

## Abstract 2: Projections of savings on energy costs by HP's.

From the paper "Drivers to heat pump adoption by European Households".

***Under the market assumptions used in this model, the installation of a heat pump to substitute a natural gas boiler as a heating and domestic hot water system is expected to generate energy savings over the forecasted period of 10 years. It's expected that the savings will increase in time.***

One of the recurring arguments when advocating for the installation of a heat pump is the lower anticipated energy consumption, which translates into lower bills and therefore increased savings for households. To give a solid base to this claim, Daikin Europe has performed a simulation forecasting energy prices in Europe. The exercise is necessarily based on assumptions and subject to a high degree of uncertainty concerning the future evolution of the global economy, however, it offers a fairly solid base for future assessment of energy savings.

To estimate future energy prices for households, Daikin has calculated a baseline price projection, based on historical energy prices corrected to mitigate the effect of outliers. Additionally, the effect of the European Emission Trading System on Consumer prices has been accounted for, as well as the future effect of Carbon Taxation. The graph below provides an estimate of price evolutions based on the assumptions mentioned above.

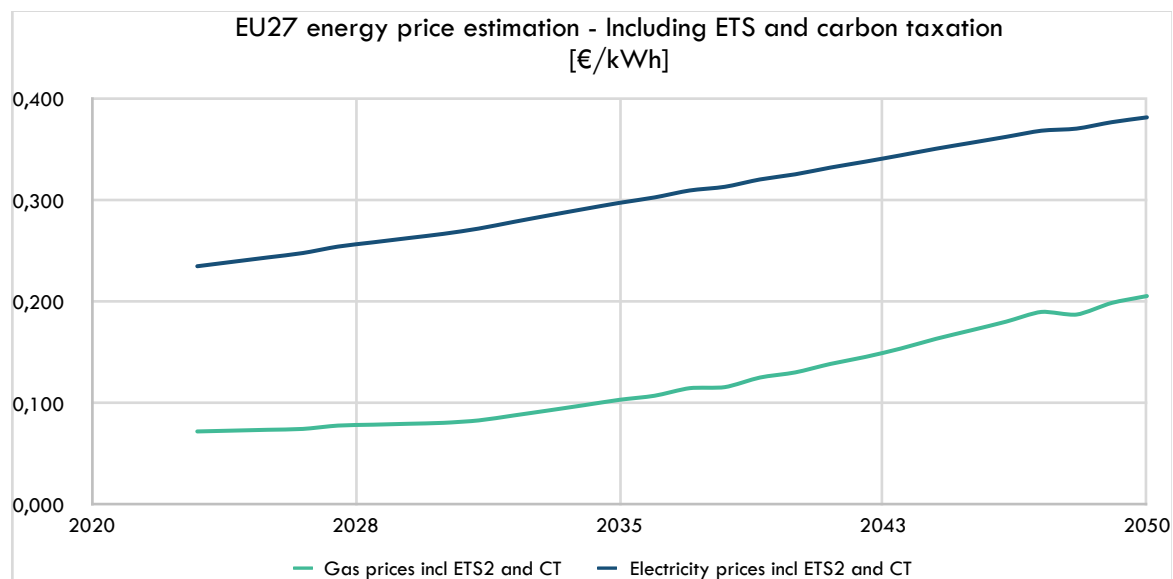


Figure **Error! No text of specified style in document..1** Sources: Own calculations

Although forecasted prices after 2032 are beyond the scope of this project, it is worth noticing how after 2035 the effect of ETS and Carbon Taxation will play an even greater role in rendering fossil fuels more expensive for European households.

To better define energy savings up until 2032, a case study has been worked out which gives a projection of the estimated savings over a time span of 10 yr. 2 cases have been worked out:

- the consumption of a heat pump
- the consumption of a gas boiler.

For reference a house with a space heating demand of 10.000 kWh was chosen. This corresponds to (approximately) an annual gas consumption of 1100 m3. This reference house would be a new house to 200 m2 or a mid-size renovation (up to 120 m2, E energy class).

In this specific comparison, the installation of a heat pump is expected to generate consistent energy savings over the forecasted period of 10 years. The table below shows the expected energy savings when using a heat pump (HP).

EU27 Average				
10 000 kWh home				
Year	Yearly running cost Heat Pump	Yearly running cost gas boiler	Energy savings	Cumulative Savings
2023	563,82 €	807,44 €	243,62 €	243,62 €
2024	574,24 €	816,50 €	242,27 €	485,88 €
2025	584,58 €	825,66 €	241,08 €	726,96 €
2026	594,98 €	835,06 €	240,08 €	967,04 €
2027	610,21 €	871,69 €	261,49 €	1.228,53 €
2028	620,25 €	881,48 €	261,23 €	1.489,76 €
2029	630,28 €	891,48 €	261,20 €	1.750,95 €
2030	640,28 €	901,71 €	261,43 €	2.012,39 €
2031	652,69 €	928,14 €	275,45 €	2.287,84 €
2032	668,54 €	982,59 €	314,06 €	2.601,90 €

Energy savings are expected to increase over time as the divide between average European electricity and natural gas prices increase. The total amount saved at the end of the forecasted period in the simulation is 2602 euros. Savings are always positive and grow at a steady pace over 10 years.

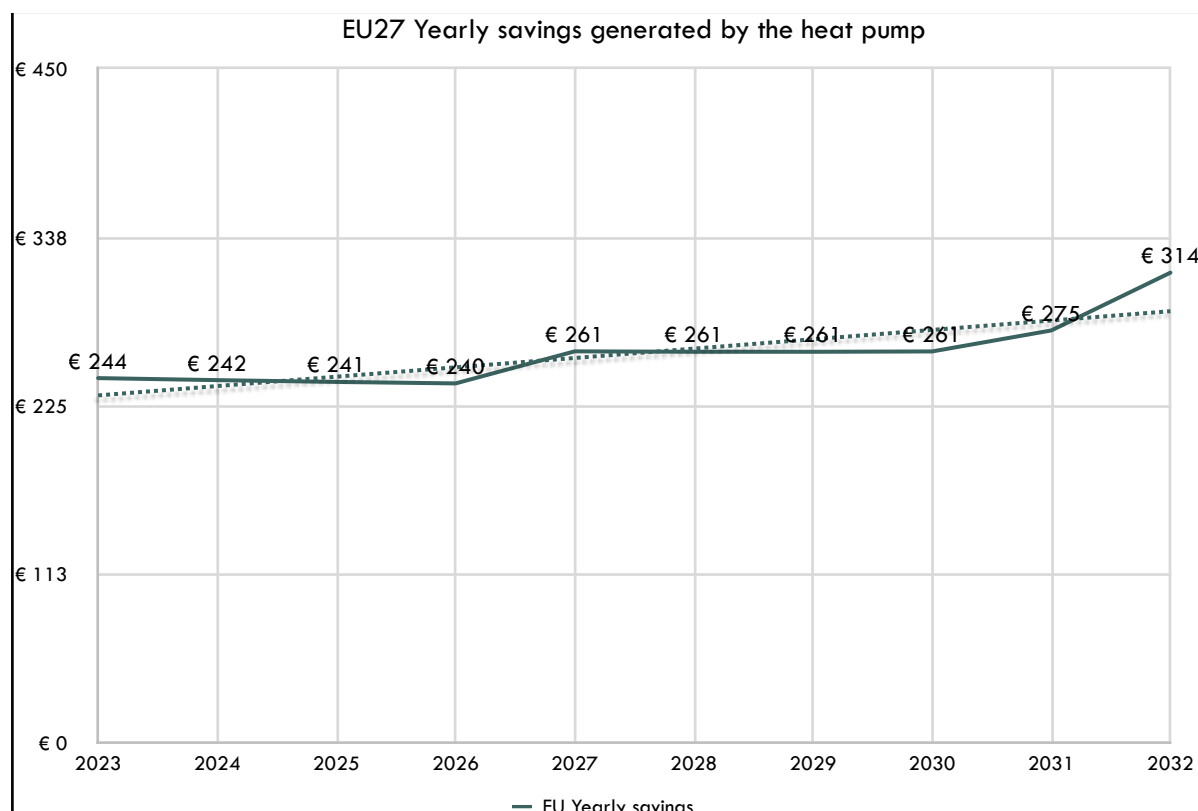


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These findings assume a renovation rate and amplification effect coherent with the current European rate, then implementation of carbon taxation form 2023 to facilitate decarbonisation, and constant market shares of technologies with eventually a phase-out of non-condensing boilers.

It is important to remember, in interpreting the data in this paper, that the forecasted energy prices are driven by the underlying assumptions in the model, and are subject to a great degree of uncertainty concerning the future evolution of the energy market and global economy. It is therefore imperative to keep in mind that these are simulations, not predictions.

For a more precise quantitative assessment, for sources and references, please refer to [the complete paper](#).