

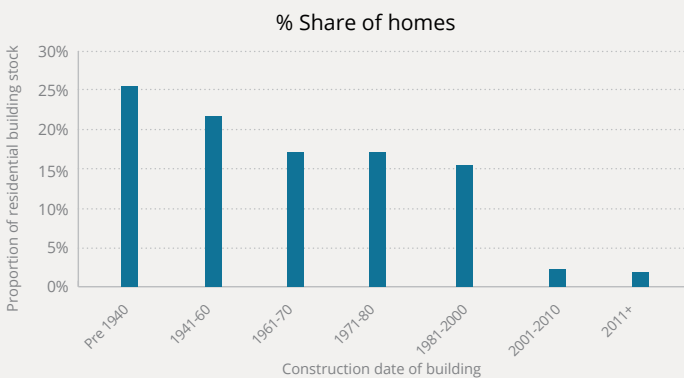
130 million people live in rural areas across Europe. These communities matter and need to be understood. To deliver a just energy transition, policy should reflect conditions in rural areas. However, data is often difficult to find.

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

- **The Swedish building stock is old.** Most homes (64%) were built before 1971. These older homes are more likely to be thermally inefficient (high heat leakage) and therefore have a higher energy demand.
- **Rural fuel emissions have fallen.** Since 1990, rural emissions have fallen 82% due to a significant fall in oil consumption.
- **Energy poverty has fallen.** The proportion of the population with arrears on utility bills has fallen by 3% since 2009, making energy poverty in Sweden less of a problem than elsewhere in Europe.

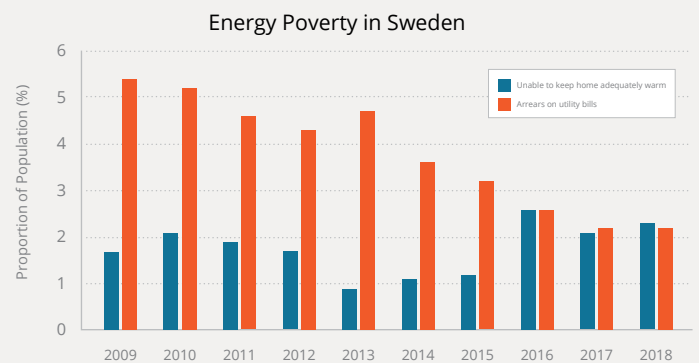
### AGE BREAKDOWN OF SWEDISH BUILDINGS



- The Swedish building stock is old, the majority of homes (64%) were built before 1971.
- Older properties have higher energy use and produce higher emissions than modern homes.
- For example, SFH's built in 1961-80 have 40% higher energy demand than those built in 2011-13.
- Many of the one million homes constructed in the 1965-75 housing programme (~20% of the housing stock) require energy efficiency measures.

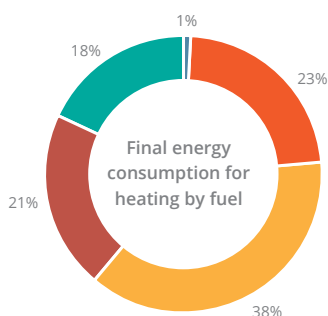
Source: [SCB \(Statistics Sweden\)](#) and [iBRoad](#)

### ENERGY POVERTY IN SWEDEN



- In Sweden, only 2% of the population were unable to keep their home warm in 2018.
- The proportion of the population with arrears on utility bills has fallen by over 3% since 2009.
- Energy poverty in Sweden is less of an issue than elsewhere in Europe.

Source: [Eurostat](#)



### RURAL HEAT DEMAND

The majority of final energy consumption for heating in Sweden is derived from district heating (38%), electricity (23%), biomass (21%) and ambient heat (18%).

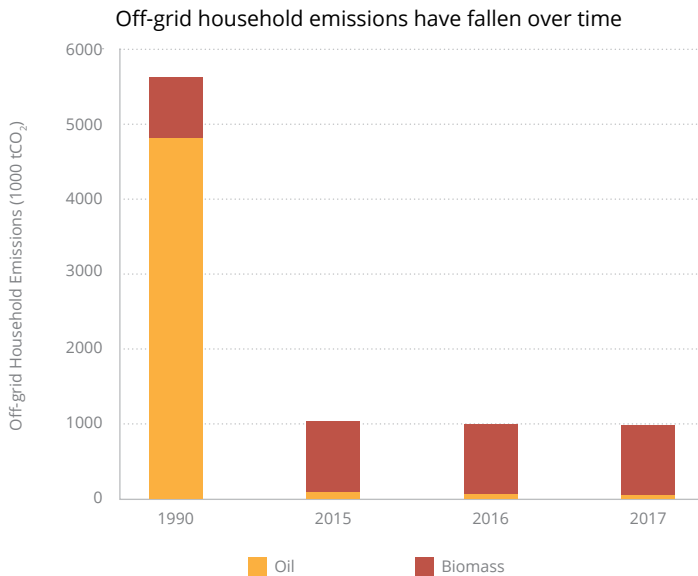
In rural areas, where district heating is not used, many communities use heat pumps for heating. However, it is estimated that around 35,000 residential oil boilers are still in regular use. These boilers are carbon intensive and emit air pollutants such as particulate matter (PM) and oxides of Nitrogen (NOx).

Source: [DG Energy](#) and [MSB \(Swedish Civil Contingencies Agency\)](#)



# Sweden - Rural Energy Data

## CO<sub>2</sub> RURAL CO<sub>2</sub> EMISSIONS TRAJECTORY



- CO<sub>2</sub> emissions from rural fuel\* consumption have fallen by 82% since 1990 and have remained stable in recent years. This is due to a sharp reduction (~99%) in oil consumption.
- In recent years, emissions have continued to fall, by 2%, with lower emissions from oil at the expense of an increase in biomass emissions.
- Overall, Sweden's greenhouse gas (GHG) emissions stand at 55.5 million tonnes (Mt) CO<sub>2</sub>e. This has fallen 24% from 1990 emissions (72.1 MtCO<sub>2</sub>e).
- Per capita emissions are at 5.5 tCO<sub>2</sub>e, which are down 30% from 2000 levels (7.9 tCO<sub>2</sub>e).

Sources: [Eurostat](#) energy balance data, GHG emissions, emissions per capita  
\* here defined as heating oil, coal, LPG and biomass

## RURAL AIR QUALITY CHALLENGES

Rural air quality in Sweden is less of an issue than elsewhere in Europe

Map of rural air quality stations reporting PM<sub>2.5</sub> emissions in 2018



- In Sweden, fine particulate matter (PM<sub>2.5</sub>) exposure has been attributed to 2,900 premature deaths in 2016.
- PM<sub>2.5</sub> emissions caused estimated damage costs of €633 million in 2017.
- However, rural air quality monitoring stations did not report PM<sub>2.5</sub> background emission levels in exceedance of WHO guidelines in 2018 (emission limits of 10 µg/m<sup>3</sup> per calendar year).

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

## RURAL ENERGY MATTERS

Rural areas account for 13% of Sweden 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 Sweden 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 Sweden's 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.