Mapping of alternative fuel in public transport among North Sea Commission (NSC) member regions – Second edition, 28 January 2016, further revised with input from Northern Netherlands 1 February

New entries in the second edition is written in this font and this font.

Background

On 4 March the Executive Committee requested the transport group to make an overview of projects on alternative fuel for public transport in the member regions. This overview was supposed to result in a statement for the 2015 General Assembly focusing on innovation and best practice results from around the North Sea Region.

The Adviser sent out a request for input from the NSC member regions on 26 March, also requesting the following additional information:

- The use of alternative fuel in service vehicles in own organisations and services
- Any incentives or schemes applying for alternatively fueled vehicles in the regions, including exemption from or reduced parking fees/regulations, exemption from or reduced congestion charges/toll fares, and access to public transport lanes etc
- The availability of filling and charging stations & related facilities and infrastructure

As too few replies had been submitted by the time of the General Assembly on 18 June 2015, it was decided to postpone this report to the autumn meeting of the Executive Committee.

Respondents

The following member regions have submitted input by 1 October 2015:

- Västra Götaland (SE)
- Nord Pas de Calais (FR)
- Aberdeenshire (UK)
- Orkney (UK)
- North Denmark (DK)
- Central Denmark Region (DK)
- South Denmark Region (DK)
- Hordaland (NO)
- Vestfold (NO)
- Vest-Agder (NO)
- Aust-Agder (NO)
- Rogaland (NO)
- Northern Netherlands (provinces of Drenthe, Groningen and Friesland)

In addition, some information from Bremen have been collected from the web.

As this report is only covering about one third of the NSC member regions it is not considered to give a complete & representative picture of the situation in the membership as a whole.

Definitions and specifications:

By <u>"alternative fuel"</u> we understand fuels other than conventional petroleum and diesel, based on renewable or low-carbon sources such as bio-energy, electricity, natural gas or

hydrogen, or any combination thereof. Also vehicles with hybrid fuel systems (gas-hydrogen, diesel-bio etc) count as "alternative fuel" in this survey.

"Public transport" is in the context of this survey including all transport modes, e.g. buses, taxis, trains and ferries, and both scheduled and demand-responsive services, e.g. "on-call services".

The report gives a summary of the input received from the members. In order to give a complete picture of the situation, we have also included information on past projects and planned schemes in addition to current practice.

Disclaimer: The input from **Västra Götaland** region only describes efforts under the auspices of the region. Municipal and national projects are not described. The City of Gothenburg has clear a policy for green vehicles within their fleet and they participate in projects funded by the three national agencies for transport, innovation and energy. The City has also funded the world's largest pilot plant of biogas production. The large national funding of projects for technical research, development, innovation and demonstration, which is due to the concentration of vehicle industry and transport industry in the region, is not described below. Volvo Cars, China Euro Vehicle Technology, Volvo Buses, Volvo Trucks and Volvo Construction Machinery all work on engines for alternative fuels and electric drive train technology. There are also several national projects within green chemistry process technology, and industrial activities for biogasoline and biodiesel based on bio-feedstock input into the refinery industry.

Strategies, objectives and measures to stimulate the uptake of alternative fuels in the transport sector

The **Nord Pas de Calais** Region launched in November 2011 a regional development plan for <u>electric vehicles</u>, in order to capitalize on the potential of the regional automobile production (the Kangoo ZE is manufactured in MCA in Maubeuge, some charging stations DBT are manufactured in Douai). The aim of this plan is to support local authorities with developing an interoperable charging system, homogeneous in the whole regional territory. The target is to have 10 000 electric vehicles operating in the region by 2016 (which will represent 0.45% of the regional automotive fleet) and 27 000 vehicles by 2020 (1.2% of the regional fleet). This pace of development is coherent with the development of the sector.

The public transport company in **Västra Götaland** region has defined requirements for renewable fuels in the procurement of public transport services and vehicles as a way of reducing the use of fossil fuels. In 2025, at least 95% of the public transport shall be operated on renewable fuels, with 25% less energy consumption per person km compared to 2010. It is an aim to reduce the emission of CO2 and particles by at least 60% per person km compared to 2009.

The provinces of **Groningen**, **Friesland and Drenthe** are aiming at 100 000 vehicles operated by renewable fuels such as green gas and electricity in 2015. This concerns all kind of vehicles like cars, trucks, buses and boats.

In **Central Denmark Region** a partnership on strategic energy planning has been established between the Region, municipalities, energy companies, universities, etc. A strategy and a plan of action, towards 50% renewable energy by 2025 (regional target) and longer term 100% (national target) of the total energy consumption in all sectors, have been established. In the field of biogas the strategy is that 75% of the region's manure, along with an equivalent quantity of other biomass, will be used to produce biogas, and the biogas will, to a significant extent, be upgraded to the quality levels of natural gas and will be fed to the natural gas grid,

from which the gas may be used for heavy transportation through strategically positioned gas service stations.

Rogaland County Council is aiming for a 100 percent emission-free public transport in the Stavanger region (comprising about 2/3 of the population in Rogaland) by 2022.

The Northern Netherlands is quite ambitious when it comes to reducing consumption of fossil energies, switching to a more sustainable society. This is done under the umbrella of 'Energy Valley', a cluster organisation for strategy and project development for the three northern provinces and the province of North-Holland. Strategic plans of action are being worked on to stimulate the use and production of alternative fuels in public and private mobility.

The province of **Fryslan** is looking into new ways of making public transport more sustainable by investing in alternative fuels. However, they have not decided upon which technique to go for yet

Use of Alternative Fuel for Public Transport

A majority of the responding members are currently applying or planning to take up alternative fuels in their public transport services. This concerns a variety of different fuels or combinations thereof, such as bio-fuels, electricity, hydrogen, natural gas/LNG and diesel hybrids. The responses are covering different forms of public transport like buses, trams/light rail, rail and ferries.

The provinces of **Groningen and Drenthe** procure public bus services together with the cities of Assen and Groningen. The contract has been awarded to Qbuzz, a subsidiary of the Dutch railway company NS. Contracts have been signed by the regional authorities with Qbuzz to replace 50 busses by the latest and cleanest Euro 6-busses.

Bio-fuel, incl. biogas

The share of renewable fuel in public transport busses in **Västra Götaland** (about 2000 buses in total) is already 72 percent, and it will increase in the years to come. Within this share, 57 percent is biodiesel (HVO) and 15 percent is biogas buses.

A plant which shall produce <u>biogas</u> from sludge from the sewage is under construction in **Hordaland**. The plant is supposed to start up during 2016. The gas are mainly planned to be used for busses in public transport, and shall replace use of natural gas. At the outset, the capacity will be sufficient for about 80 buses.

Financed by the **North Denmark Region** all 6 busses on the coach line between Aalborg and Frederikshavn are replaced by busses running on <u>certificated biogas</u>. The biogas is produced from slurry from animal production. From the end of 2015, 2 city busses in Fredrikshavn will be replaced by the same type of gas buses running on biogas. The City of Aalborg is planning to replace 12 buses with biogas buses next year, if financial support from the EU can be obtained.

Since 2013, 14 buses covering regional routes in **Central Denmark Region**, have been fuelled by diesel with 25% **biodiesel** added. The EU standard requirement is 7%. The specific biodiesel used is 2.generation and is produced using carcasses and waste from abattoirs.

Central Denmark Region has entered into a partnership with 14 of the region's municipalities, Midttrafik (the regional public transport company) and HMN (the regional

natural gas company) to distribute (certified) biogas for busses and heavy transportation. Despite a widespread natural gas grid, the lack of refuelling options for gas-driven vehicles in Denmark, is an obstacle in the distribution of biogas for transportation. Thus the partnership will investigate, whether the public bus transportation and other public transport, may provide grounds for widening the distribution of refuelling options.

So far the partnership has mapped out the potential in each municipality for the conversion of busses and heavy vehicles to CO2 neutral biogas operation. This includes the regional bus routes which operate across municipality lines. The mapping incorporates localisation of the existing fleet, as well as the options of strategically situating refuelling stations in relation to the distribution of the natural gas grid.

As part of a larger climate focus, several of Central Denmark Region's municipalities aim to reduce the climate liability of public bus transportation, as well as other forms of transport. An example is by converting conventional bus operations to biogas operations. The municipalities of Holstebro, Skive and Silkeborg have all made the conversion, or are in the process of doing so.

In Aarhus, the largest municipality of Central Denmark Region, the plan is to offer the city busses, which are suitably located in correlation to the existing natural gas grid, to operate on (bio)gas. The time-frame is 2019/2020

City busses in Municipality of Fredericia (11 of them) in **South Denmark Region** are running on biogas. Municipality of Sønderborg is introducing bio-gas-busses in their next tender.

Vestfold has decided that 70 % of the bus fleet should run on bio-gas from 1 July 2016. The bus fleet in the county is in total consuming 4 million liters of diesel per year, and the GHG emissions would be reduced by 14 000 tons by a transition to bio gas. The county is now in the process of facilitating for bio-operated buses in conjunction with a new public tender in the Tønsberg region (regional capital).

Rogaland has 51 gas buses. The buses are running on natural gas and an increasing share of locally produced biogas. There is currently a pilot project with two battery busses, and this is being increased to five buses in total during the next months.

The province of **Groningen** has been investing in 10 busses fully driving on biogas, together with Arriva. Finally, the province of Drenthe decided to invest in 2008, in 65 gas busses and the building of 3 filling stations for the amount of \in 10 million. It has also invested in a pilot for 5 busses to be operated on biodiesel in the city of Assen.

In 2008 a bus fleet based on biogas started to operate in Groningen, Friesland and Drenthe.

Electricity

The number of plugin electric and fully electric <u>busses</u> in **Västra Götaland** are low but are expected to increase rapidly. Plug-in hybrid buses use biodiesel and electricity as fuel, and battery-electric buses use electricity from renewable energy. Two new city ferries are in operation in Gothenburg that are designed to be fully or partially electrified.

In November 2011, **Nord Pas de Calais** Region launched a regional development plan for <u>electric vehicles</u>, in order to capitalize on the potential of the regional automobile production The target is to have 10 000 electric vehicles operating in the region by 2016 (which will

represent 0.45% of the regional automotive fleet) and 27 000 vehicles by 2020 (1.2% of the regional fleet). This pace of development is coherent with the development of the sector

Hordaland County Council runs one <u>light rail line</u> from the city center to the south of the city (about 14 km). The line will continue to the airport, and this extension (7 km) will be finished in summer 2016. Plans for new lines to the western and northern part of the city are being made. The light rail system is supposed to be the core of the public transport system in Bergen.

Hordaland County Council runs one Trolley bus line (about 7 km). There are currently not sufficient vehicles to operate the service solely with this technology. It has been decided to procure a sufficient number of <u>trolley busses</u> so that the line will solely be operated by trolley busses (about 6 busses). Extension of the trolley line and battery charged by the contact wire is under consideration.

There is one <u>small passenger boat</u> crossing a bay in the center of Bergen that is operating on <u>electricity</u>. It is operating without public grants.

A <u>high speed passenger boat</u> between Bergen and the island of Askøy is planned to be <u>electric</u> in a few years' time.

The Kirkwall Airport Service in **Orkney**, a subsidised public bus route, will be served using a fully electric bus from this summer.

The **Agder counties** will explore the feasibility of taking up electrical buses or chargeable hybrids in the long run.

The bus fleet in **Bremen** is currently running on the cleanest diesel. The public transport company BSAG is currently performing tests on electrical buses, and from 2016 all new or replacement vehicles should be operated by electrical sources.

In Aarhus, the largest municipality of **Central Denmark Region**, the plan is to operate 2-3 electric busses full time in order to gather operating experience over a multi-annual period.

The "Busway2020 project" in **Rogaland** will be the cornerstone of the public transport system in the Stavanger area. A vast political majority in the Council has decided that the busway will be run by trolley buses. The busway will be more than 50 kilometers and will be the longest trolley bus lane in Europe. As a part of the Busway2020 project some lines connecting to the main busway will be running as "slide in" buses. They will be electric buses and charging by the wires while running in the main busway lines. This concept is still being developed.

Rogaland is member of the Smart Cities and Communities Lighthouse Project Trianglum. The project is set to demonstrate, disseminate and replicate solutions for Europe's future smart communities. Infrastructure solutions, among them electrical vehicles are included in the project.

Moreover, the bus operator Qbuzz (**Northern Netherlands**) will invest in operating two fully electric busses in the city of Groningen. The province of **Fryslan** has invested in 6 electric busses on the Waddenisle Schiermonnikoog. They are fully electric and operated by Arriva. The isle will be the first place in Europe to fully offer transport services without emissions.

The municipality of the Waddenisle Ameland is looking into the use of electric busses in connection with the exploitation of a large solar energy park.

Hydrogen

There are a limited number of <u>hydrogen buses</u> running on selected main commuter corridors from **AberdeenShire into Aberdeen City**, purchased and developed by support from the Interreg North Sea Region programme and the EU Framework programme on research – FP7.

The municipality of Mariager Fiord in **North Denmark** is planning to <u>test hydrogen buses</u> in public transport if technically and financially feasible.

Orkney has been looking into <u>alternative fuels</u>, with particular focus on <u>ferry services</u>. A project is focussing on the renewable energy produced on the island and whether <u>hydrogen</u> could be stored for use on the ferries etc.

The operator Qbuzz participate in a research project aiming at finding possibilities for hydrogen busses on the link between **Groningen** and Delfzijl and executing a pilot with two busses.

Hydrogen-Natural gas

Nord Pas de Calais has initiated a project to validate the technical and economical relevance of public transport for 50 buses with a mix of <u>natural gas-hydrogen</u> at 6% then 20% of hydrogen volume. The ambition is to use this energy on the territory by 2017 and to bridge towards industrialisation of processes and solutions.

LNG (Liquid Natural Gas)

In **Hordaland**, there are about 100 busses using natural gas (LNG). The Council has one ferry under contract that runs on natural gas (LNG). In addition to the ferries run by Hordaland County Council there are 3 ferries operated by the company Fjord1 (state ferries on road E39).

A new ferry which runs on LNG (natural gas) has been put into operation between Hou and the Isle of Samsø in **Central Denmark Region**. In the long term operation of the ferry is intended to be converted to operate on locally produced biogas.

In 2014 the regional government of **Drenthe** decided to invest € 149.500 in research on the small scale production of liquid biogas for usage in the transport sector, being public or private. Rolande LNG BV and waste processor Attero BV are partners in this project. Goal is to produce a sound business case with a long-term positive operational result for a small scale production plant.

Hybrid

The number of <u>hybrid</u> buses in **Västra Götaland** are also increasing. They are all using HVO biodiesel.

As a part of the Baltic Biogas projects (Interreg IVB Baltic Sea Programme), 2 biogas hybrid busses were procured by the public transport organization "Skyss" in **Hordaland**. These busses are serial hybrid busses, which mean that they are run by an electric motor from batteries. The batteries are charged by a biogas motor producing electricity. In addition, the batteries are charges by brake energy. Test of these busses show very low emissions, actually as low as a single ordinary car. These buses are 24 meter long, the longest in Norway.

As part of the EU CIVITAS project VIVALDI, 6 serial <u>hybrid busses</u> were demonstrated on the citybus lines in the City of Aalborg in **Northern Denmark**. The buses were full 12 meters city busses that replaced ordinary busses in the daily running for a period of 4 years. The technology were serial hybrid, where the busses were driven by electrical motors on the wheels, with power from batteries, charged from a small diesel engine running a generator, when outsides the city.

On the city bus lines in Aalborg some normal city buses are replaced by <u>parallel hybrid buses</u>, were the breaking energy is being accumulated and via an electrical motor reused to start and accelerate the bus until the diesel engine is switch on at 30 km/h. On the best fitted routes with lots of stop and go the result is a fossil full saving on some 30%.

As part of the EU CIVITAS project ARCHIMEDES, 50 buses on the citybus lines in the City of Aalborg were powered by <u>biodiesel</u> for a period of 2 years. The fuel was a mixture of fossil diesel and 2 generation biodiesel produced from dead animals and waste from slaughterhouses.

In Municipality of Odense in **South Denmark Region** hybrid-busses (electric + diesel) have been introduced.

In the **Agder counties**, Euro VI diesel-hybrid are considered to provide the best environmental benefits for buses operating in cities and densely populated areas, typically making 70 000 km a year. The Euro VI diesel bus is considered to be the best alternative in rural areas for buses running up to 30 000 km annually, e.g. local- and school buses.

The use of alternative fuel in service vehicles

39 percent of the service vehicles (public transport excluded) in **Västra Götaland** are running on renewable energy. These are primarily vehicles that are used in transport services for health care purposes. Ambulances accounts for a 14 percent share of renewable energy fuel, and goods transport (primarily related to hospital goods transport) is also 14 percent renewable energy fuel.

In 2014, 96 percent of the vehicles procured by Region Västra Götaland were biogas or plugin hybrid or battery-electric (most were biogas).

Aberdeenshire Council is looking to reduce the consumption of conventional fuels from the Council's vehicle fleet. While clean fuel vehicle pilots in house have not proven successful in the past due to range limitations/fleet integration, the Council considers the application of range extenders as a potential solution to these barriers and as a way forward to introduce

electric vehicles to the Council's own fleet. Aberdeenshire Council is partner to the HyTreC2 project in the NSR programme, and if the application is successful, they will be introducing hydrogen to selected fleet vehicles.

Hordaland county council has procured 22 <u>4- electric cars</u> in 2015, and is planning to procure more electric cars. One hydrogen car will be procured in 2016.

North Denmark region has been using electrical vehicles as official cars, but at present this is changed to <u>hybrid vehicles</u>. The region is using 2 3.5 tons lorries on <u>certified biogas</u> for internal transportation in the health sector.

The **Region of Southern Denmark** has (in the central administration) a fleet of 12 cars to be used by the staff. 3 of them are e-cars – but they are quite seldom used because the action range is too small for most purposes.

The **Northern Netherlands region** has a lot of service vehicles in operation: transport fleet owned and operated by governments or government-related organizations. The regional authorities of Drenthe, Fryslan and Groningen have all invested in greening their own fleet of service vehicles and do put requirements on this issue in procurement tenders. But also Groningen Seaports for example, invested in electric cars. Moreover, the University Medical Centre of Groningen has announced to be willing the explore the possibility of using electricity as a fuel for ambulances.

Orkney Islands Council has around 6 <u>electric vehicles</u> within their fleet. As part of the asset replacement programme, an electric vehicle will be considered in the first instance where it is appropriate.

Aust-Agder has 6 <u>electrical</u> service cars with an own fast charging station A service vehicle for a secondary School in the county is running on <u>bio diesel</u> B30, a scheme which will be evaluated in the autumn of 2015.

The inter-municipal (consisting of several municipalities) waste-treatment company in **Vestfold** has decided that all the renovation vehicles in the area should be phased-over to biogas within the end of 2015.

Incentives or schemes applying for alternatively fueled vehicles including exemption from or reduced parking fees/regulations, exemption from or reduced congestion charges/toll fares, and access to public transport lanes etc

There are different schemes in operation in the responding member regions/countries for the promotion of alternatively-fueled vehicles. Such schemes are ranging from tax/duty exemptions or reductions, free parking, access to public transport lanes, grants for pilots, partial grants and interest-free loans for the purchase of vehicles. These schemes are often part of larger national schemes in the different countries.

National incentive scheme for electrical cars in **Norway**

- Free access to public transport lanes. But from now on it will be up to the county councils to decide whether this access should apply in the respective regions
- Free parking at municipal parking lots
- Free passing through road tolls and exemptions from congestion charges
- Free transport on main road ferries (but the driver must pay)

- Free use of most public charging stations
- 50% discount on company car taxation
- Extra re-numeration per km for job-driving
- Reduced annual car tax/fee (only NOK 435, € 52)

Aberdeenshire Council's Local Transport Strategy supports the adoption of alternative fuel types including electrically powered vehicles. Organisations in Scotland can apply to the Energy Savings Trust's Low Carbon Loan Fund (funded by Transport Scotland) to access an interest-free loan of up to £50,000 for EVs, with a repayment term of up to 6 years.

The Government currently offers a grant to fund 25 per cent of the purchase price of an electric car up to a maximum of £5,000. There are also grants available for electric vans which fund 20% of the purchase price up to a maximum of £8,000. Additionally, full funding is available to install a home charge point for electric vehicle.

Electric vehicles are also <u>exempted from vehicle tax</u> and fuel duty, and are free from company car tax until the end of 2015.

Aberdeenshire Council is currently considering the introduction of preferential <u>reduced car</u> <u>parking charges for low emission vehicles</u> in the Council's public off-street car parks.

The regional Sustainable Transport Program in **Västra Götaland** support projects that have a clear innovation dimension, but not infrastructure of fuel tank stations per se. The largest project in this program is ElectriCity, where the co-fund about 10 percent of a 250 MSEK (ca. 27 MEUR) collaboration aimed at demonstrating electric bus systems that can be integrated with the built environment (bus stops inside buildings). In a next phase of this project it will be demonstrated rubber-wheel electric high capacity transport using automated buss systems.

Nord Pas de Calais has established a scheme which is providing regional financial support to electric mobility initiatives and projects from sub-regional territories.

There are some national incentives for using alternative fuels in Denmark, but the **North Denmark** region has not introduced any additional incentives to the national ones.

In **South Denmark**, this is a task for the municipalities, as the region has no authority concerning the infrastructure. The normal scheme is, that charging and parking is free for ecars (but there can be different schemes in the municipalities). Congestion charge and toll fares are not used in Denmark.

No particular incentive schemes for vehicles on alternative fuels (except for parking) apply in **Northern Netherlands**, though a wide range of grant programmes either coordinated on the level of a province or on the northern level. Moreover, a lot of effort is being put in project development, both on a regional and European level, and knowledge development together with regional universities and colleges.

Availability of filling and charging stations & related facilities and infrastructure

The public transport system in **Västra Götaland** has its own dedicated infrastructure for HVO, biogas and electricity.

There exist a publicly available infrastructure for <u>compressed natural gas</u> in the region. Physically about 50 percent of that gas is biogas and 100 percent biogas is available through contract linked to biogas production that feed into the gas infrastructure.

One <u>H2-station</u> opens in October 2015, which is the second or third H2-station in Sweden.

Public charging stations for <u>battery electric vehicles</u> are comparably rare, e.g. in comparison to Norway and Denmark. A large European project that is co-funded by Region Västra Götaland aims to develop 50 quick charging stations in the region (funding is not secured yet but depends on private interest). Two of our science parks, Lindholmen Science Park and Innovatum, are active in projects that develop schemes for electric charging infrastructure

Publicly accessible charging points have been installed across **Aberdeenshire** since 2010 with funding from the Government's 'Plugged In Places' initiative and have an evolving network of 50kw, 22kw and 7kw Charging posts.

Nord Pas de Calais is establishing a <u>hydrogen</u> filling station on a bus site in the region.

The region has a strategy to provide a regional public service, ensuring access to <u>charging stations</u> to all kind of vehicles without any subscription. The goal is 10 000 electric vehicles for 4 Million inhabitants. 1250 normal to accelerated <u>charging stations</u> (3 to 22kW– 8 to 1 hour to charge) minimum ratio required by the French State: 1 charging station for 6000 inhabitants.

Hordaland County has about 900 charging points for electric cars. The Council has financed 155 charging points, among them 19 fast-charging. 7 new fast charging points are planned with grants from Hordaland County council. Total grants for charging points from Hordaland County Council is about 10 mill NOK (more than 1 mill euro)

One charging point is also prepared for a <u>filling station for hydrogen</u>. An application for state grant (to Enova) is under preparation.

By June 2015, a total of 16 charging points electric vehicle will be located across Orknev.

In **Vestfold** there are plans for the establishment of parking places and filling equipment for up to 100 bio-fuel buses. The Council is currently preparing a case on the location of a bus depot with filling equipment, as well as the formal requirements related to ownership and operation of such a facility. The municipalities in Grenland (region of Telemark) and Vestfold are now constructing a production facility for biogas outside Tønsberg. The facility has received a grant of 40 mill. NOK from the state agency ENOVA.

Groningen has at least four green gas stations.

There are also several charging stations for electrical vehicles in the **Agder** counties.

According to «elbilerne.dk» there around 50 places with charging stations in the **South Denmark region.** At least 8 of them are fast charging stations. There are four bio-gas-stations (1 in Fredericia, 1 in Odense and 2 in Sønderborg). There are two hydrogen filing stations (in Vejle and Ejby) and two planned stations (Esbjerg and Kolding).

To be able to use biofuels to the full extent in **Northern Netherlands**, the infrastructure should be present to supports its use. The city of Leeuwarden and the Province of Fryslan will therefore be investing in a fermentation plant in the Frysian capital. To promote the use of biofuels the Frysian regional authority is also working together with the private sector, for example waste processor Omrin, which will be operating waste trucks on biogas. The

provinces of Groningen and Drenthe also invested in fermentation plants for the production of biogases together with the private sector. Some other investments in the Northern – Netherlands since 2008 (not limitative):

- Building of 4 natural gas filling stations;
- Development of Green Planet, a fully sustainable filling station and info centre;
- Stations for electric charging, for example in the cities of Groningen and Leeuwarden (near public transport hubs);
- Development of a 'green gas hub' near the city of Groningen (investment of € 20 million) and in Wijster (Drenthe), coordinated by Energy Valley.

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The province of **Groningen** will build a new filling station for hydrogen busses.

Follow-up

The Transport group will complement the report with information from additional member regions at a later stage. It is an ambition to regularly update this report as a way of exchanging information between member regions, and as a reference for the development of EU projects.