

## **ENG**

### **Energy coaching and smart technology halves energy bills for Dutch households**

New MIT and AMS Institute research reveals that energy coaching and smart technology can help solve energy poverty. Through simple measures, energy bills and consumption fell, and households saved more money.

The study, led by Joseph Llewellyn from MIT's Senseable City Lab Amsterdam in collaboration with the Amsterdam Institute for Advanced Metropolitan Solutions (AMS Institute), demonstrated that 75% of participating households moved out of energy poverty (when more than 8% of a household's income is spent on energy) using this approach. Households reduced their electricity consumption by an average of 33%, gas consumption by 42%, and saved an average of 104 euros per month—a 53% reduction in energy costs. The percentage of income spent on energy dropped from 10.1% to 5.3%.

Energy poverty affects over 550,000 households in the Netherlands, with about 35,000 in Amsterdam alone. The City of Amsterdam is working to get all households off natural gas by 2050 as part of its energy transition. So, to avoid leaving vulnerable households behind in this transition, the municipality can support them in reducing their energy-related emissions and costs. This will prevent them from being disproportionately burdened with higher energy costs. This research also appears at an important time because participants expressed concern about their financial future, partly due to the removal of temporary social benefits such as energy subsidies.

#### **Direct solutions for those living in energy poverty**

Researchers visited 167 households across Amsterdam, implementing both technical and behavioral changes to reduce energy consumption. This included installing radiator foil, draught strips, and water-saving showerheads, along with smart technology such as real-time displays that tracked energy use. This allowed residents to make immediate adjustments, such as lowering thermostats and turning off unused appliances. Practical energy-saving advice like taking shorter showers and heating homes more efficiently also contributed to the savings.

#### **The Importance of the humble energy coach**

The most significant savings came when families received guidance from an energy coach. While many households made technical improvements, they didn't see noticeable savings until they worked with a coach. The coaches focused on personalized, non-judgmental solutions. "The level of energy literacy varied quite a bit," says Llewellyn. "I never moralized about energy use. Instead, I worked with residents to find solutions that suited their specific situation."

#### **The hidden challenge of energy costs**

For many low-income households, paying for energy-related improvements can be difficult. According to Llewellyn, energy costs often feel "invisible" compared to necessities like food and clothing. "For a household that cannot spare 100 euros, these are big costs. Energy is often the last thing people think about when paying for other basic needs," he adds.

#### **What's next?**

This research provides insights that can guide better energy poverty policies. As Annoesjka Nienhuis, Program Manager for Innovation and Sustainability at the Municipality of Amsterdam, states, "This research provides insights for better energy poverty policies and, through the home visits, has directly helped reduce residents' energy bills."

However, the researchers also acknowledge that tackling energy poverty requires addressing structural factors like lowering energy prices and improving building efficiency. To this end, Llewellyn is developing an experiment with Amsterdam officials to explore retrofitting residential buildings to reduce energy costs. The challenge is ensuring these measures benefit residents rather than increasing rents. "We don't want a household to save money on energy bills if the rent goes up," Llewellyn explains.

This research is part of the Energy Lab South East, a collaboration between AMS Institute, the City of Amsterdam, TU Delft, and HvA to advance a social energy transition in South East Amsterdam. It's a strong example of how the lab bridges science and practice to address urban challenges. For more, visit [openresearch.amsterdam](https://openresearch.amsterdam)

Amsterdam Institute for Advanced Metropolitan Solutions (AMS Institute) is a unique center for urban innovation founded by TU Delft, Wageningen University & Research, and MIT, in partnership with the City of Amsterdam.

We bring together scientific experts and the community to develop new ideas, research and technologies that help solve key challenges in the Amsterdam region, such as improving transport, food systems and circular economy.