

Energy poverty in the Dutch heat transition: Policy options

To avert the climate crisis, homes in Europe will have to move from fossil fuels to cleaner sources of heating and become more energy efficient. This transition risks having a big impact on the most vulnerable people, such as energy-poor households, who face substantial financial barriers to renovate homes and shift to renewable heating. If European governments and the EU address energy poverty, they will ensure that the most vulnerable in society will benefit from climate policies and strengthen public support for the energy transition. In this study, we examine what measures and policies the Netherlands could implement to alleviate energy poverty, while facilitating the transition to clean heating.

1 Context

Energy poverty in the EU

Energy poverty is a widespread problem across Europe. 34 million Europeans are unable to afford keeping their homes heated (European Commission, 2020), a number that is growing frighteningly quickly due to soaring gas prices. While energy poverty is a problem throughout the EU, the rate and causes vary from country to country. The highest rates are concentrated in Southern and Central-Eastern European countries, where energy poverty is often the result of a huge amount of lower-quality, badly insulated homes. Yet, energy poverty affects also high-income countries in Western Europe, such as the Netherlands.

The EU recognises energy poverty as a urgent priority for the European Green Deal and recommends that Member States take action to alleviate it (EC, 2019). The Fit for 55¹ package includes several proposals linked to building renovation and the phase out of fossil fuels in buildings that could have wide-ranging implications for energy-poor households. For instance, the EU intends to create a Social Climate Fund to provide support measures and investments in renovations for people at risk of energy poverty. The proposal for the revised Energy Efficiency Directive (EED) requires that part of the energy savings that countries are required to achieve each year must come from measures to save energy in energy-poor households.

Europe is still largely dependent on fossil fuels for heating its homes, in particular on natural gas. To reach the 55% greenhouse gas emissions reduction goal by 2030 and net-zero emissions by 2050, Europe needs to accelerate the phase-out of fossil fuel heating and scale up the deployment of clean heating solutions. As heating accounts for the largest share of household energy cost and often is the expenditure that drives low-income households into energy poverty, policymakers are facing the challenge of ensuring that people in energy poverty are able to switch to clean heating systems and do not remain locked in the expensive fossil fuel infrastructure.

¹ This package of measures is intended to ensure that the objectives of the Green Deal are realised and the EU cut its greenhouse gas emissions at least by 55% by 2030.

Energy poverty and the heat transition in the Netherlands

As one of the front-runners in the decarbonisation of heating in Europe, the Dutch government has made a priority to phase out natural gas in homes. This heat transition requires investments in home renovations and ‘natural gas-free’ heating technologies. In addition, while the transition to clean energy will in the long term reduce costs, energy prices will rise in the short term due to a combination of policies, market developments and increased investment in new technology. Energy poverty and the affordability of energy bills are therefore an increasing concern, particularly in the context of the heat transition. Energy poverty may even pose a threat to the success of energy transition if not tackled, as socially just climate policies are essential to enhance public and political support for the energy transition (RAP, 2020).

Energy poverty is affecting people in the Netherlands and is expected to increase if no action is taken to combat it. However, for a long time there has been little attention for, or studies into, energy poverty in the Netherlands. The Dutch government doesn’t have a strategy nor have implemented targeted measures to tackle energy poverty. Support for lower-income households is seen as an element of poverty alleviation, which are part of general social policy (Ministry of Economic Affairs and Climate Policy, 2020). More recently, the central government and municipalities have been paying increasing attention to energy poverty as a specific problem, particularly since the sharp increase in energy prices from the autumn of 2021.

This study outlines a systematic approach to recognising and quantifying energy poverty and assesses the impact of policy measures that are aimed at addressing energy poverty in heat transition. This approach may be useful for other European countries that will go through a similar heat transition and that may face similar challenges.

2 Main findings

Energy poverty occurs in diverse groups of households and homes

According to 2020 Eurostat data, 2.4% of the population in the Netherlands is unable to keep their home adequately warm. In our research, we found energy poverty is a bigger problem. There are approximately 274,000 households (3,9% of households) that are unable to afford energy bills or are forced to use less energy than needed to keep their home adequately warm.

Energy poverty takes different forms and can be measured through several indicators. In this study, we have chosen to measure energy poverty using indicators that specifically address the inability to afford energy bills and hidden energy poverty.

Households that cannot afford energy bills

First, we examine households where the energy bill leads to an **affordability problem**. For this purpose, we use a database with sample results of more than 67,000 Dutch households² from Statistics Netherlands (CBS) (Ministry of the Interior and Kingdom Relations & CBS, 2019). The Netherlands has a total of 7.9 million households.

² A weighting was applied to make these sample results representative of all households in the Netherlands.

We use a combination of two indicators to measure how many households can't afford energy bills:

- **High energy expenditure ratio:** the energy expenditure is more than 8% of the disposable income of the household. In the Netherlands, this amounts to 8.8% of households (634,000).
- **Payment risk:** a household, after paying its energy bill and housing costs, has insufficient residual income to meet minimum living costs. In the Netherlands, this affects 5.5% of households (almost 400,000).
- **High energy expenditure ratio and payment risk:** households with both a high energy expenditure ratio and a payment risk have an affordability problem that is largely caused by a high energy bill. This occurs in 3.3% of households in the Netherlands (234,000 households).

Energy poverty as an affordability problem - both a high energy expenditure ratio and a payment risk - is particularly prevalent among low-income households. Energy poverty occurs in 26% of households with the lowest 10% of income and in 36% of households receiving unemployment or welfare benefits.

Energy poverty is relatively more common in rental housing. In the Netherlands, 25% of households live in social rented housing, 10% in private rented housing and 56% in owner-occupied housing. Of the households with energy poverty, almost two-thirds (59%) live in social housing, 24% live in private rented housing and 17% in owner-occupied housing.

Energy poverty is not only found in homes that are energy inefficient. Energy demand can be high even in reasonably insulated homes, such as when people spend a lot of time at home. For some households, a low income is the main cause of energy poverty.

Hidden energy poverty

Energy poverty cannot always be described by the difficulty in paying high energy bills. In order to stay in their budgets, some households deliberately use less energy than needed to adequately heat, cool and power their home. This is often called hidden energy poverty because it is not directly measurable: since the energy use is very low, there is no evident affordability problem or high energy expenditure ratio. In this study, we developed an indicator for hidden energy poverty. Approximately 40,000 households in the Netherlands experience hidden energy poverty.

Energy poverty increases without additional policies

In scenarios without measures specifically targeted at combatting energy poverty, we find that energy poverty increases. In the short term, the energy transition will lead to higher energy costs and low-income households will not have financial means to invest in renovations and more sustainable heating systems. If no energy efficiency improvements and clean heating technology for energy poor households are taken, the percentage of households in energy poverty will increase by one-third at the projected energy prices in 2030. In the lowest 10% income group, the share of households affected by energy poverty will then increase from 26 to 34%. If all homes are made energy-efficient and 'gas-free', the increase in the number of households affected by energy poverty in 2030 is smaller than without energy measures.

Improve energy efficiency, increase awareness and short term financial support

To address energy poverty, governments can focus on three approaches:

- Improve the energy efficiency of homes, thereby structurally reducing energy bills and simultaneously advancing the heat transition.
- Increase awareness and energy-efficient behaviour at household level, for example through energy coaches or energy monitors, to reduce energy consumption and save on energy bills
- Introduce relief measures that focus solely on alleviating payment problems, either reducing the energy bill or providing social benefits for specific risk groups. However, these measures only provide relief for as long as the financial support is available, and do not deliver benefits in term of energy savings or the transition to clean heating.

Effects of policies on energy poverty and energy savings

In the study, we evaluated a selection of possible policy measures the Dutch government could implement to alleviate energy poverty and improve the living conditions of households in energy poverty. Table 1 provides a brief description of each measure.

Table 1 - Overview of measures

Type	No.	Measures until 2030	Target group	Number of households in the target group
Sustainability measures	1	Vouchers for basic insulation for owner-occupied homes: all owner-occupier households receive a one-time allowance for insulation measures	Owner-occupier households living in homes with EPC label D-G	1,800,000
	2	Vouchers for basic insulation for minimum-income households in owner-occupied homes: owner-occupier households with a low income and poorly insulated home get a one-time allowance for insulation measures	Low-income owner-occupier households, living in homes with EPC label D-G	45,000
	3	Discontinuation of landlord levy and commitment to insulate buildings with the worst energy performance rating: in the Netherlands, housing associations pay a landlord levy on the value of their social housing stock. The landlord levy involves large sums: since its introduction in 2013, € 11.7 billion in landlord levies has been paid by housing associations in the Netherlands. Discontinuation of the landlord levy creates investment opportunities for housing associations to insulate 450,000 homes	Social housing association homes with EPC label D-G	450,000
	4	Renovation to natural gas-free homes by energy service provider: a centrally managed service provider executes energy measures to make homes gas-free, financed by the national government	1.5 million homes before 2030 (target in Dutch Climate Agreement)	1,500,000
	5	Mandatory minimum energy performance standards and full subsidy: starting in 2023, require	All households whose homes have EPC label	2,500,000

Type	No.	Measures until 2030	Target group	Number of households in the target group
		homeowners to insulate their home when changing occupants (both in the case of sale and new tenants). Financed by the national government	C/D* and lower and with relocation before 2030	
	6	Energy performance requirement for heating and full subsidy: new heating systems must be more efficient than gas boilers from 2023 onwards. The hybrid heat pump will therefore become the standard heat technology. Financed by the national government	All households whose gas boiler will be replaced before 2030	3,000,000
Energy coaches and energy monitors	7	Energy advice by energy coaches: households with a high energy expenditure ratio receive energy advice to implement small energy-saving measures	Households with a high energy expenditure ratio	1,200,000
	8	Energy monitors: for households with a high energy expenditure ratio, an energy monitors installed to provide insight into energy consumption	Households with a high energy expenditure ratio	1,200,000
Measures providing relief	9	Extra bracket energy tax <1,000 m³: new tax bracket in which the tax will be increased moderately on consumption up to 1,000 m ³ and increased significantly above this level	All households	7,900,000
	10	Increase in energy tax credit: increase in tax credit by € 230	All households	7,900,000
	11	Rent freeze for property with a low energy rating: landlords of homes with EPC label D or worse are prohibited from raising the rent	Rental housing with EPC label D-G	408,000
	12	Energy allowance: all households receiving healthcare allowance will receive an annual energy allowance of € 1,000	Households that are under the income limit eligible for healthcare allowance	1,600,000

* The insulation standard is the insulation level at which pre-war homes can be heated using 70°C heating water, and post-war homes can be heated using 50°C heating water.

Figure 1 shows the calculated effects of these measures on energy savings and energy poverty (defined here as the inability to afford energy bills). It can be seen in the figure that the three types of measures - sustainability measures, energy coaches and measures providing relief - have different effects. Energy efficiency measures have significant impact on both energy savings and energy poverty relief. The cost of these measures may be high (up to several billion EUR a year), but they will have a permanent effect. Mandatory minimum energy performance standards with full subsidy and basic insulation for all owner-occupied houses deliver the most in terms of energy savings.

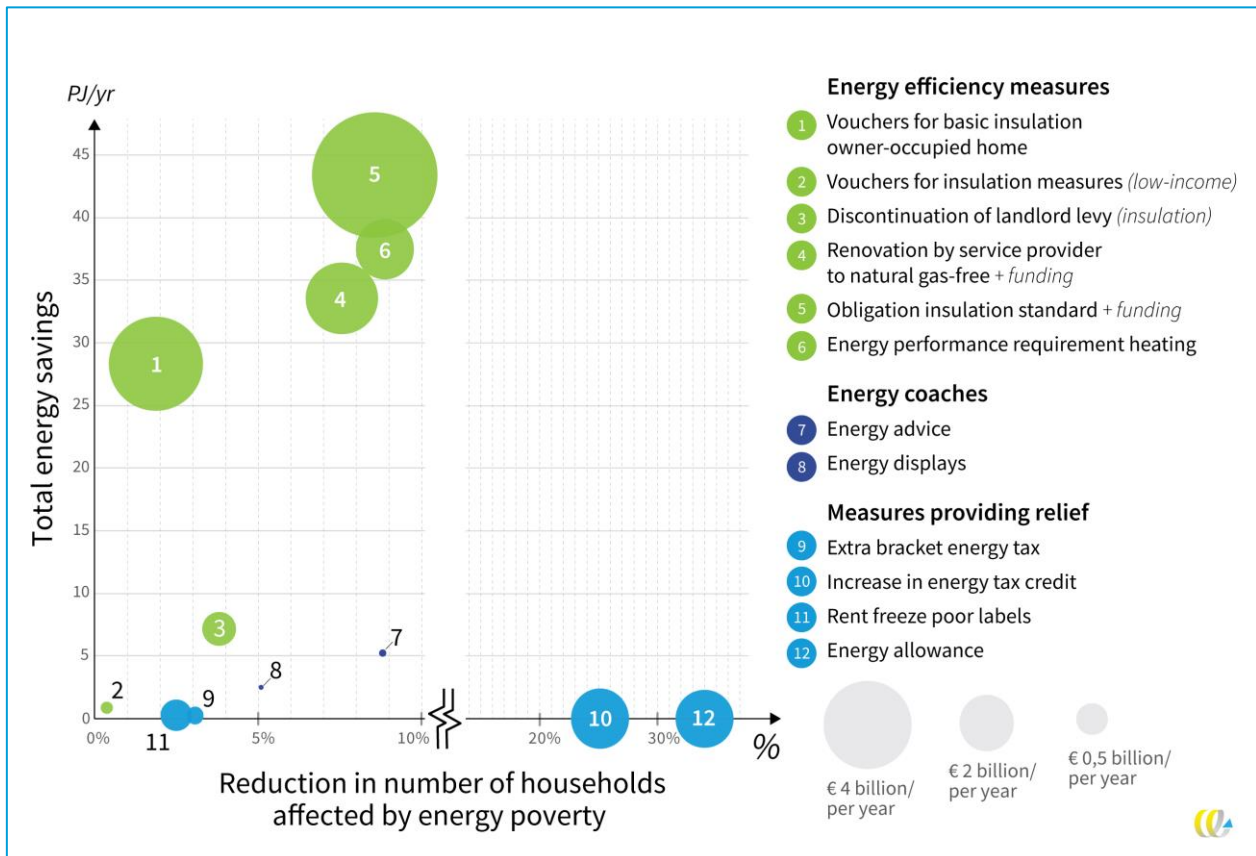
On the other hand, the effect of these measures on the number of households experiencing energy poverty is relatively limited - 10% households will be lifted out of energy poverty. Some of the households affected by energy poverty live in a home with a fair or good energy label. These households do not benefit from basic insulation measures. In addition, some of the households have such a high energy expenditure ratio and/or affordability risk that making their homes more energy efficient does not have sufficient effect.

Renovating all homes one at a time has a limited and slow effect on alleviating energy poverty. The greatest structural effect can be achieved if households affected by energy poverty receive priority with regard to energy efficiency measures. Further research can identify these households more precisely and specify how to accelerate renovation.

Advice from energy coaches and installation of energy monitors can reduce energy poverty by approximately 9% and achieve limited energy savings at a relatively low cost. However, these measures do not yield sufficient results for the heat transition: more significant measures are required to reach the long-term climate targets.

When energy improvements are not sufficient to lift households out of energy poverty or the households already live in a well-insulated home, low income is a major factor in energy poverty and relief measures are needed. Income support measures, such as energy allowances and higher tax credit, can reduce the number of households in energy poverty by 35 and 25% respectively.

Figure 1 - Impact of measures on energy savings and energy poverty



3 Conclusions and recommendations for EU policymakers

If the energy transition is shaped and steered in a smart way, achieving climate goals and countering energy poverty can go hand in hand. Policies that reduce energy use in homes, alleviate energy poverty and help advance the heat transition at the same time. A combination of subsidies, assistance and prescriptive policy measures is crucial to effectively reach households affected by energy poverty. For some households, energy efficiency measures will have to be complemented with income support policies.

In the following paragraphs we present recommendations for alleviating energy poverty in the context of the European Green Deal.

Social Climate Fund

As part of the Fit for 55 package, the EU has proposed the creation of a Social Climate Fund to support households at risk of energy poverty. However, it is not yet clear how the financing will reach people.

This study shows that to effectively tackle energy poverty, it is important to combine different measures. Sustainability measures (aimed at improving *energy efficiency*) or mitigation measures (*income support*) on their own offer a one-sided solution; both approaches are needed.

Minimum energy performance standards (MEPS)

The European Commission has proposed the introduction of minimum energy performance standards for existing buildings as part of the revised Energy Performance of Buildings Directive (EPBD), the bearing pillar of the EU's Renovation Wave which aims to significantly upgrade Europe's building stock. Minimum energy performance standards (MEPS) can support a massive increase in the renovation rate needed for the European Union to achieve zero-emission buildings (RAP, 2020).

Insulating homes is not only an important measure to meet energy efficiency goals, but also to combat energy poverty. In doing so, however, it is important to remember that owner-occupants affected by energy poverty do not have the financial resources to invest in improving the energy efficiency of their homes themselves. To ensure that they do not aggravate energy poverty levels, the introduction of MEPS should be combined with subsidy or financing options for renovations for households affected by energy poverty.

One example is a voucher for insulation measures. A voucher is a credit that homeowners can use to claim a subsidy, which is awarded prior to starting renovation works. The advantage of this is that homeowners do not experience uncertainty as to whether they will actually receive the subsidy and they do not have to pay for the measures in advance with their own savings.

Energy service providers (or energy service companies, ESCOs) could make extensive renovations possible for homeowners without having to invest financial resources or efforts themselves. An energy service provider is not only responsible for implementing energy efficiency measures and arranging funding, but also for monitoring and maintenance. This means that the homeowner does not need to make any pre-investment or take out a loan.

Energy savings obligation in Energy Efficiency Directive (EED)

The proposal for the revision of the Energy Efficiency Directive (EED) requires EU Member States to reach annual energy savings of 1.5%. and to achieve part of these energy savings from among vulnerable customers and final users, people affected by energy poverty and, where applicable, people living in social housing (article 8). These energy savings can be achieved by Energy Efficiency Obligation Schemes (EEOS) and/or by other policy measures.

Both in the context of the EED and for lasting reduction of energy poverty, it is important that structural measures are taken to achieve long-term energy savings. Structural measures include insulation and switching to more efficient heating technologies.

Though the effects of behavioural interventions are less certain and the lasting effect is unknown, offering energy advice should be seen as an important first step towards structural energy measures in energy-poor households. An approach using energy coaches also includes identifying vulnerable households, and increases awareness and trust. In addition, energy efficiency advice by energy coaches

can deliver some energy savings and improved home comfort, although less significantly than retrofitting measures. A study of more than 22,000 Dutch households shows that advice in combination with minor energy-saving measures leads to an average saving of 8% on electricity consumption and 5% on gas consumption.

Energy poverty in National Climate and Energy Plans (NECPs)

Member States are required by EU law to report on energy poverty in their Long-Term Renovation Strategies (LTRS) and National Energy and Climate Plans (NECPs). These must contain definitions, indicators, timeframes and policies to reduce energy poverty. Research (LIFE Unify, 2020) shows that multiple Member States have failed to even provide a clear definition of energy poverty in their national plans.

Our study shows that, rather than generic measures, targeted measures are needed to tackle energy poverty effectively. Therefore, to identify and monitor households at risk of energy poverty, it is important to have a clear definition of energy poverty and related indicators. An EU-wide definition of energy poverty is still lacking (EC, lopend). Developing clear EU-wide definitions and indicators would help develop a more focused approach throughout Europe.

References

- EC. (lopend). *Conclusions: Indicative energy poverty indicators in the EU 28*. Retrieved december 15, 2021, from https://ec.europa.eu/energy/content/conclusions-indicative-energy-poverty-indicators-eu-28_en
- EC. (lopend). *Energy poverty*. Retrieved december 15, 2021, from https://ec.europa.eu/energy/eu-buildings-factsheets-topics-tree/energy-poverty_en
- European Commission. (2020). *Renovation Wave: doubling the renovation rate to cut emissions, boost recovery and reduce energy poverty*. Retrieved december 15, 2021, from https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1835
- LIFE Unify. (2020). *Tackling energy poverty through National Energy and Climate Plans: Priority or empty promise?* LIFE Unify.
- Ministry of Economic Affairs and Climate Policy. (2020). *Integraal Nationaal Energie- en Klimaatplan: 2021 - 2030, p.47*. Den Haag: Ministry of Economic Affairs and Climate Policy.
- Ministry of the Interior and Kingdom Relations & CBS. (2019). *WoOn2018: release 1.0 - Woononderzoek Nederland 2018*. Retrieved from <https://easy.dans.knaw.nl/ui/datasets/id/easy-dataset:121805>
- Nieman. (2021). *Rapport standaard en streefwaardes bestaande woningbouw*.
- RAP. (2020). *Case studies: Minimum energy performance standards for European buildings*. Brussels: Regulatory Assistance Project.
- RVO. (2021). *Standaard en streefwaarden*. Retrieved from <https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/gebouwen/wetten-en-regels/standaard-en-streefwaarden-voor-woningisolatie>