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CITIZEN-LED RENOVATION

Country study the Netherlands

A PESTLE analysis on the environment for citizen-led renovation services in the Netherlands

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About this report

To support the development of sustainable building renovation activities by energy cooperatives and communities (citizen-led renovation) we have analysed three business models – operated by Carbon Coop (UK), Energy Communities Tipperary Cooperative (Ireland), and Klimaatpunt/Pajopower (Flanders) - for the delivery of such activities. To accompany the business model overviews we have analysed the context in which they operate using the PESTLE method looking at Political, Economic, Social, Technological, Legal, and Environmental factors relevant to citizen-led renovation in the respective countries. Additionally, the same analysis has been done for the Netherlands, and will be undertaken for the Basque country. This study on The Netherlands has been the fourth in this set of five 'country analyses'. This study was prepared as part of the 'Citizen-led Renovation' project funded by the European Climate Foundation.

About citizen-led renovation

Citizen-led renovation is energy communities and/or cooperatives undertaking renovation activities for, and with, their members and local communities. This includes renovation, energy efficiency in buildings, and sustainable heating and cooling. Furthermore, these activities are often combined with installing renewable energy systems. Renovation activities range from performing energy audits and providing information to homeowners, all the way to guiding households through the entire renovation journey, which includes planning, financing, delivery of measures, and evaluation (a 'one-stop-shop' or 'integrated home renovation' service).[1]

Although the offered services differ from cooperative to cooperative most citizen-led renovation programs share a few common traits:

- Citizens are involved in the renovation process and governance of the initiative and/or project;
- As social enterprises without focus on profit cooperatives can act as a trusted partner providing independent advice and support;
- The development of local businesses and skills of people involved is supported by the program;
- Activities are adapted to local conditions and local networks and partnerships are created. Energy cooperatives and communities are rooted in their local communities and often act in partnership with local authorities, SME's, and other community groups and/or NGO's. Many follow a neighbourhood approach.

[1] For more information see: https://www.rescoop.eu/citizen-led-renovation

Summary

There is a good potential for building renovation services in the Netherlands, including for citizen-led renovation programs. This despite the Dutch building stock not being the most attractive for renovation (compared to other EU countries) as it is around average age, already has medium levels of insulation, and a relatively efficient but fossil gas based heating system.

The national government has set strong renovation targets including the ambition to switch 1.5 million homes from fossil gas to sustainable heating by 2030. Government focus lies on accelerating renovations and kick-starting the development of a renovation 'system'/market through focusing on the social housing sector. Hoping to lower costs and accelerate the renovation process. Given the Dutch context this could be a good strategy as the country has a high share of standardized building blocks and social housing managed by large providers (compared to other EU countries). Although this could have beneficial effect on larger market for renovation services, but less opportunities for citizen-led initiatives.

At the same time there is a well-developed community energy sector, with already some activities on citizen-led renovation, especially around energy efficiency advice and developing sustainable heating systems. In general, most municipal related energy savings advisory services seem to focus on simple energy savings measures and shallow renovation. With most government subsidies available focussing on deeper renovations this could be an opportunity for 'one-stop-shop' type of services aimed at deep renovations.

Barriers:

- Relatively good state of the building stock
- Government focussing on social housing providers to kick-start the renovation sector, less policy attention to individual home-owners & private tenants.

Opportunities:

- Government ambition to move away from fossil gas for heating

- Government subsidies for deeper renovations and low-interest loans

- Strong energy community movement active in energy efficiency

- Few existing one-stop-shop services

- Interest among home-owners to improve sustainability of their house

1. Background: building stock, renovation potential, & community energy

Background: building stock characteristics and renovation potential

In 2019 the Netherlands had 7.8 million homes housing 7.9 million households. Most of these buildings are moderately insulated and mainly heated using fossil gas. With 93 percent of households in 2020 being connected to the gas grid, 6 percent connected to district heating, and 1 percent using other sources[2]. On average a home in the Netherlands in 2019 used 1180 cubic metres of fossil gas (1850 m3 in 2010) and 2730 kWh of electricity (3300 kWh in 2010)[3]. In total the primary energy use for the built environment amounted to 662 Pj of which around 400 Pj for households, resulting in 35 percent (21 percent for households) of the countries final energy use[4]. Although the average energy use in Dutch homes has been declining steadily due to improved insulation and more efficient gas burners the total energy use in the residential sector has roughly stabilised since 2015 due to an increase in households and homes. Compared to the rest of Europe the Dutch building stock is of slightly below average age (2014 data)[5]. With half of the housing stock dating from before 1975, 30 percent has been built between 1975- 1995, and 20 percent after 1995. The country has the 5th highest share of single-family houses, yet a relatively low average space heating and cooling consumption[6]. The average size of a Dutch home is 119 square meters, with 38 percent of the homes being between 100 and 150 square meters.

When it comes to ownership, 58 percent of homes were owner-occupied, 29 percent socially rented, and 13 percent privately rented. These proportions have been roughly stable over the previous years. On average, owner-occupied homes have the highest energy performance rating, and privately rented homes the worst. Overall the housing stock has become more energy efficient over the past decade. Roof and window insulation is common (over 80 percent), while floor (60 percent) and façade (70 percent) insulation less so. Although buildings energy performance ratings have improved over the years, this has, as we saw above, barely resulted in total primary energy savings. Since 2015 fossil gas use in homes and electricity use for appliances and ICT has increased, offsetting previously achieved savings. Obviously the increase in households has also contributed to this.

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[2] Centraal Bureau voor de Statistiek, "4. Duurzaam wonen."
[3] Centraal Bureau voor de Statistiek, "StatLine - Energieverbruik particuliere woningen; woningtype en regio's."
[4] RVO, "Monitor Energiebesparing Gebouwde Omgeving 2019."
[5] EU Buildings Database, "EU Buildings Database - Building Stock Characteristics - Stock by Age."
[6] Fabbri, "Clean Energy Package."

As described in more detail below ('political'), 1.5 million homes and non-residential buildings in the Netherlands need to be sustainably renovated by 2030 and replace their fossil gas based heating systems resulting in 2.2 million ton of GHG reductions to achieve current climate targets. Another 1 million ton will need to be reduced in the non-residential sector, and 0,2 million ton through improved standards for newly built buildings[7]. Currently renovation rate lies around 1.1 percent (medium renovations), meaning around the EU average. Knowing that to reach the EU's climate neutrality target the rate of renovation needs to increase to around 2-3 percent of deep renovations per year on average in the EU, and with deep renovation rates at around 0.1 percent (2012-2016 average[8]) there is still a huge potential in the Netherlands for sustainable building renovation.

Background: community energy

Community energy in the Netherlands has been growing steadily over the past five years. In 2020 there were 623 energy communities with a total of around 97.000 members (up from 243 communities in 2015). The annual report on the state of energy communities in the Netherlands provides a detailed overview of the sector (published by the HIER foundation and the Netherlands Enterprise Agency).The movement has not only grown in amount of initiatives and members but also in the type of activities they are undertaking. Increasingly energy communities are cooperating with each other and with municipalities and engaging with local and regional energy policy, including for example the Regional Energy Strategies and Municipal Heat Plans (see 'politics')[9]. Moreover, through the national umbrella organisation (Energie Samen), energy cooperatives are also engaging with national energy policy. This has resulted in, for example, the adoption of the wish to 'strive towards' 50 percent local ownership of renewable energy production in the Dutch Climate Agreement (broad stakeholder agreement on climate targets and policy).

In 2020 70% of all energy cooperatives were involved in developing solar PV projects, with total installed capacity under their management amounting to 166,4 Mw (around 1.6 percent of total solar PV capacity in the Netherlands). Although the growth of solar PV is slowing due to changes in the fiscal framework (both individual and collective net-metering will be discontinued), a shortage of suitable and available roofs, increasing issues with net-capacity, and for 2020 COVID restrictions. Only 19 percent of energy cooperatives develops wind projects, with total cooperatively owned installed capacity amounting to 230MW (5.7 percent of all on-shore wind) and another 150MW in the

[7] Netherlands Enterprise Agency, "Long-Term Renovation Strategy: En Route to a Low-Co2 Built Environment," 92.
8 Ipsos & Navigant, "Comprehensive Study of Building Energy Renovation Activities and the Uptake of Nearly Zero-Energy Buildings in the EU."
[9] Schwenke, "Lokale Energie Monitor: 2020."

pipeline. Also, one study already indicated in 2014 that energy cooperatives are increasingly offering energy savings and renovation related advice and services[10]. Most notable is the nationally operating HOOM cooperative (see table on actors/existing services).

2. Political

Factors: government priorities and policy to promote sustainable renovation; policies to boost citizen participation, energy communities, and cooperatives; existence of funding tools and grants.

Government priorities and policy to promote sustainable renovation

As part of its ambition to reach the goals of the Paris Climate Agreement the Dutch government has set the targets of 49 percent GHG reduction in 2030 (compared to 1990) and 95 percent for 2050. Through a broad stakeholder dialogue – including e.g. stakeholders from industry, NGOs, energy communities, and municipalities- a 'Climate Agreement' was agreed in 2019 describing both government measures to achieve the GHG targets as well as commitments by the involved stakeholders. In its Long-term renovation strategy the government has included the measures planned for the built environment as part of the Climate Agreement[11]. A major measure as part of the Climate Agreement – and closely connected to public resistance against domestic fossil gas production fuelled by increasingly prevalent earthquakes and climate concerns[12] – is to eliminate use of fossil gas in buildings and ensure 1.5 million buildings will be 'fossil gas free' by 2030. For new buildings a nation-wide ban on fossil gas based systems has already been put in force, but for existing buildings this will be a though challenge with only 9 years left to decarbonise 1.5 million buildings[13]. In addition to measures focussed on developing sustainable heating systems the Climate Agreement plans for short-term cost effective energy saving interventions and measures for deep renovations.

Dutch renovation policy: a neighbourhood approach

The Dutch government has centred its renovation policy, as outlined in the Dutch Climate Agreement, around a neighbourhood approach ('district oriented') in the belief that a collective approach taking into account local specificities has higher chances of success

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[10] Kieft, Harmsen, and Wagener, "Warmtepompen in de bestaande bouw in Nederland: een innovatiesysteemanalyse."
[11] Netherlands Enterprise Agency, "Long-Term Renovation Strategy: En Route to a Low-Co2 Built Environment."
[12] Oxenaar and Bosman, "Managing the Decline of Fossil Fuels in a Fossil Fuel Intensive Economy."
[13] Netherlands Enterprise Agency, "Long-Term Renovation Strategy: En Route to a Low-Co2 Built Environment," 10.

and will lead to more cost effective options for households. The first 'layer' in this approach divides the country in thirty regions that need to develop a 'Regional Energy Strategy' focussed on demand and supply of sustainable energy in their area. One-level below that municipalities are required to develop 'energy visions' setting out how the heating system will be organised for each district in their municipality. This will enable developing renovation programs and sustainable heating systems – including district heating – at the neighbourhood level. Key to this approach is doing this collectively at the district scale in collaboration between residents and municipalities. Joined ownership of the future renewable energy and heating systems is specifically mentioned as part of the neighbourhood approach. Although the local authorities are officially 'in charge' of implementing the approach it still has large potential to provide opportunities for citizen-led initiatives – including citizen-led renovation – due to its focus on including residents and local ownership.

'Fossil Gas Free' pilot neighbourhoods

To help enable the switch away from fossil gas-based heating and learn how this can be done at the neighbourhood scale an expansive pilot program has been set up (Program 'Fossil Gas Free' Neighbourhoods) has been set up by the national government[14]. The goal is to facilitate 100 neighbourhoods in developing a sustainable heating system. In 2018 a first round of 27 pilots were accepted into the program, with another 19 having been in added in 2020. Currently the third round of pilots is open for application. On average every pilot receives around 4 million euro in financial support from the national government in addition to the country wide support measures they can make use of. The pilots encompass a variety of partnerships between municipal authorities, residents, SME's, and other stakeholders and are looking at a variety of technical solutions.

Policies to boost citizen participation, energy communities, and cooperatives

As mentioned above major support for energy communities has been pledged by a variety of stakeholders from the energy sector as part of the 'Climate Agreement' through the ambition to ensure 50 percent local participation (including ownership) in renewable energy projects (on shore). As part of this agreement a manual on citizen and local stakeholder participation for renewable energy projects has been developed.

In addition to national level support some municipalities also provide support for the development of citizen-led initiatives (see next section) in the form of (in-kind) subsidies.

[14] PAW, "Programma Aardgasvrije Wijken: Proeftuinen."

Government policy and support measures (grants, funding, instruments, tax incentives, etc.)

The table below gives and overview of government support measures that could possibly be relevant to citizen-led renovation

Government policy and support measures (grants, funding, instruments, tax incentives, etc.)	
Name:	Description:
VAT reimbursement for domestic Solar-PV	Households can get their VAT reimbursed when they buy solar PV panels for the first time.
Net-metering for households and SME's ('Salderingsregeling')	Until January 2023 households and SME's will still be allowed to use net-metering as a billing mechanism for the electricity they produce using solar PV. After 2023 the mechanism will slowly be phased out and replaced by a subsidy.
Lowered Tarif Scheme ('Postcoderoos')	Cancelled as of 2021. Used to give citizens the possibility to get a subsidy on solar PV installed in the vicinity of their home. This made is possible for people without an own roof (e.g. apartment buildings) or tenants to participate in solar PV generation. The subsidy consisted of getting back the energy tax on their share in the generated electricity for a period of 15 years. It has been replaced by the "Subsidy Scheme for Cooperative Energy Generation"
Subsidy Scheme for Cooperative Energy Generation (SCE)	Subsidy scheme for renewable energy generation for energy cooperatives and home-owner associations. It covers Solar PV, wind, and hydro. The subsidy is based on a fixed price per generated kWh and is fixed for a period of 15 years. The subsidy only covers the difference between the fixed price and the current electricity price (if the electricity price increases the subsidy increases and vice versa). Similar to the Lowered Tarif Scheme participants need to live in the same, or an adjacent, postal code area as where the electricity is generated.
Scheme for the stimulation of	The SDE+ is the main stimulus measure from the national government for renewable energy. It has been operating in a variety of forms since at

sustainable energy production and climate transition (SDE++)	least 2008 (SDE, SDE+)[15]. Until 2016 the majority of the subsidies went to biomass (co-firing in coal thermal powerplants), after 2016 the majority went to solar PV and wind. For 2021 there is a budget of 5 billion euro. As of 2021 carbon-capture and storage, electrolysis for hydrogen, electric boilers (industrial size), and re-use of waste heat are also eligible for subsidy.
Energy savings loans	The national government provides low interest loans through the 'National Heat Fund'. They offer loans to households, home-owner associations, and schools.
The Renovation Accelerator	Multi-annual support program for the renovation of rental housing. Main goal is to reduce the cost of renovations through standardisation, industrialisation of components, bundling of projects, and cooperation in the value chain. Sustainability (reducing energy use and emissions) is and end goal, but within a framework of total cost of ownership. Provides subsidies, knowledge, and project coordination support, and connects both owners of buildings and providers of renovation services. Focus mainly on providers of social housing ('housing corporations') as they usually own many buildings in close vicinity and with similar characteristics and represent a large share of the Dutch housing market.
Investment Subsidy for Energy and Energy Savings (ISDE)	Subsidy for home-owners and businesses to support them in increasing their production of renewable energy and taking energy saving measures. Supports e.g. installing solar boilers, heat pumps, connection to a district heating system, and insulation measures. Businesses can also apply for support for small wind turbines and solar PV installations. For 2021 a total budget of 124 million euro is available. As of august 2021 home-owners have claimed 36,4 million in subsidies, of which 24,7 for insulation measures, 10 million for heat pumps, 1,6 million for solar boilers, and less than 100.000 euro for district heating connections. Businesses have claimed 9,9 million for heat pumps, 6,3 million for solar PV, 0,9 million for solar boilers, and 0,5 million for wind turbines [16].

[15] https://www.rvo.nl/subsidie-en-financieringswijzer/sde/feiten-en-cijfers-sde-algemeen
[16] https://www.rvo.nl/subsidie-en-financieringswijzer/isde/budget

Energy Savings Subsidy for Home Owners (SEEH)	Subsidy for energy savings measures for home-owners. Total of 84 million euro was available for 2020, it remains to be seen if new budget will be made available for 2021 and 2022. Maximum is 10.000 per dwelling, or 15.000 when doing a deep renovation. To be eligible home-owners had to take at least two energy savings measures (following specific minimum criteria).
Energy Savings Subsidy for Home-owner associations (SEEH Vve)	For 2021-2022 a total of 32,2 million euro in subsidies is available for associations of home-owners wanting to invest in improving the energy efficiency of their building. Also covers building assessment, renovation advice, sustainable maintenance plans, and project coordination.
Lowered VAT tariff on renovation activities	The labour costs for insulating floors, walls, and roofs, that are more than two years old are subject to a lowered VAT rate (9 percent instead of 21)[17].
Subsidy for Energy- and Climate Innovation (DEI+)	Open to companies investing in R&D on solutions related to 'fossil gas-free' buildings and neighbourhoods. Supports the development of new products (technology) but also services and organisational models. For 2021 the budget is around 10 million euro.
Support Scheme for Reduced Energy Use in Homes (RREW)	In 2019 and 2020 municipalities could make use of a nationally funded scheme to support households (both home-owners and tenants) in their municipality in taking energy saving measures. This focused on low level measures such as: energy savings measures that could be taken by the inhabitant themselves, having a professional come by to optimize your fossil-gas heating system and/or ventilation system, getting energy savings advice.
Regional an municipal support measures	In addition to support measures given by the national government many regions and municipalities also offer a variety of support measures. A complete overview can be found here. Some relevant examples for citizen-led renovation include: - Municipality of Amsterdam: low interest loans for energy saving measures and related activities; subsidy for a building assessment for

[17] Netherlands Enterprise Agency, "Long-Term Renovation Strategy: En Route to a Low-Co2 Built Environment," 36.

	energy savings or renewable energy production; subsidy when decoupling a building from the fossil-gas grid; subsidy for developing citizen-led initiatives aimed a sustainable neighbourhoods; low interest loans for sustainable projects by companies, public bodies, energy cooperatives and associations of home-owners/tenants. - Province of Fryslan: home-owners taking energy savings measures fitting within the criteria of the national subsidy scheme can get up to 50 percent additional funding from the provincial government. - Municipality of Groningen: compensation subsidy for earthquake related damage to invest in energy saving and generating measures. - Municipality of Haarlem: subsidy for the development of collective Solar PV roofs; free energy savings advise (Haarlemse Huizenaanpak)

3. Economic

Factors: spending in the renovation sector; energy prices for households; renovation cost for homeowners and developers., cost of housing for homeowners/tenants; private sector financing methods.

Spending in the renovation sector

One study indicated that total household spending on renovation in 2018 amounted to around 1,36 billion euro, or around 0.4 percent of household disposable income (well below 0.9 percent EU average). Although spending has been on the rise over the past years, current spending still lies below the 2010 level (1,43 billion)[18]. However, an other study indicated much higher numbers with an average annual investment of 47,5 billion euro in residential renovations of which around 20 billion for energy related renovations (2012-2016). With 4.2 billion for medium level renovations (30-60 primary energy use savings) and 1.4 billion for deep renovations (over 60 percent energy savings)[19]. Perhaps this difference stems from difference in definitions used, it could be for example that the renovation spending used in the first study only included deep renovations in their number.

[18] European Commission, "European Construction Sector Observatory: County Profile Netherlands."
[19] Ipsos & Navigant, "Comprehensive Study of Building Energy Renovation Activities and the Uptake of Nearly Zero-Energy Buildings in the EU."

Energy prices for households

In 2019 all Dutch households together spend a bit over 9 billion euro on energy (including fossil gas, electricity, heat, and grid-fees, excluding oil products), up from 8,7 billion in 2015[20]. On average, over all incomes and dwelling sizes, households spend 510 euro (2760 kWh) on their electricity bill in 2018, and 1720 euro on their gas bill (1400 m^3).

Cost of renovation for homeowners/developers

The national association for home owners provides indications for frequently undertaken energy savings measures. For example, they indicate insulating the outside facade of an average Dutch row/terraced house costs about 5000 euro's (for 40 m^2). Cavity wall insulation is significantly cheaper at 20 euro/m^2. For a slanted roof they indicate around 60 euro/m^2 and 50 euro/m2 for a flat roof (insulating from the inside). For floor insulation they indicate between 20 euro/m^2 (underside) – 30 euro/m^2 (topside). While insulating windows cost about 165 euro/m^2 [21]. On average household can expect between 20.000 and 30.000 euro of investments (heat-pump, insulation, draught proofing, removing gas mains) to be able to move towards sustainable heating sources such as a heat pump. The same study found that only between 36 and 29 percent of the households would have sufficient savings to finance such a renovation while over 80 percent of households would be able to finance this through a mortgage or other type of loan. In total only about 2 percent of homeowners would have no financial possibilities (savings or loan) at all to invest in sustainable renovation[22],

Cost of housing for homeowners/tenants

In 2018 average net cost of housing amounted to 753 euro per month for households owning their home and 502 for tenants. Interestingly the average cost of owning a home has decreased over time, from 794 euro per month in 2012, while the cost of renting a home has increased from 416 per month in 2012. On average housing costs for tenants in the private sector amount to around 661 euro per month while costs in the social sector amount to around 436 euro per month[23].

[20] Centraal Bureau voor de Statistiek, "StatLine - Energieverbruik particuliere woningen; woningtype en regio's."
[21] Vereniging Eigenhuis, "Prijzenindicator voor de meest voorkomende klussen in huis."
[22] Warnaar, "Kunnen woningeigenaren energie-investeringen betalen?"
[23] CBS, "StatLine - Woonlasten huishoudens; kenmerken huishouden, woning."

Private sector financing methods

Several banks in the Netherlands provide the option to finance energy efficiency measures through their mortgages by increasing the mortgage ceiling to up to 106 percent of the costs of the home. Several banks additionally also provide lower interest rate loans for the purchase of energy efficient homes. The amount that can be borrowed above the normal mortgage amount depends on the height of energy savings achieved [24].

4. Social

Factors: culture (in favour or not) of sustainable renovation and energy efficiency

Culture (in favour or not) of sustainable renovation and energy efficiency

A study done in 2019 on behalf of the national government found that only 34 percent of Dutch citizens indicated they were (very) motivated to help mitigate climate change through action within their own living environment. Specifically for energy savings and renovation measures the study t75 percent indicated to be willing to only use LED lights, 56 percent to install a water saving showerhead, 54 percent to draught proof their home, and 53 percent to install insulated windows (HR++). Moreover, around 50 percent indicated they would be interested in having wall/roof insulation. Also, 50 percent of the surveyed people would be interested in installing solar PV, 36 percent in installing a heat pump, and 26 percent indicated they would be interested in becoming member of an energy cooperative and/or community[25]. Overall, the study found that 22 percent of the people could be seen as very motivated to take action on climate change, and 14 percent as 'pragmatists' interested in taking renovation measures to reduce costs and/or improve comfort of their home.

Looking specifically at home-owners one study found that on average 65 percent of the owners would be interested in making their home more sustainable. With especially wealthier (70-80 percent for households with double modal income or higher) and/or younger households (70-80 percent for people between 25 and 54 years old) being motivated. Motivation declines drastically for households in the over 54 years bracket[26]. Nevertheless 43 percent of Dutch households indicated they would not renovate their home in the coming 5 years, with the main barrier being the expectation that the costs of

[24] Vereniging Eigenhuis, "Geld lenen voor energiebesparing."
[25] Motivaction, "Publieksmonitor Klimaat En Energie 2019."
[26] Warnaar, "Kunnen woningeigenaren energie-investeringen betalen?"

renovation measures would decline in the future and more government support would be available.

Overall there seems thus to be a limited interest by households to implement sustainable renovation measures, with interest being much higher among home-owners.

5. Technological

Factors: access to existing technological solutions; renovation skills and availability of professionals in the construction sector; Research and development in the renovation sector

Access to existing technological solutions

In general there seem to be no issues regarding access to existing technological solutions..

Renovation skills and availability of professionals in the construction sector

Almost no data was found on the skills and availability of professionals in the construction sector. However, a lack of contractors skilled in sustainable renovation has been named as a barrier in the Long-Term Renovation Strategy of the Netherlands.

Research and development in the renovation sector

Several organisations are heavily involved in research and development regarding building renovation and sustainable heating systems. Especially the Netherlands Enterprise Agency and the (largely) government funded R&D institute TNO who support both technology, business model, and organisational focussed innovations.

Especially notable is the large scale pilot program for sustainable heating systems at the neighbourhood scale with been set-up by the national government to help achieve the target of eliminating gas use in buildings by 2050. It provides millions of euros in funding to implement a variety of sustainable heating systems. For more detail see the overview table with government support measures.

6. Legal

Factors: e.g. building regulation, standards, and certification for sustainable building renovation; building energy performance certificates; other legal factors

Building regulation, standards, and certification for sustainable building renovation

Legal requirements when renovating a building

The Building Decree sets requirements for the renovation of buildings including renewal or replacement of insulation, attic conversions, deep renovations, and technical systems. When renewing or improving insulation the general minimum level to achieve is a Rc of 1.3 m^2K/W. For floors the minimum is a Rc of 2.5 while for the façade the minimum is 1.3 m^2 .K/W and 2.0 m^2 .K/W for roofs. It also sets minimum values for the efficiency of heating, ventilation, and hot water systems.

Gas connections for homes and districts

As part of the national governments policy to phase out the use of fossil gas for heating and cooking in the residential sector several regulatory changes have been made. It is no longer required that homes are connected to the gas grid, as of July 2018 newly built homes are no longer allowed to be connected to the gas grid[27], and the use of fossil gas in existing homes will be phased out (with a total ban expected for 2050).

Nearly zero-energy buildings

As of 2021 all new buildings in the Netherlands need to be Nearly Zero Energy Buildings (BENG / Wet kwaliteitsborging voor bouwen).

Civil code amendments for building-related measures

To accommodate collective renovations of rental buildings the national government is looking into ways to strengthen tenants' rights to initiate improvements to the buildings. To accommodate building-related finance a provision is being developed which will allow all lenders to provide building-related sustainability loans, meaning that the loan is not bound to the owner of the building, but the building itself[28].

Building Energy Performance Certificates

Energy Performance Certificates in the residential sector

As of January 2015 it is mandatory to have an energy label for a home being sold or rented out. As of 2021 energy labels also need to indicate the energy performance in amount of fossil energy used per surface area (kWh/m^2). The EPC's have a validity of 10

[27] RVO, "Factsheet Gasaansluitplicht Vanaf 1 Juli 2018."
[28] Netherlands Enterprise Agency, "Long-Term Renovation Strategy: En Route to a Low-Co2 Built Environment."

years and provide recommendations on improving the energy efficiency of the building[29].

Minimum energy performance standard for office buildings

As of January 1st 2023 all office buildings in the Netherlands bigger than 100 m² are required to have at least an EPC label of C (maximum primary fossil energy use of 225kWh/m²/year). The municipal authorities will have to enforce this. There are however many criteria connected to this minimum energy performance standard, with e.g. 'monumental buildings' (heritage listed), buildings in temporary use as office, and measures that would have a longer payback time than 10 years being excluded[30]. Given these criteria, the fact that municipalities are expected to enforce this standard, and that around 60 percent of the buildings are not yet reaching label C as of mid-2021[31] it remains to be seen if the standard will be reached by 2023.

7. Environmental

Relevant factors such as awareness on sustainable building renovation have been discussed under social factors.

8. Existing schemes and relevant actors in the (citizen-led) renovation sector

Existing schemes and relevant actors in the (citizen-led) renovation sector (non-exhaustive)	
Name	Description
The Coalition for Citizen Participation	Coalition of five organisations representing citizens and energy communities. As part of the Climate Agreement they provide a national support programme for both citizens initiatives and other stakeholders, such as governments and project developers.

[29] RVO, "Wetten en regels gebouwen | RVO.nl | Rijksdienst."
[30] RVO, "Energielabel C kantoren | RVO.nl | Rijksdienst."
[31] "Meer dan helft kantoren voldoet nog niet aan energielabel-C-verplichting | RVO.nl | Rijksdienst."

Energiesprong Foundation	Non-profit developing industrialised solutions to renovate buildings to net-zero.
Reimarkt	Commercial provider of energy efficiency advice and project support. Focus on social housing providers.
Municipal initiatives/measures	In addition to initiatives coming from the national government many municipalities also provide advice and support on building renovation. For example: (collective) home assessment and renovation advice, collective purchasing of measures/systems, information on renovation and available support measures.
Regional campaigns/initiatives	For example: Province of Drenthe "10.000 households campaign": together with a variety of stakeholders the province has set up a campaign to improve awareness around energy savings and increase motivation for more significant energy saving measures. Focussed on behavioural change and energy saving appliances.
HOOM	Nationally operating energy cooperative providing energy advice offices in partnership with over 50 municipalities and training energy efficiency and renovation assessors/advisors.
Energie Samen	National umbrella organization for energy cooperatives / communities
Buurtwarmte	Service part of Energie Samen, helping communities develop locally owned and governed sustainable heating systems.
Energy communities / cooperatives	There are over 600 energy communities and cooperatives in the Netherlands, many of these also

	have activities around energy efficiency, sustainable renovation, and sustainable heating.
Buurkracht	A non-profit foundation working with municipalities to empower people to develop activities with their neighbours. One of their goals is to support energy efficiency awareness campaigns, collective purchasing of e.g. solar PV and insulation material, and providing information on renovation.
Netherlands Enterprise Agency (RVO)	National agency in charge of implementing subsidy and support programs for energy efficiency and building renovation. They have a strong focus on working with businesses/SME's. Also provides information and advice on regulation, support measures, financing, etc. and runs projects on innovation, including for building renovation. For example through its TKI Urban Energy program, which has supported the launch of over 450 innovation projects related to energy in the built environment and runs a four year 'mission driven innovation program' on the acceleration of sustainable building renovation.
Energy Saving Explorer tool (Energiebesparingsverkenner)	Online tool developed by RVO that households, professionals, and municipal officers can use to get a first overview of how to improve the energy efficiency of their home. Another version of the tool is available to look into how to make an entire neighborhood more energy efficient.
TNO	National government supported research organisation on technology related topics. Advises on building renovation and works on developing (industrialised) methods to increase the speed of the building renovation process. See for example: link here

Innovation Centre for Construction and Technology (BTIC)	Set-up by the national government together with trade associations for the construction industry, umbrella organisations for universities (of applied sciences), and R&D organisations. The goal is to foster innovation through supporting partnerships between business, government, and university. Run a knowledge and innovation program on 'integrated energy transition in the built environment'. Focus is on achieving cost reductions and shortening the renovation process through using pre-manufactured components digitalised planning and monitoring, and monitoring of building performance. For heating they are focussing on affordable and easy to use heat pumps and improved heating storage solutions.
Commercial construction companies	Several nationally operating construction companies are executing renovation programs for social housing providers. E.g. BAM Wonen, Coen Hagedoorn Bouw, Dijkstra Draisma,
Dutch Green Building Council	A foundation started in 2008 by a variety of commercial stakeholders from the construction and related sectors. They developed a 'Delta Plan Sustainable Renovation' setting out the goal to have the built environment be 'Paris Proof' by 2040. Their goal is to get commercial real estate stakeholders such as investors, builders, developers, service providers, and owners to commit to reduce emissions from (their) buildings.
Platform Duurzame Huisvesting (Platform for sustainable buildings)	Focus on increasing cooperation to sustainably transform offices and other commercially used buildings
Warmte Netwerk (network for heat)	Network developed by a variety of stakeholders from the heating and cooling sector, especially stakeholders involved in district heating.

Klimaatstichting HIER / HIER Opgewekt	Foundation aimed at empowering citizens to take action on climate change through reducing their energy use, generate renewable energy, and/or participate in local initiatives. They also run the 'smart neighbour' platform which provides information on sustainable home renovation and connects people looking for information with households that have already done a sustainable renovation (in their neighbourhood).
District System Operators (DSO's)	Several district system operators operate in the Netherlands, some of which are involved in the management and development of district heating systems. Such as, for example, Firan (part of the DSO Alliander).
Commercial district heating owners	There are both large and small commercially owned and run district heating systems in the Netherlands. Larger systems are usually operated in partnership with the municipality and using waste heat or heat coming from waste incinerators.
National association for home-owners (Vereniging Eigen Huis)	National consumer organisation representing home owners (800.000 members). Their services include information and basic support with home-renovation. For example, providing costs estimates, collective purchasing schemes, information on measures and financing, discounts on some products, discount on renovation measures when using partnered contractors.

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