

Hoogeveen

1. Background

Hoogeveen is a medium-sized municipality located in the northeast of the country in the province of Drenthe. In 2021, it had 55,603 inhabitants (CBS, 2022a). In 2021, Hoogeveen had 25,496 housing units, of which owner-occupied homes made up about 61%, and rental properties made up 38% (no data on the remaining 1%). Housing associations owned 74% of residential rental properties, and private landlords owned the other 26% (CBS, 2022b). In terms of the age of the housing stock, 7.6% of the dwellings were built prior to 1945; 13% – after 2005. Single-family homes made up 74% of the housing stock, while multi-family homes made up 26% (CBS, 2022c).

In 2021, 89% of all homes in Hoogeveen had an individual natural gas boiler, 5% were heated through block heating, 2% – electricity, and 1% – district heating (there is no data on the rest of the 3% of homes) (CBS, 2022d).

2. Heat transition vision

2.1. Vision development and stakeholder engagement

The City Council adopted the municipal heat transition vision for Hoogeveen in December 2021. The municipality hired consultants from TAUW to help develop the vision. The consultants organised meetings with the residents, housing associations, businesses, city councillors, and municipality employees to discuss the potential trajectories for the heat transition. The stakeholders identified several principles that will guide heat decarbonisation in the municipality, including the need to focus on heat demand reduction as a primary task, to ensure affordability, to support residents' initiatives, and to prioritise integrated approaches to the heat transition. They recommend linking diverse opportunities and taking into account 'natural moments' such as home purchasing or renovation (Hoogeveen Municipality, 2021).

In February-March 2021, an online questionnaire was posted on the municipality's website. 241 respondents completed the survey fully. The majority of the respondents (40%) said they were not willing to get rid of natural gas, 35% of the respondents said they were ready to do so, and 25% expressed neither a positive nor a negative opinion (TAUW, 2021). A municipal employee noted, however, that the Russian invasion of Ukraine and the energy crisis in Europe made the residents more interested in cooperating with the municipality on heat decarbonisation¹.

2.2. Approach to heat decarbonisation and natural gas phase-out

The municipal heat transition vision specified the steps that will take place before 2030. These measures include building awareness of the need for heat transitions, putting significant effort into home insulation, installing hybrid heat pumps, and learning about the opportunity to use hydrogen for heating through a pilot project in the Erflanden

¹ Interview with a Hoogeveen municipality official.

neighbourhood (see more information about the pilot in Section 3.1). The municipality is conducting analysis on whether heat networks could be a suitable solution for some neighbourhoods and the possibility of using local heat sources (e.g., surface water of the Hoogeveen Vaart canal) (Hoogeveen Municipality, 2021).

A neighbourhood-level implementation plan has been developed for the Erflanden district that considers switching existing homes to hydrogen. Until 2030, the municipality does not plan to draw up neighbourhood-level implementation plans for any other neighbourhoods. However, if opportunities arise from residents' initiatives or the provincial or central government, the municipality will respond accordingly (Hoogeveen Municipality, 2021).

The municipality of Hoogeveen has been recently cash-strapped, so it does not see the opportunity to provide financial support for heat transitions. In addition, due to limited capacity and resources, the municipality envisions challenges for the planning and implementation of heat transitions in other neighbourhoods (PAW, 2021). A municipal employee shared these concerns, saying, '*We don't have the means for it. We have just a few people to do the work, and there is an enormous amount of work*'². Although resident engagement and heat transition implementation take place at the local level, the municipality stressed the importance of the central government's involvement in creating capacity for planning and implementation of heat transitions and the role of regional cooperation in knowledge and expertise sharing (PAW, 2021).

3. Heat transition pilots

3.1. Erflanden district (grant from Programma Aardgasvrije Wijken (PAW), or the Natural Gas-Free Neighbourhoods Programme)

The municipality of Hoogeveen has been one of the two Green Deal H2 Districts participating in the Dutch central government's initiative to pilot the use of hydrogen in the built environment (Green Deal, n.d.). Hoogeveen has carried out a pilot project consisting of two parts: 1) construction of 100 new homes in the Nijstad-Oost district using hydrogen for heating; 2) switching existing homes in the adjacent neighbourhood of Erflanden from natural gas to hydrogen. The project was developed by 22 partner organisations, including local, provincial, and central governments, as well as business and education organisations. The project received a grant of €472,359 from Top Sector Energy, the Dutch government's programme for promoting innovation in the top sectors of the economy (Topsector Energie, n.d.).

In partnership with the gas and petroleum production company NAM and the operator of the national gas transmission grid Gasunie, the municipality of Hoogeveen prepared an application for the PAW funds. A municipal employee noted that the grant application process was '*quite top-down*'³ and that the technical and financial aspects of the application received the most attention. A PAW grant of €4,375,749 was awarded to the municipality in 2020 (the second round of grants) for the pilot area in the Erflanden neighbourhood. The pilot's technological solution is the use of individual central heating boilers that use hydrogen as a fuel. The pilot neighbourhood consists of 427 residences, all of which are owner-occupied. The main partners in the pilot implementation are the Residents' Council consisting

² Interview with a Hoogeveen municipality official.

³ Interview with a Hoogeveen municipality official.

of Erflanden residents, N-TRA (a subsidiary of the gas and electricity operator RENDO), Gasunie, NAM, Alfa College, Friends of Technology Hooegeveen, Hanze University of Applied Sciences, and the Drenthe Energy Organisation Foundation (PAW, n.d.).

The pilot will use different sources of hydrogen to heat homes in the pilot area in a multi-phase plan. In the first phase, hydrogen is expected to be delivered by truck from a hydrogen storage facility in Zuidwending, 62.8 km away from Hooegeveen. In the second phase, in combination with external supply, green hydrogen will be generated at the pilot site through electrolysis with the use of solar-generated electricity. Finally, the pilot area is expected to be connected to Gasunie's planned national hydrogen transmission network (Consortium Waterstofwijk Hooegeveen, 2020; Waterstof Hooegeveen, n.d.-a).

Along with a goal of technology piloting and looking for opportunities for cost reduction, PAW grants task pilot leaders with the responsibility of testing effective forms of citizen engagement in the heat transition. After receiving the PAW grant, the project's emphasis has shifted from the technology side to organising resident involvement in the switch to hydrogen-based heating (PAW, 2021).

The municipality has focussed on engaging with residents and providing them with the necessary information for making a decision about whether to use hydrogen to heat their homes. In September 2019, several residents of Erflanden formed the Residents' Council, which became an intermediary between all residents, the municipality, and other stakeholders in the pilot. In 2021, the Residents' Council appointed a project leader to help residents navigate different aspects of the process of switching to hydrogen heating, including costs, technology, and safety (Waterstof Hooegeveen, n.d.-b). In 2021, the municipality of Hooegeveen, Alfa College, Friends of Technology Hooegeveen, and the South and East Drenthe Region Deal worked together to build a Hydrogen Tiny House where residents can see how a hydrogen boiler operates (Waterstof Tiny House, n.d.).

In October 2021, the Energy Transition Centre at Hanze University Groningen issued a report measuring public support for switching to hydrogen in Erflanden. Survey results showed that the majority of the respondents (90%) were concerned about the climate, but there was more division in public opinion on the importance of phasing out natural gas. A little over half of the respondents (58%) supported the plans to switch existing homes in Erflanden to hydrogen, while 42% of the respondents opposed such plans. About three-quarters of the respondents mentioned that they were not satisfied with the opportunities to participate in the pilot's decision-making process (Energy Transition Centre, 2021). This echoes the municipality's assessment that not enough resources were devoted to citizen engagement in the pilot (PAW, 2021).

The municipality is expected to make a decision in 2023 on whether to go ahead with building 100 hydrogen-heated homes in Nijstad-Oost and switching a block of six homes in the adjacent Erflanden district to hydrogen. Switching existing homes to hydrogen requires the participation of 100% of the residents because the pipeline infrastructure supports the delivery of either hydrogen or natural gas, not both. To switch a neighbourhood to hydrogen, the natural gas connection should be shut off. Currently, Dutch municipalities do not have the power to disconnect existing homes from natural gas. The municipality of Hooegeveen is committed to upholding democratic principles in the heat transition and allowing the residents to decide on how they heat their homes (PAW, 2021). At the same time, a

municipal employee illuminated challenges of the voluntary nature of heat transitions, ‘*We don’t have the means and the power [in the heat transition]. It’s all up to the people – if they want to do it and if they want to pay for it. It’s a really strange position we have as a municipality. We have the [task of] coordination of the heat transition, but we don’t have the means*⁴.

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