibility of fostering more hydrogen related businesses in various locations across the Netherlands. In this project, the stakeholder's influence primarily lies in its role of constructing the hydrogen network in the Northern Netherlands, with the identification of favorable locations for potential hydrogen refueling station and storage places.

### Alstom

As an international company in the sustainable transportation sector, Alstom concentrates on the development and sale of hydrogen trains in Europe. It is also engaged in technological advancements related to heavy hydrogen vehicles. The influence of Alstom relies in this context on its ability to serve as a supplier of hydrogen trains on this railway. Consequently, the company can actively participate in the project implementation of a hydrogen train between Groningen and Enschede.

### Engie

An energy company engaged in the production and distribution of electricity and natural gas, as well as providing services to the energy sector, Engie is currently part of the green hydrogen chain in North Netherlands (HydroNetherlands). Engie is responsible for supplying green hydrogen and installing refueling facilities to promote sustainability. This stakeholder positively influences the project as a hydrogen supplier. Furthermore, Engie possesses knowledge of implementing hydrogen in trains and hydrogen refueling stations, contributing to the overall hydrogen infrastructure in the Netherlands.

### Municipality of Emmen

Emmen has a strategic position due to its geographical location and the presence of a significant industry, including the gas purification plant (GZI Emmen). With the reduction in natural gas usage, the focus has shifted towards sustainable energy. The GZI Next project will investigate sustainable initiatives at this site, including hydrogen production and distribution (Gasunie, 2024). Exploring this industry/location is crucial for realizing hydrogen in the 'Nedersaksenlijn'. Emmen's interest in the GZI Next project primarily revolves around enhancing the sustainability of the city and the region. The municipality's influence on the 'Nedersaksenlijn' project primarily stems from its role in local governance and regional developments.

### Interreg

This European financing entity will contribute to the possibilities of hydrogen in the 'Nedersaksenlijn'. It is crucial to evaluate the funding level that Interreg can offer for this project. The significance and influence of this stakeholder are both considerable.

### New Energy Coalition (NEC)

This network comprising knowledge institutions and businesses accelerates the pace of the energy transition. With multiple knowledge institutions and businesses involved, this stakeholder holds a crucial position, bringing expertise to the energy transition. The primary interest of this party is the energy transitions towards a sustainable future, and its knowledge significantly impacts the research into the potential of hydrogen in the 'Nedersaksenlijn' and its surroundings.

### Holthausen Clean Technology

This family-owned business located in Hoogezand plays an important role in the hydrogen environment in the Northern Netherlands. The company is involved in converting existing fossil fuel vehicles into hydrogen vehicles and oversees hydrogen refueling stations in the region, known as 'Holthausen Energy Points' (Holthausen Energy Points, 2024). This stakeholder aims to be responsible for sustainable refueling stations in the region's future, offering opportunities for a potential refueling station for hydrogen trains in the 'Nedersaksenlijn'.

## Secondary Stakeholders

### Oost NL

This regional development agency, with a focus on Overijssel, holds a crucial position in the regional economy. When exploring the potential of hydrogen, it is essential not to underestimate this stakeholder. Their objectives include regional development, investments in sustainability, and facilitation of business establishments in the region. Initiatives promoting hydrogen usage, such as introducing a hydrogen train in the 'Nedersaksenlijn', generate demand for hydrogen-related businesses in the region. The influence of this stakeholder will primarily be at the regional level, with a focus on developing and supporting hydrogen initiatives.

### NOM

This regional development agency, concentrating on Groningen and Drenthe, is crucial to the regional economy. When exploring the potential of hydrogen, it is essential not to underestimate this stakeholder. Their objectives include regional development, investments in sustainability, and facilitation of business establishments in the region. Initiatives promoting hydrogen usage, such as introducing a hydrogen train in the 'Nedersaksenlijn', generate demand for hydrogen-related businesses in the region. The influence of this stakeholder will primarily be at the regional level, with a focus on developing and supporting hydrogen initiatives. NOM has a partnership with NEC (New Energy Coalition).

### Residents of Groningen, Drenthe, and Overijssel

Because part of the railway line still needs to be constructed, and the potential establishment of a hydrogen network may occur, this project has implications for the environment and the community. Key concerns of local communities primarily revolve around environmental protection and safety. The influence of this stakeholder on the project primarily resides in opinions and the acceptance of hydrogen projects.

### Environmental Organizations

For this project, adjustments will be required in the environment, including installing new railway tracks, hydrogen refueling stations, and hydrogen storage facilities. These changes will impact the environment based on how they are implemented. The primary interests of environmental organizations will revolve around sustainability and nature protection. The initial phase may not raise many concerns when promoting hydrogen use, but understanding its potential impact on the physical nature will be a more significant challenge. The influence of this stakeholder on the project will be through influencing policy formulation and regulations related to environmental issues.

## Schematic overview of the stakeholders

Table 1: Schematic table of the primary stakeholders (made by author, 2024)

Stakeholder	Interests	Influence	Involvement	Attitude
<b>Province of Groningen, Drenthe &amp; Overijssel</b>	Regional mobility improvement, sustainability, economic development.	On local infrastructure and mobility decisions.	Actively involved in local projects, positively critical.	Positive, if it stimulates regional development and sustainability goals.
<b>ProRail</b>	Efficient railway management, and sustainable mobility.	Important role in the rail infrastructure. Development of new rail facilities or the adjustment of it.	Active in rail projects, proactive in infrastructure development.	Positive, if the project improves the railway infrastructure and ensures safety.
<b>Arriva</b>	Sustainability & Operational Efficiency.	Policy decisions.	Direct impact on services.	Positive, if project aligns with sustainability goals.
<b>Ministry of Infrastructure and Water Management</b>	National mobility policy, sustainability, infrastructure.	Policy making, national infrastructure projects.	Active in policy making, coordination in national projects	Positive, if the project aligns with national policy goals and promotes sustainability.
<b>Ministry of Economic Affairs and Climate</b>	Coordination of economic policy, and sustainability.	Policy making, permit coordination.	Active role in economic policy, coordination of permits.	Positive, if the project contributes to climate goals and promotes clean, reliable energy.
<b>NAM</b>	Safe and efficient hydrogen storage and transport.	Involvement in hydrogen logistics and infrastructure.	Active in hydrogen related projects, involved in infrastructure developments.	Positive, if the project aligns with future sustainability goals for gas infrastructure.
<b>Hynetwork Services</b>	Development of hydrogen infrastructure, regional economy.	Crucial role in the construction of the hydrogen network in the Northern Netherlands.	Leading role in hydrogen infrastructure, regionally involved.	Positive, if the project contributes to the development of hydrogen infrastructure.
<b>Alstom</b>	Development and sales of hydrogen trains, technological progress.	Supplier of hydrogen trains, involvement in project implementation.	Actively involved in implementation, technologically innovative.	Positive, if the project promotes the sale of hydrogen trains and contributes to sustainability in the transportation sector.
<b>Engie</b>	Development and sales of hydrogen trains, technological progress.	Supplier of hydrogen trains, involvement in project implementation.	Actively involved in implementation, technologically innovative.	Positive, if the project promotes green hydrogen production and aligns with the company's sustainability goals
<b>Municipality of Emmen</b>	Sustainable activities at GZI location.	Local governance and influence on local developments.	Actively involved in GZI Next and sustainability projects.	Positive, if the project promotes sustainable activities and aligns with local policy goals.
<b>Interreg</b>	Financing innovative solutions and sustainable projects in Europe.	Funding at the European level.	Funding partner for regional development.	Positive, if the project aligns with the innovation and climate goals of Interreg and contributes to the European hydrogen economy.
<b>New Energy Coalition</b>	Acceleration of the energy transition of a sustainable future.	Expertise in energy transition and sustainability.	Active role in regional and international collaboration.	Positive if it contributes to energy transition and sustainability goals.



Table 2: Schematic table of the secondary stakeholders (made by author, 2024)

<b>Stakeholder</b>	<b>Interests</b>	<b>Influence</b>	<b>Involvement</b>	<b>Attitude</b>
<b>Oost NL &amp; NOM</b>	Strengthening of the regional economy.	Focused on regional economic developments	Actively involved in sustainability innovations in the region.	Positive, if the project strengthens the regional economy and aligns with sustainability goals.
<b>Residents of Groningen, Drenthe, and Overijssel</b>	Safety in the region and environmental protection.	Opinions and acceptance.	Moderate, impact on the local community.	Variable, depending on individual perspectives.
<b>Environmental Organizations</b>	Sustainability and environmental protection.	Influence on policy formulation and regulations.	Role in environmental issues.	Positive, if sustainability is promoted, and the environment is minimally burdened.

Tables 1 and 2 present a structured overview of the interests, influence, involvement, and attitudes of all stakeholders, both primary and secondary. Identifying interests enhances our understanding of the objectives pursued by each stakeholder. Determining influence allows us to recognize which stakeholders can significantly impact decision-making regarding hydrogen-related issues. Structuring the involvement is a crucial aspect of fostering effective communication and collaboration. Lastly, it is important to examine the attitudes of the various stakeholders. To ensure the success of the project and capitalize on hydrogen opportunities in the 'Nedersaksenlijn', it is imperative to evaluate when different stakeholders will embrace a positive attitude towards the project. This involves considering what is needed for stakeholders to adopt a favorable stance on the project.