

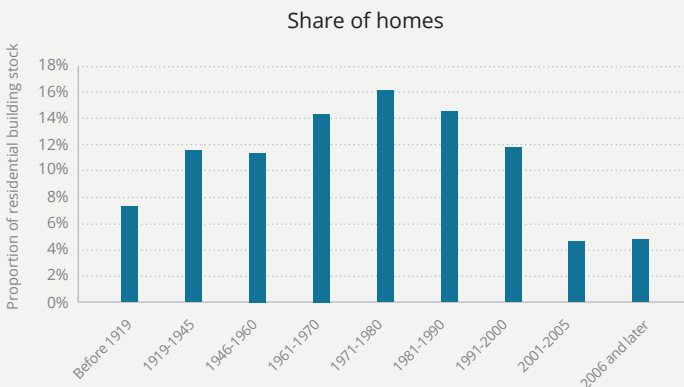
130 million people live in rural areas across Europe. These communities matter and need to be understood. To deliver a just energy transition, policy should reflect conditions in rural areas. However, data is often difficult to find.

This series of country-profiles provides the reader with an accessible overview of the key rural energy challenges in selected EU member states and brings together important datapoints in an accessible review.

Rural Energy Matters

- **Rural air quality is a problem in the Netherlands.** 90% of rural air quality stations reported emissions in excess of WHO guidelines in 2018. PM_{2.5} emissions caused estimated damage costs equivalent to €200 million in 2017.
- **Off-grid household emissions are stagnant.** Between 2015 and 2018, estimated off-grid emissions from household energy consumption fell by only 1.4%. Despite this fall, emissions from coal consumption have increased over the same period.
- **The building stock is old and energy inefficient.** Around 60% of homes were built before 1981, and over 40% of homes were built before the first thermal regulations.

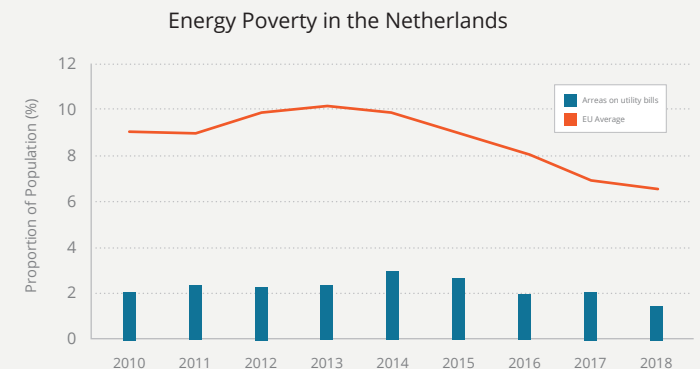
AGE BREAKDOWN OF BUILDINGS IN THE NETHERLANDS



- Most homes (60%) were built before 1981.
- Over 40% of homes were built before the first thermal regulations (built before 1970).
- These homes are typically less energy efficient and have higher fuel bills than modern homes.

Source: [Eurostat](#) and [European Commission](#)

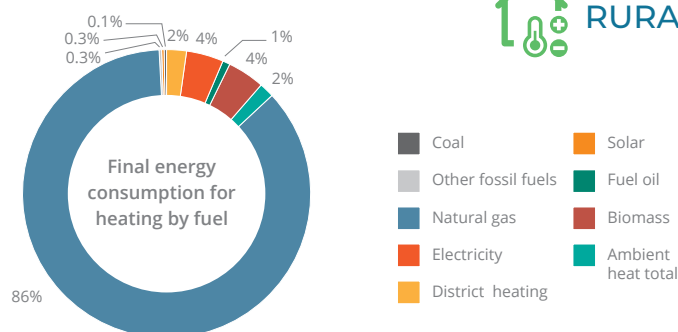
ENERGY POVERTY IN THE NETHERLANDS



- Energy poverty has been falling in the Netherlands, with 1.5% of the population having arrears on utility bills in 2018.
- In comparison to the EU average which is 6.6%, it is evident that energy poverty in the Netherlands is less of an issue compared to Europe as a whole.

Source: [Eurostat](#)

RURAL HEAT DEMAND



Source: [DG Energy](#) and [Oxford Energy Institute](#)

The majority of final energy consumption for heating in the Netherlands is derived from natural gas (86%), electricity (4%) and biomass (4%).

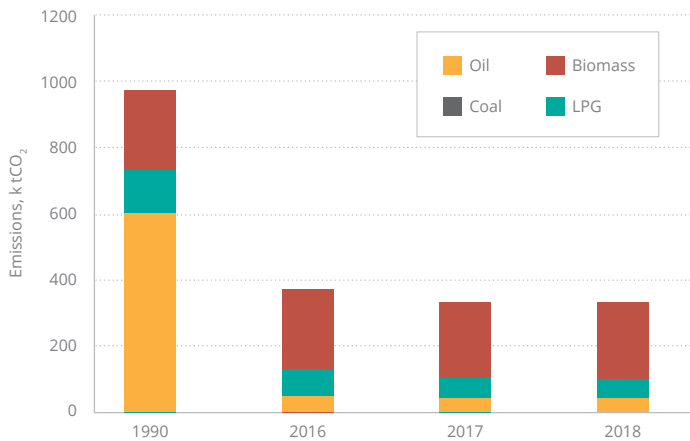
As most Dutch homes are connected to the gas grid (~95%), fuel consumption in urban and rural areas is very similar. However, there is still some consumption of carbon-intensive fuels such as heating oil.



The Netherlands - Rural Energy Data

CO₂ RURAL CO₂ EMISSIONS TRAJECTORY

Off-grid household CO₂ emissions



- Approximately 5% of buildings are not connected to the gas grid and must rely on alternative fuels for heating (e.g. LPG, oil, coal and biomass).
- Between 2015 and 2018, estimated off-grid emissions* fell 1.4%. Despite this decrease, emissions from coal consumption increased 100%.
- Overall, greenhouse gas (GHG) emissions stand at 205.8 million tonnes (Mt) CO₂e, 9% less than 1990 levels (226.4 MtCO₂e).
- Per capita emissions are at 12 tCO₂e, which are down 17% from 2000 levels (14 tCO₂e).

Sources: [Oxford Energy Institute](#) and [Eurostat](#).

*emissions from the household consumption of heating oil, coal, LPG and biomass.

RURAL AIR QUALITY CHALLENGES

Most air quality stations in the Netherlands reported PM emission levels above WHO guidelines

Map of rural air quality stations reporting PM_{2.5} emissions above WHO guidelines in 2018



- 90% of rural air quality monitoring stations in the Netherlands reported PM_{2.5} background emission levels in exceedance of WHO guidelines in 2018 (emission limits of 10 µg/m³ per calendar year).
- Fine particulate matter (PM_{2.5}) exposure has been attributed to 9,200 premature deaths in 2016.
- The damage cost imposed on the economy from emitting PM_{2.5} was estimated at approximately €200 million in 2017.

Source: [European Environment Agency](#), [WHO](#) and [OECD](#)

RURAL ENERGY MATTERS

Rural areas account for 9% of the Netherlands population. These rural communities are often not connected to the natural gas grid. As a substitute, heating oil and solid fuels are widely consumed for heating purposes.

Decarbonising heat will be necessary if the Netherlands is to meet its climate change targets. To do this in a just and effective way, policymakers need to balance emission reduction, air quality and energy affordability challenges, all of which impact the Netherlands rural communities.



The Future of Rural Energy in Europe (FREE) initiative was created by SHV Energy in 2010 to promote the use of sustainable energy within rural communities. FREE is supported by a variety of stakeholder groups, together giving a voice to all those who believe that rural energy needs are important, and aiming to add new perspectives to the EU's energy and climate debate. Identifying untapped potential in Europe's rural areas to decarbonise and improve air quality in a cost-effective manner. Filling in rural energy data gaps. Engaging and supporting rural communities is essential if government energy, climate and environment policies are to be realised.