

Schneider Electric  
Whitepaper

# The Rise of Home Energy Efficiency

How households are  
adapting their energy  
use to reduce bills and  
emissions in the face  
of global crises

Life Is On

**Schneider**  
Electric

## Report Contents

<b>Foreword</b> – by Michael Lotfy Gierges, Executive Vice President, Home & Distribution, Schneider Electric	3
<b>Methodology</b>	4
<b>Findings</b>	
<b>#1</b> The energy crisis has shifted our priorities	6
<b>#2</b> Sustainability and energy; one in the same?	13
<b>#3</b> A smarter way to manage energy use	19
<b>#4</b> Homes of the future, today	23
<b>Conclusion</b> The time for wiser energy use is now	25

## Foreword

By Michael Lotfy Gierges,  
Executive Vice President,  
Home & Distribution,  
Schneider Electric



**In our ever-changing world, homes remain a constant in our lives.** They are where we spend most of our time, and therefore, where we consume a large amount of energy. In fact, homes contribute to 20% of global CO<sub>2</sub> emissions, mainly due to energy consumption.

Home energy consumption is top of mind for many currently. Driven by the rising cost of resources such as oil and gas, the aftermath of the COVID-19 pandemic and the war in Ukraine, the cost of household bills has reached record highs, leaving many of us wondering what we can do to get our energy usage and costs under control.

As we draw another year closer to our Net Zero by 2050 goals, sustainability too is a crucial topic for families and households to businesses and governments. From whether we are on track to meet the 1.5°C target globally through to the record-breaking temperatures we saw this summer – with extreme weather increasingly common around the world.

Our focus on reducing carbon emissions and finding more sustainable ways to live has for many people been driven by a new and immediate priority for many homeowners: keeping their finances in check.

Homeowners are acting themselves and finding energy-saving solutions that work for their homes and lifestyles.

Although driven by reducing bills, the fortunate knock-on effect of such behavior is that by reducing energy use and adopting more energy efficient ways of living, households are also reducing their emissions.

The world is at a tipping point; change must happen for us to continue enjoying the lifestyles we have. We must find new ways to achieve energy independence. We must better understand our energy consumption and production. We must collectively begin embracing renewable technologies on a much wider scale. But more importantly, we must ensure that consumers have enough guidance and support to make all this possible.

The results of our 2023 global consumer research survey paint a picture of consumer action being taken. We outline the findings, which show how priorities have shifted – that while minimising the impact of climate change is still important to most of the population, the lifestyle adjustments that people are proactively taking right now are focused on lowering energy bills. We question how closely aligned the topics of energy efficiency and sustainability are. And we explore how smart technology providers, such as Schneider Electric, can provide solutions that meet these needs for today's homeowners and those of the future too.

## Methodology

A global consumer survey was conducted by Opinium on behalf of Schneider Electric amongst 9,000 respondents across 7 markets in August 2023.

Fig. 1 - Number of respondents per country

1,000

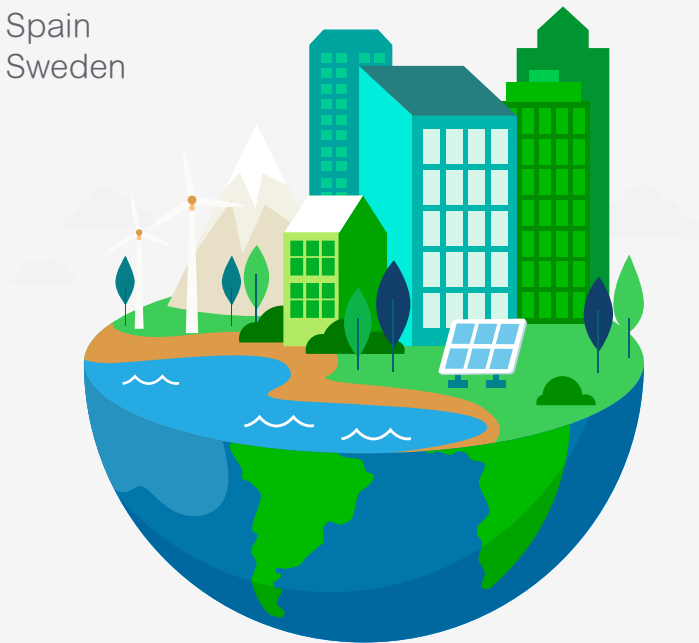
respondents per country:

- France
- Germany
- Australia
- Spain
- Sweden

2,000

respondents per country:

- United Kingdom
- United States



The survey was conducted online via a survey form, in the respondents' native language with translations provided by a professional translation company. Questions that involved elements such as currency and political parties were customised for each market.

### 2021 Edition

Respondents completed the 31-question Smart Homes and Psychology of Sustainability survey, which took an average of 16 minutes and 58 seconds to complete.

The study was conducted amongst 8,019 respondents across 6 markets:

- Australia – 1,004 respondents
- France – 1,003 respondents
- Spain – 1,006 respondents
- Sweden – 1,004 respondents
- UK – 2,001 respondents
- USA – 2,001 respondents

The survey was conducted online via a survey form, in the respondents' native language with translations provided by a professional translation company. Questions that involved elements such as currency and political parties, were customized for each market.

The research was collected by OPINIUM, a strategic insight agency that uses the right approach and methodology to deliver robust insights, strategic counsel and targeted recommendations that generate change and positive outcomes.

### 2020 Edition

Global consumer survey conducted across six markets in July-November 2020. The study was conducted amongst 7,000 respondents across 6 markets:

- France – 1,000 respondents
- Germany – 1,000 respondents
- Spain – 1,000 respondents
- Sweden – 1,000 respondents
- U.K. – 2,000 respondents
- U.S. – 1,000 respondents

The survey was conducted online via a survey form, in the respondents' native language with translations provided by a professional translation company. Questions that involved elements such as currency and political parties, were customized for each market.

The research was collected by OPINIUM (U.K. and Spain), and by Edelman (U.S., France, Germany and Sweden).

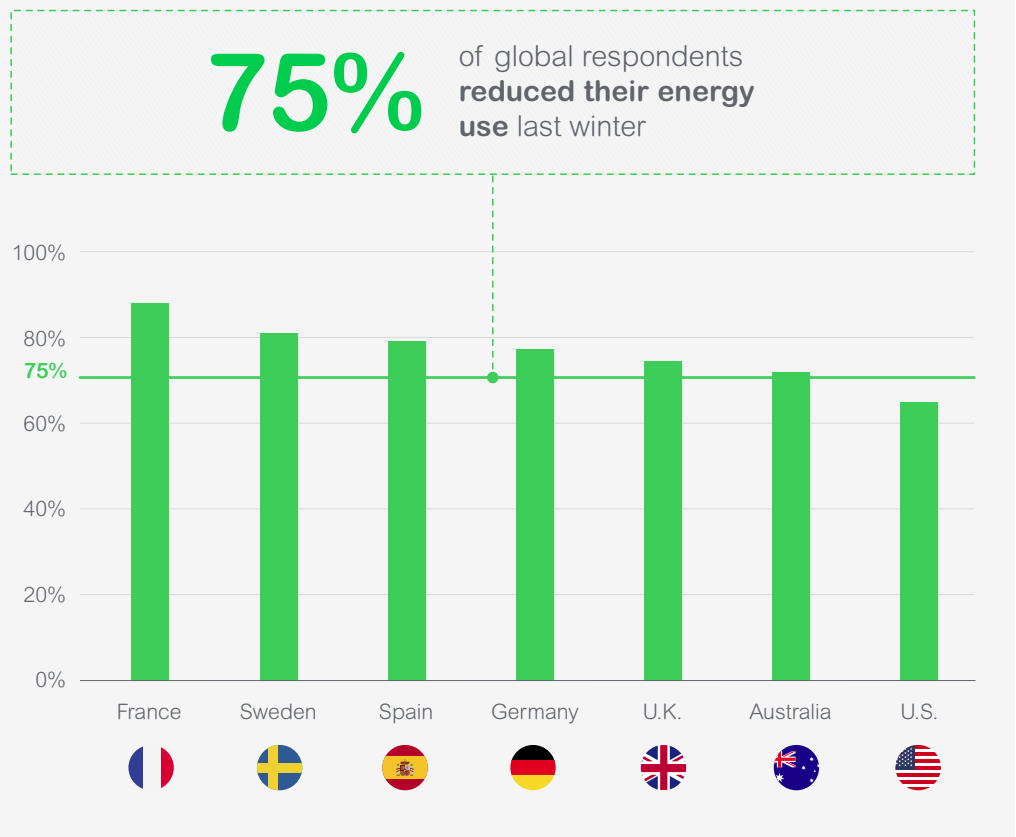
## Finding #1

### The energy crisis has shifted our priorities

In the aftermath of the COVID-19 pandemic, the most prominent concern for the public over the past 12 months became the global energy crisis.

Worldwide, 2022 saw record-breaking increases in energy prices, with natural gas and electricity reaching all-time highs in some markets, while oil prices rose to the highest level since 2008. This trend continued into 2023. The impact has been felt by individuals, families, and communities across the world. 75% of global respondents confirmed they had adapted to using less energy over the past winter and 68% of people said they were looking for ways to reduce energy consumption, with 66% feeling like it was their duty to do so.

**Fig. 2 - Percentage of respondents who reduced energy use in winter 22/23**



To what extent did you adapt your energy consumption over the last winter (December 2022 – February 2023) compared to previous winters?

Fig. 3 - Attitudes on reducing energy use in the home

68%

feel it is their duty to reduce energy use at home  
10% do not

66%

looking for way to reduce the amount of energy they use at home  
12% do not

65%

know how to reduce the amount of energy they use at home  
11% do not

49%

are willing to sacrifice comfort to reduce their energy use at home  
23% do not

63%

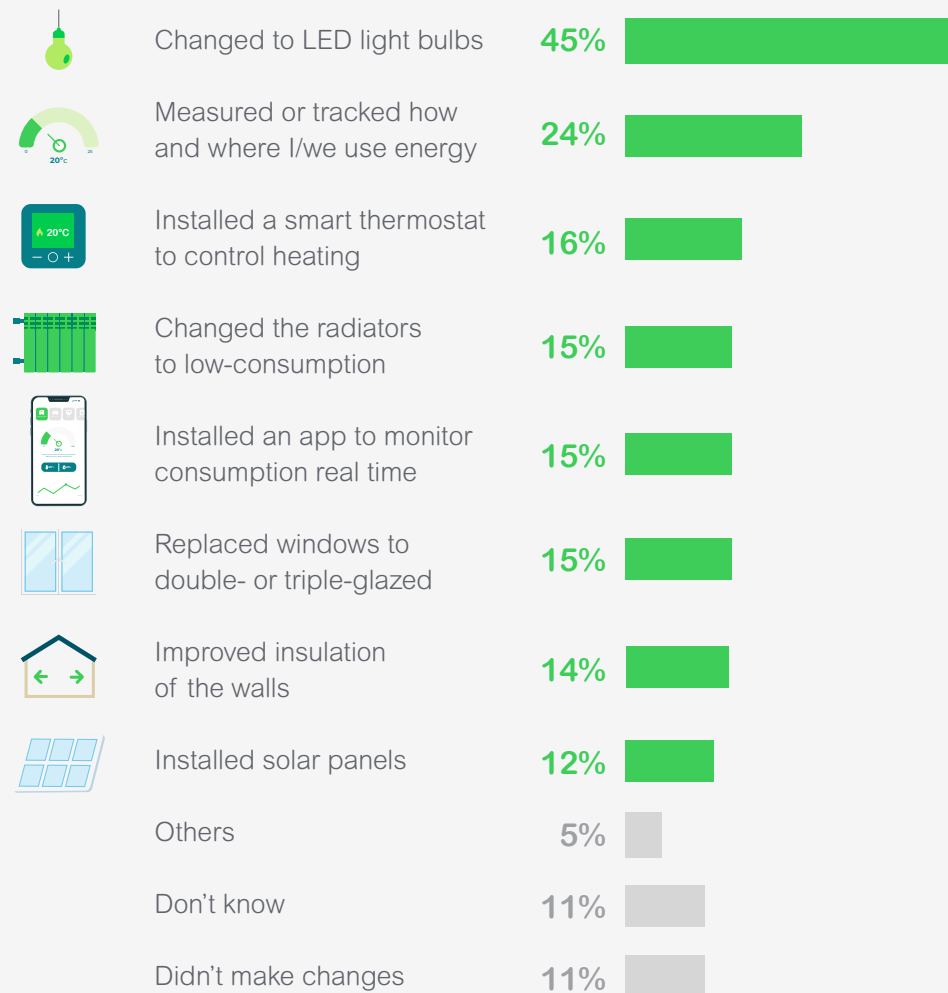
would like to easily track the energy they use at home  
11% do not



To what extent do you agree or disagree with each of the following statements? Extract 'NET Agree' and 'NET Disagree' answers

When asked, almost half of respondents (49%) would be willing to sacrifice their comfort to reduce energy use at home, which reveals a sense of urgency among consumers to reduce their energy bills. Homeowner comfort should not need to be compromised.

**Fig. 4 - Increased deployment of energy measuring devices – key to understanding home energy use**



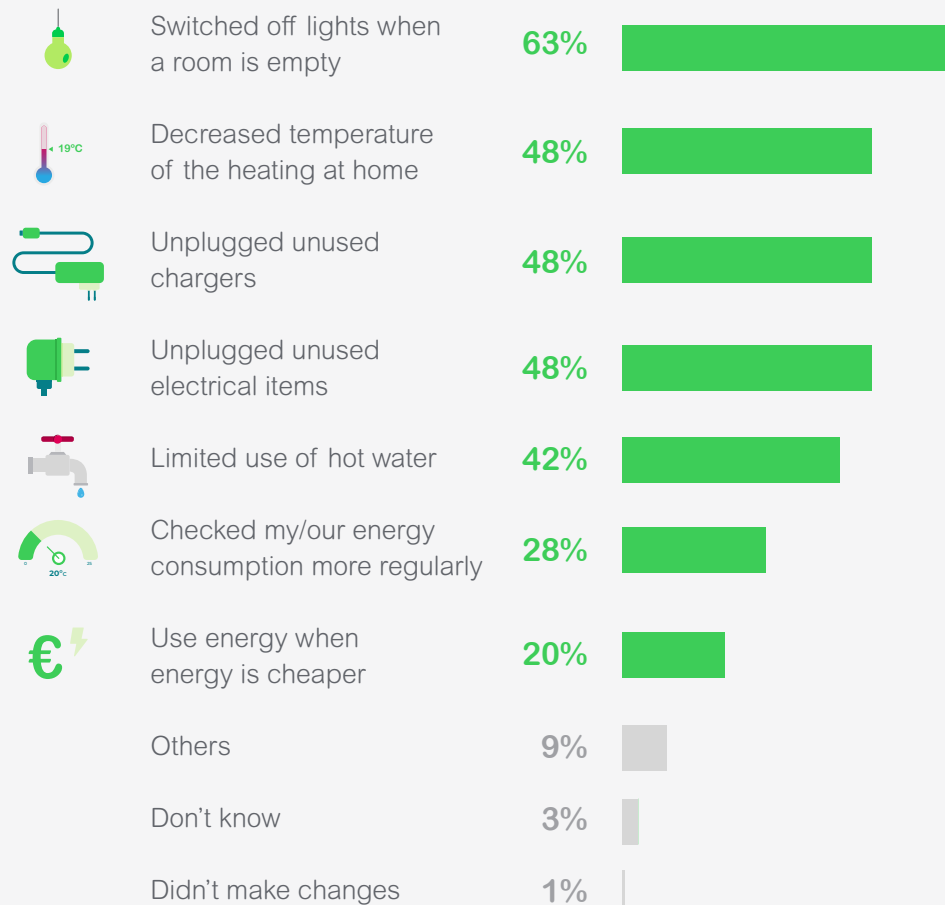
In order to limit or decrease your energy consumption/ energy bill, which, if any, of the following checks/ changes to your home have you made in the last 12 months (i.e. since August 2022)? Please select all that apply

Instead, more needs to be done on educating consumers on the ways they can improve energy efficiency without significantly impacting their daily lives. When it comes to our homes and behaviour, the need to manage the energy crisis is evident. Looking at the changes individuals have made to their homes, responses included switching to LED lightbulbs (45%), installing smart thermostats (16%), upgrading radiators (15%), investing in double or triple-glazed windows (15%), and improving insulation (14%).



As well as investing in the fabric of their homes, many homeowners have begun to recognise the simple behavioural changes that can also have an impact on energy usage. Changes being made to lifestyle habits include switching off lights when they are not needed (63%), lowering the temperature on their thermostat (48%), unplugging unused chargers and electrical devices (48%), and limiting hot water use (42%).

**Fig. 5 - Behavior changes target reduction of energy waste**

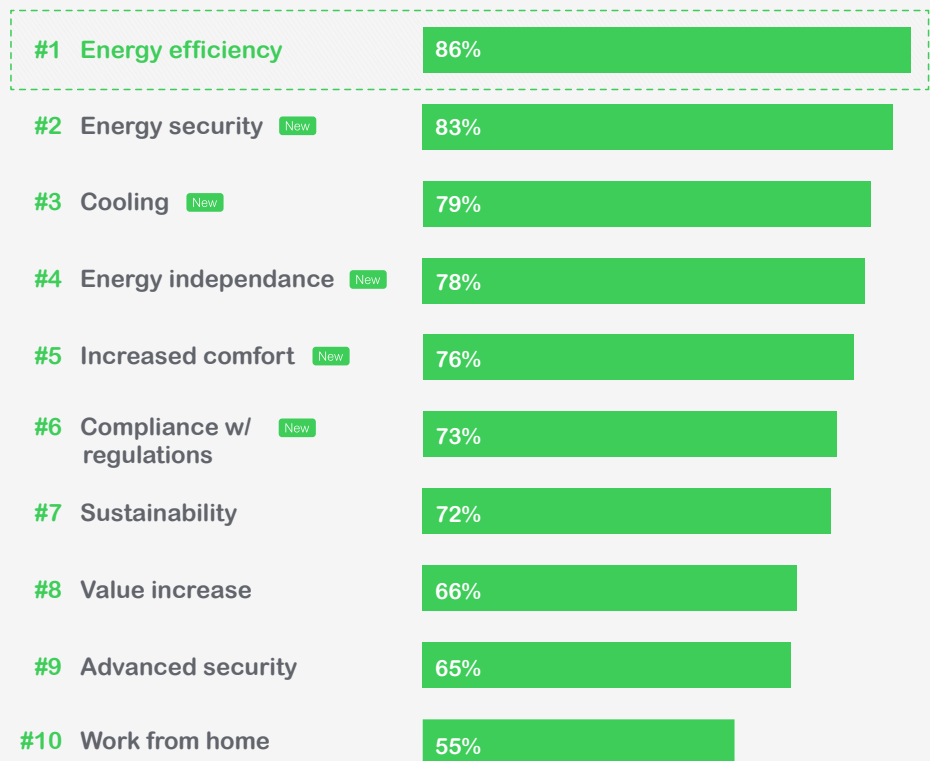


Which, if any, of the following habits have you started doing/ started doing more often to decrease your energy consumption? Please select all that apply

In fact, actions to combat the energy crisis go beyond the monitoring, altering, and reducing of energy usage daily, with energy-saving becoming a major driver of home improvements too.

Today, energy dominates decisions in home improvements, making up the top four aspects people consider when improving their homes.

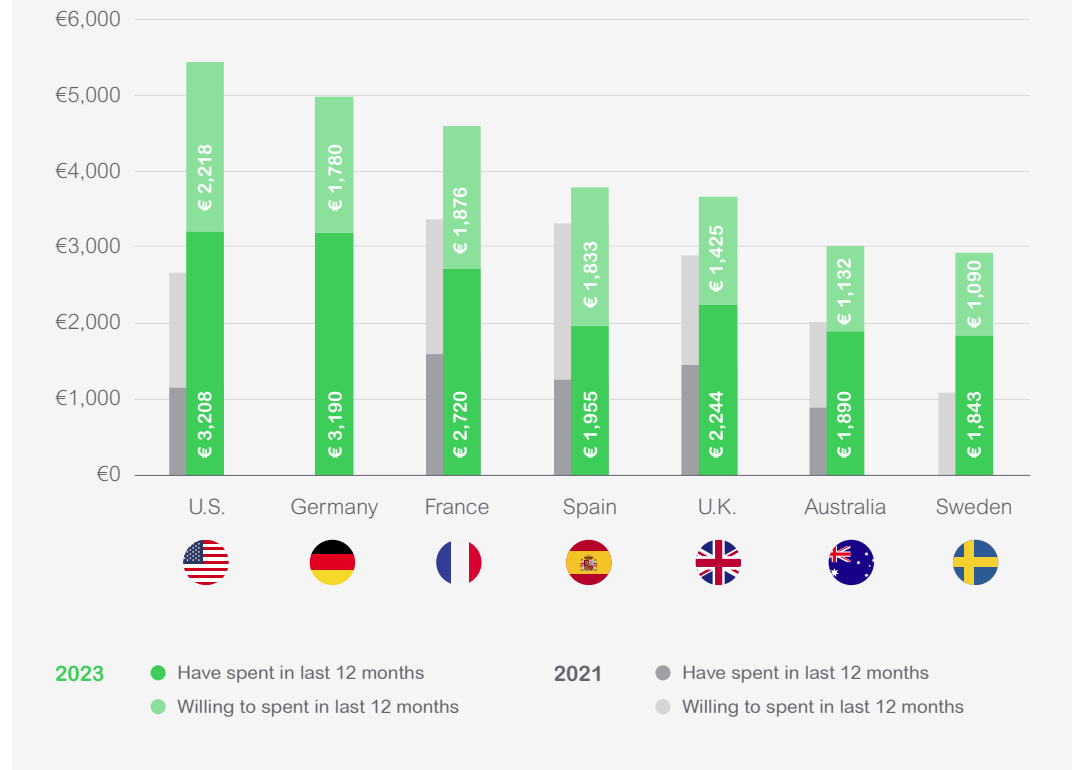
**Fig. 6 - Most important home improvements among global respondents**



Thinking about improving your home in the future, how important would the following improvements be for you? Extract 'NET Important' answers by topic

It's clear that people are taking energy efficiency seriously, with significant investment being made – or planned – around the world on efficiency-improving upgrades. In fact, the typical homeowner is looking to make an investment of 2,062 USD, or 1,926 EUR, on average to improve the energy efficiency of their homes. The return on this investment is important to homeowners, with 25% expecting to see payback within 1-3 years of their upgrades being completed.

**Fig. 7 - Average investment on energy efficiency improvement spent and planned**

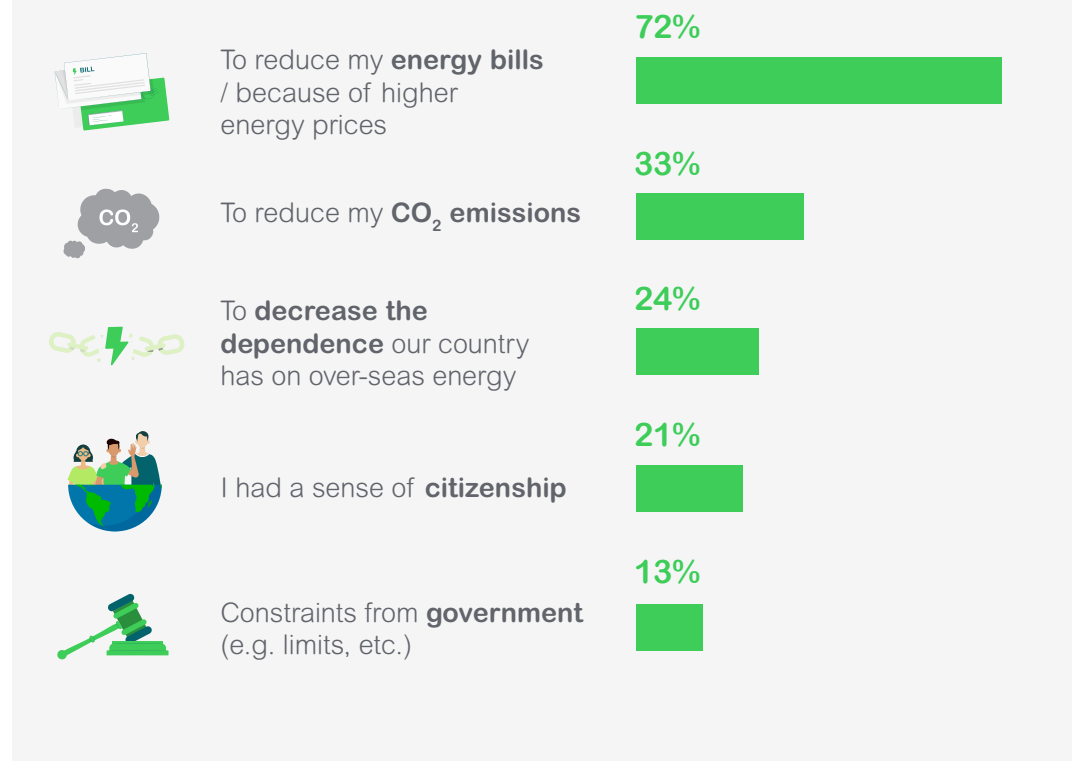


Energy efficiency improvements are in the pipeline for homeowners across a wide range of areas, from smaller changes such as installing smart thermostats to a complete overhaul of the fabric of their property. Many homeowners are using their DIY skills to make these changes themselves. When those who have carried out upgrades over the past 12 months were asked who completed the work, over half of respondents (53%) stated that they didn't need to enlist professional help and took to doing it themselves, while 30% relied on skilled tradespeople.

Ultimately, the findings show a clear picture of the impact of the energy crisis: that most people today are adapting their homes and energy use with the intent to reduce energy bills (72%) and temper the immediate impact on our wallets.

However, over 30% also cited their hope to reduce carbon emissions as a key motivator in making these adjustments. With global Net Zero target deadlines looming in the next 5-10 years and the cost-of-living crisis impacting daily lives, it is easy to understand why this is a secondary factor for many people. While we may think that the energy crisis is the main priority of today, how closely does sustainability around the world impact rising costs, and vice versa?

**Fig. 8 - Top motivations driving energy reduction last winter**



You mentioned you adapted your energy consumption to use less last winter compared to previous winters. Which of the following describes why this was?

## Finding #2

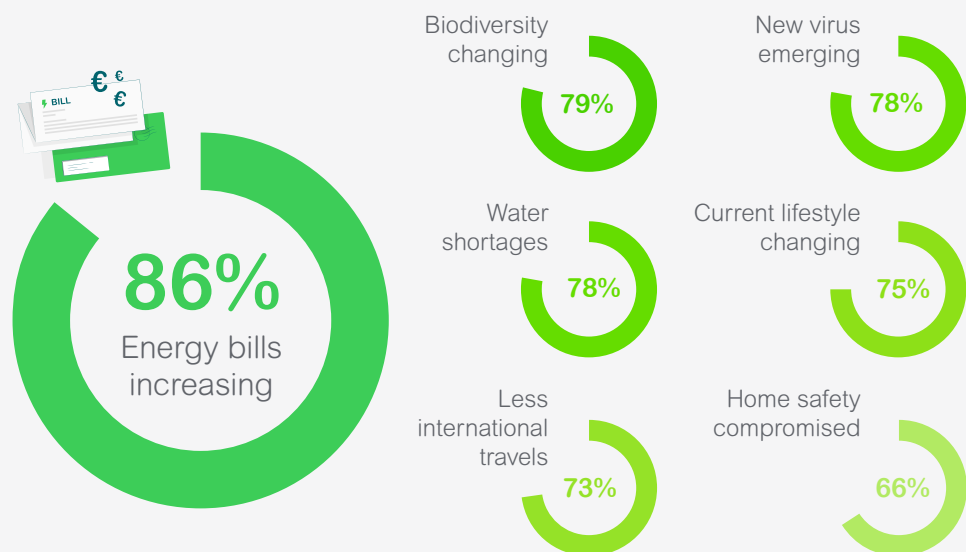
### Sustainability and energy; one in the same?

As we have explored, the topic shaping the global agenda has shifted since our last consumer survey report in 2021, with COVID-19 related issues decreasing and the impact of the energy crisis on the rise.

Over the past 12 months, it has become clear that energy use and sustainability are two topics that are inherently intricately linked; our research shows that 86% of people are concerned about energy bills increasing, as a direct impact of global temperatures rising by 1.5°C. However, when we discuss sustainability, we are looking at a wider picture – not just how we heat and power our homes.

As outlined by the United Nation's 17 Sustainable Development Goals, this encompasses not only environmental concerns, but economic development, world health and global equality too. This is reflected in the concerns people have about the impact of rising temperatures, with biodiversity changing (79%), new viruses emerging (78%) and water shortages (78%) all ranking highly.

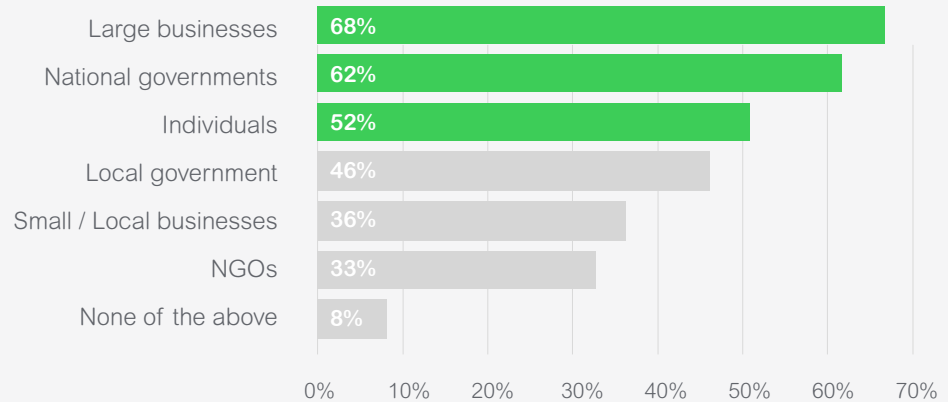
**Fig. 9 - Predicted outcomes if global temperatures rise by more than 1.5°C**



Should temperatures increase by more than this, how likely do you think that the following may happen to you?

Based on these findings, it is therefore understandable that people are looking to make changes that support sustainability. In fact, 70% of people believe it is important to live a sustainable lifestyle and drive down their own carbon footprint, and 73% see carbon emissions as a major threat. So, we know that reducing carbon emissions is important, but how do we achieve this?

**Fig. 10 - Stakeholders most responsible for reducing carbon emissions**



Who, if any, of the following do you think are responsible for reducing carbon emissions? Please select all that apply.

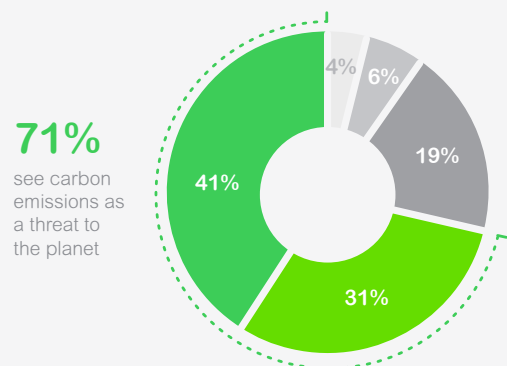
From our survey results, we found that large businesses (68%) and national governments (62%) are viewed as having the most responsibility in lowering carbon emissions. But there is an increasing awareness that we all have a role to play too, with over half of people (52%) stating that individuals have a responsibility as well.

The first steps people are taking to be more sustainable are primarily starting at home, which makes sense given that our homes are responsible for 20% of global CO<sub>2</sub> emissions. The commitment people are making does vary by country, with French homeowners taking the most action.

To what degree do you feel carbon emissions are a threat to the planet?

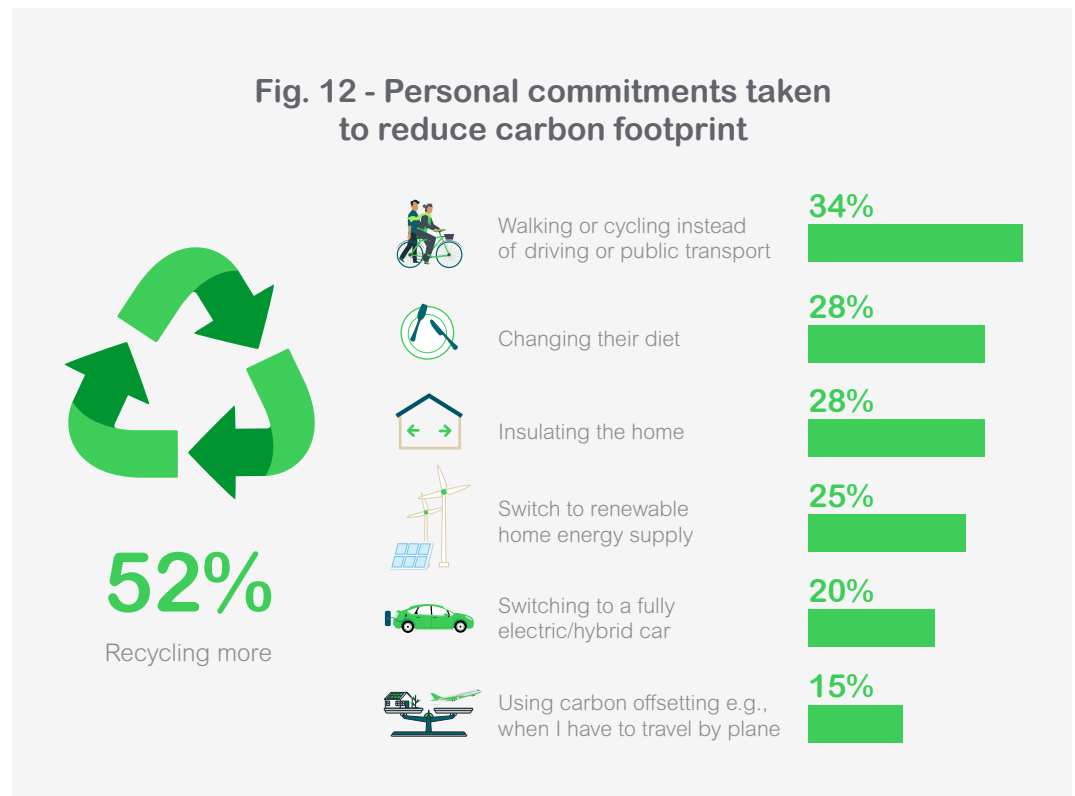
**Fig. 11 - Breakdown of views on the threat of carbon emissions**

● Not at all a threat ● Not a big threat ● Neutral  
● A major threat ● Somewhat a threat



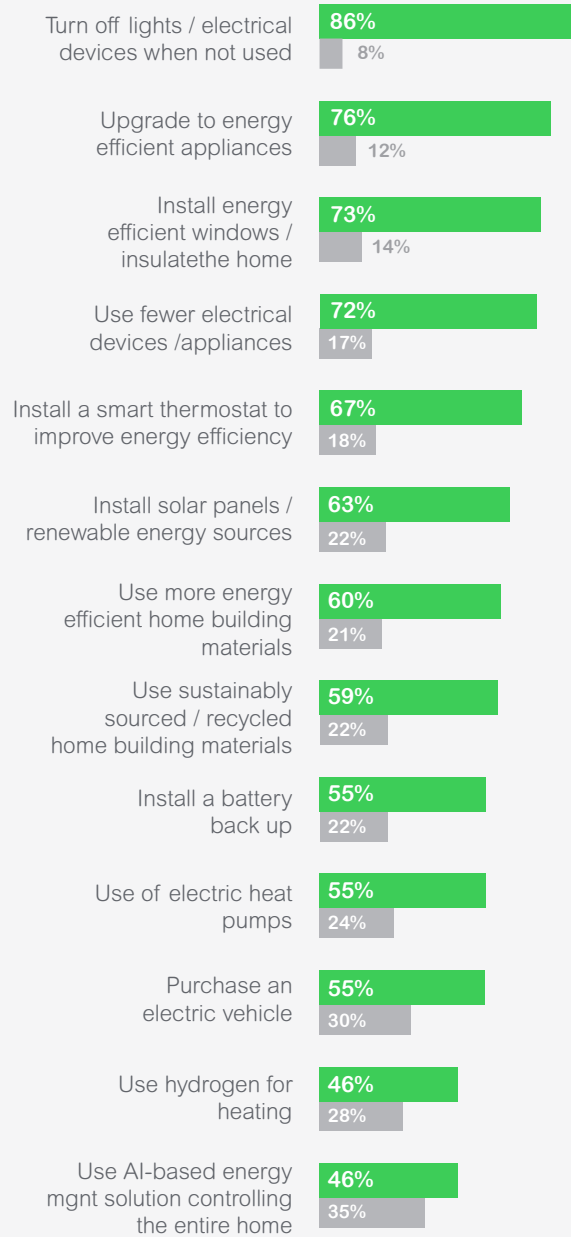
With so many people now relating rising energy costs back to sustainability, albeit via the top concern of reducing energy bills, it is understandable that many of us see reducing our energy use as one of the key ways that we can minimise the impact of global warming.

In terms of the personal commitments people are making to reduce their own carbon footprint, 25% stated they are switching to renewable energy sources (the same level as 2021), whilst other actions such as recycling (52%) was down 2 percentage points year-on-year and walking more (34%) up 2 percentage points.



Additionally, when asked about the actions being considered – or which have already been implemented – to become more sustainable at home, many of the responses related to our energy consumption. This includes upgrading to more energy efficient appliances (76%), installing smart thermostats (67%) and installing solar panels (63%).

**Fig. 13 - Actions taken or considered to become a more sustainable home**



Turning off the lights and other electrical devices when not in use have been selected by the vast majority of the people (86%) as the most common activity to be more sustainable at home. While they are the most visible and obvious actions, there is a need to educate people on their limited effectiveness. Lighting represents on average 5% of an energy bill and vampire loads, such as devices left on standby, only around 1-2%. Whilst these actions are a solid beginning to the energy reduction journey, consuming energy more efficiently on the biggest energy loads, such as heating or air-conditioning, will have a significantly larger and immediate impact on reducing energy bills.

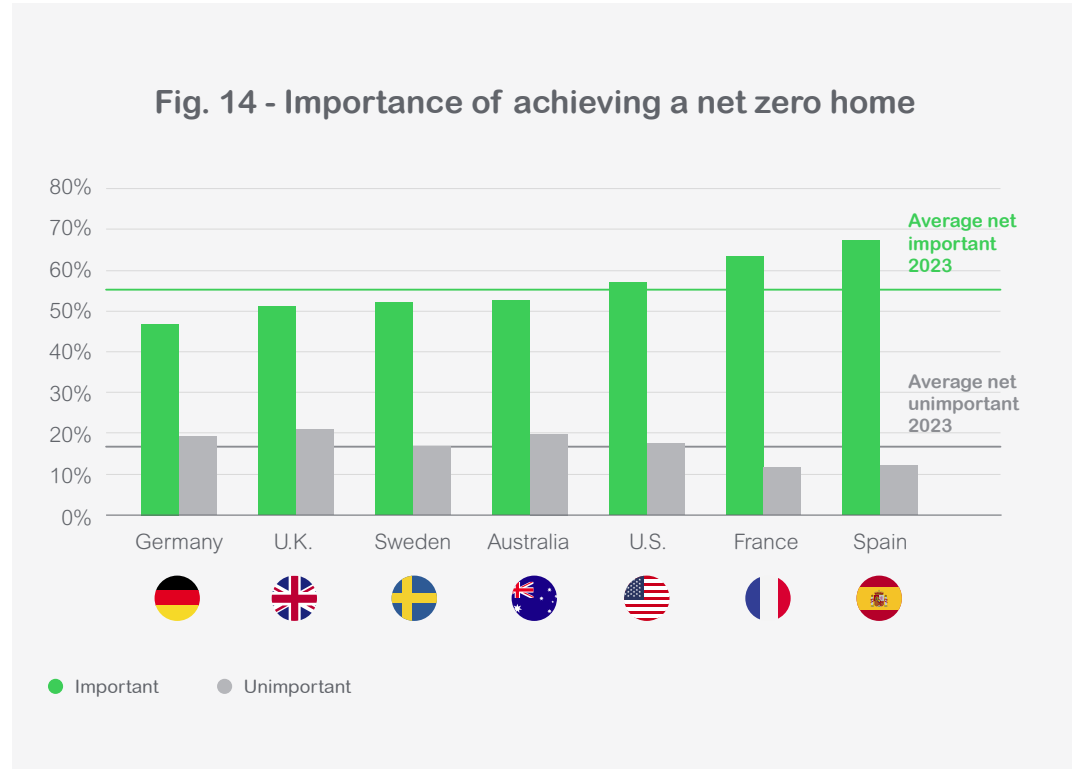
Would you consider, or have you already done, any of the following actions to become more sustainable at home?

- NET Would consider / Have already done
- NET Not currently doing this



According to our survey, sustainability is seen as important for 7 in 10 people, with over half believing it is important their home becomes Net Zero. However, global expectations of achieving this are generally pessimistic, with 40% believing it is unlikely that their homes will become Net Zero in their lifetime, an increase of 4 percentage points on 2021.

**Fig. 14 - Importance of achieving a net zero home**

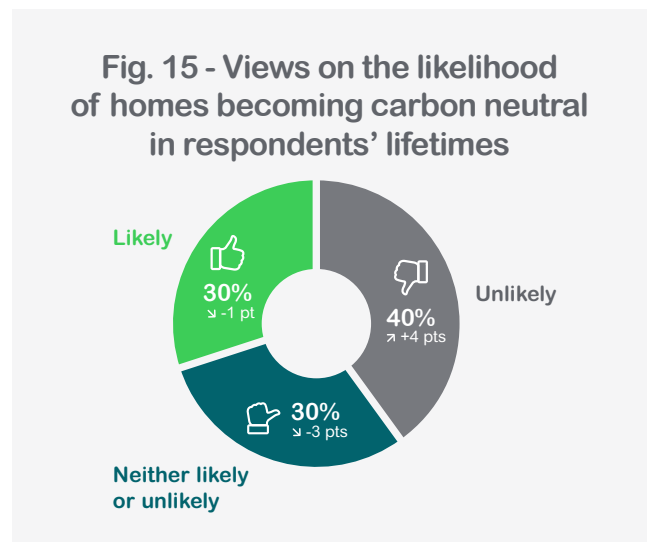


How important is it to you that your home will become net zero (a home producing zero carbon emissions) over the course of your lifetime?

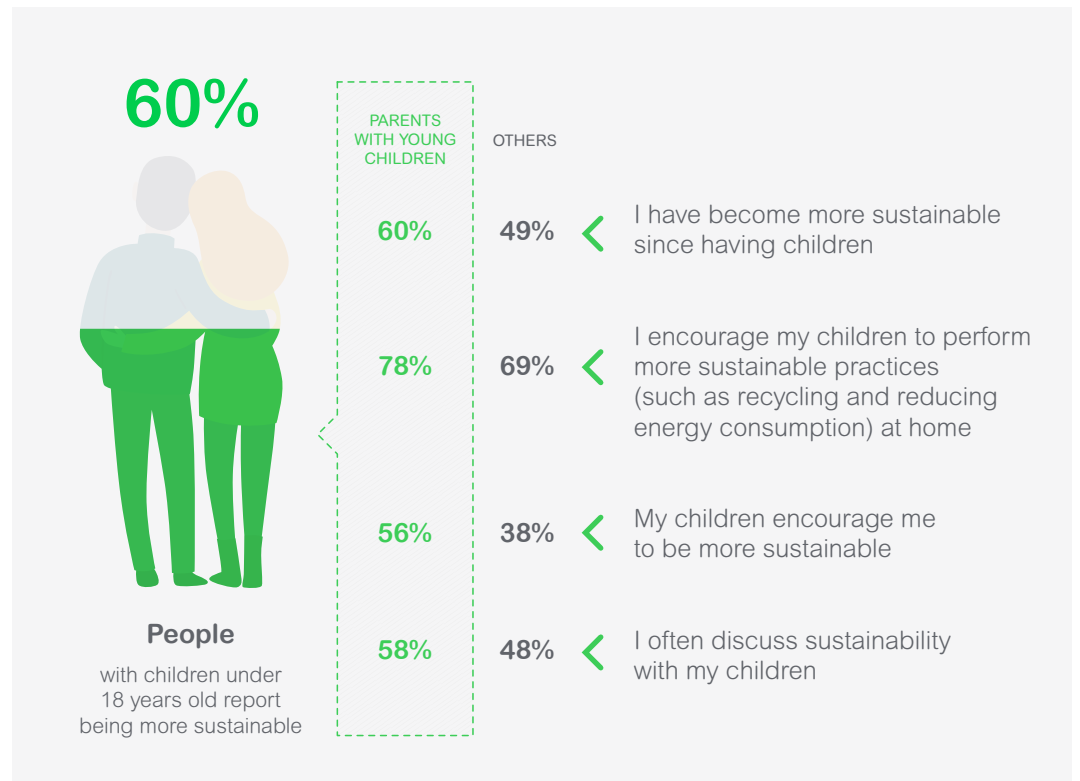
While this change in attitudes is likely due to the competing hierarchy of concerns and lack of understanding of the pathways to net zero homes, we can hope that continued technological development, the further electrification of homes and financial support for the installation of renewable energy will combine to create greater and more impactful change in the future.

How likely do you think it is that your home will become net-zero in terms of carbon emissions within your lifetime?

**Fig. 15 - Views on the likelihood of homes becoming carbon neutral in respondents' lifetimes**



Looking ahead, our perception of the future can shape our attitude towards sustainability, particularly for those with a close connection to the next generation. 60% of those with children under the age of 18 have become more sustainable since journeying into parenthood.



More of us are passing our sustainability commitments down to our children too, with 78% of parents encouraging children to perform more sustainable practices and 58% often discussing sustainability with their children.

## Finding #3

### A smarter way to manage energy use

So how can we tackle the issues of global warming and the energy crisis - two issues that our survey has shown are inextricably linked?

Over the past decade, the concept of the smart home has evolved rapidly. What was once seen as an exciting gadget of the future has evolved into a crucial piece of technology that helps improve the efficiency of our homes.

40% of respondents see a smart home as an easy and affordable way to reduce energy bills, and a similar number believe that smart technology will have a direct impact on improving the sustainability of their homes.

# 40%

consider **smart home** as an easy and affordable way to **reduce energy use**<sup>1</sup>

# 40%

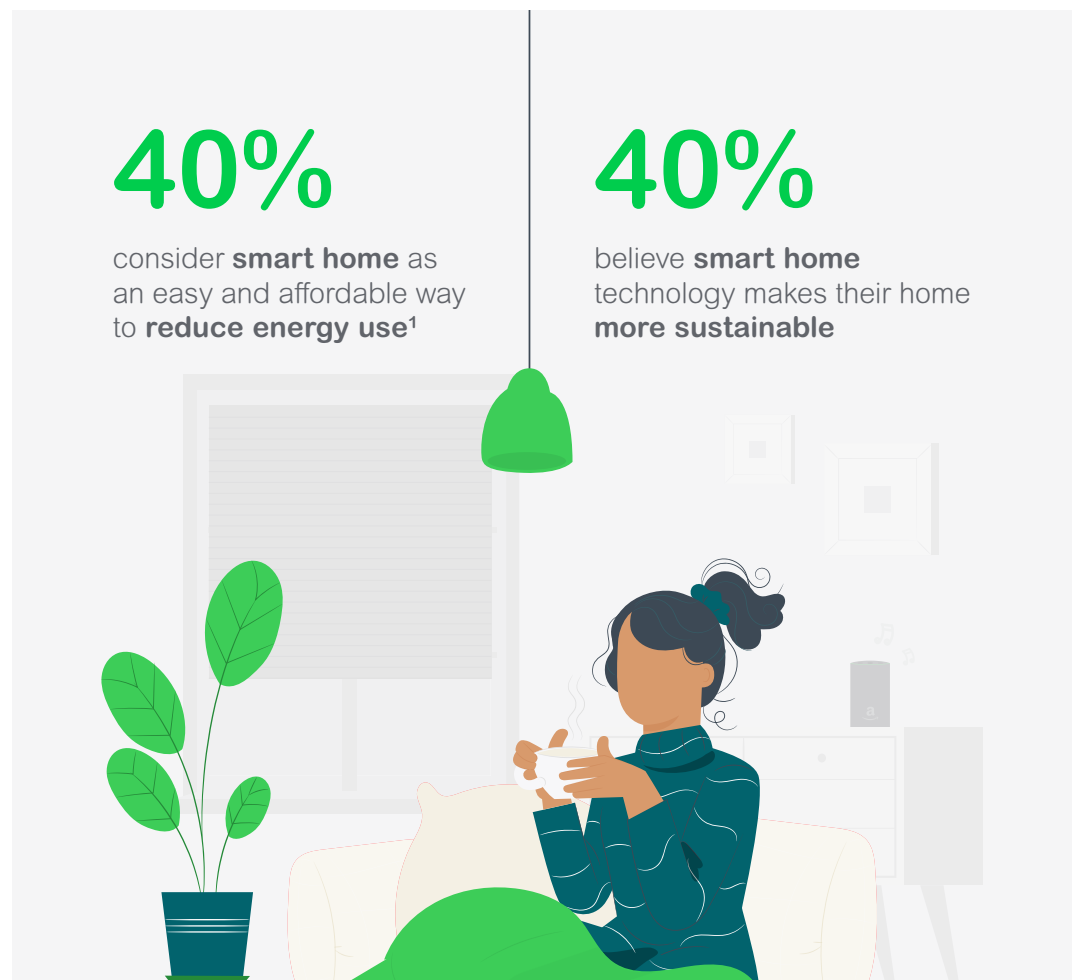
believe **smart home** technology makes their home **more sustainable**

<sup>1</sup> How much do you agree or disagree with each of the following statements about smart home technology?

Smart home devices are an easy way to reduce my energy use – 40% selected 'Agree' (40% in 2021)

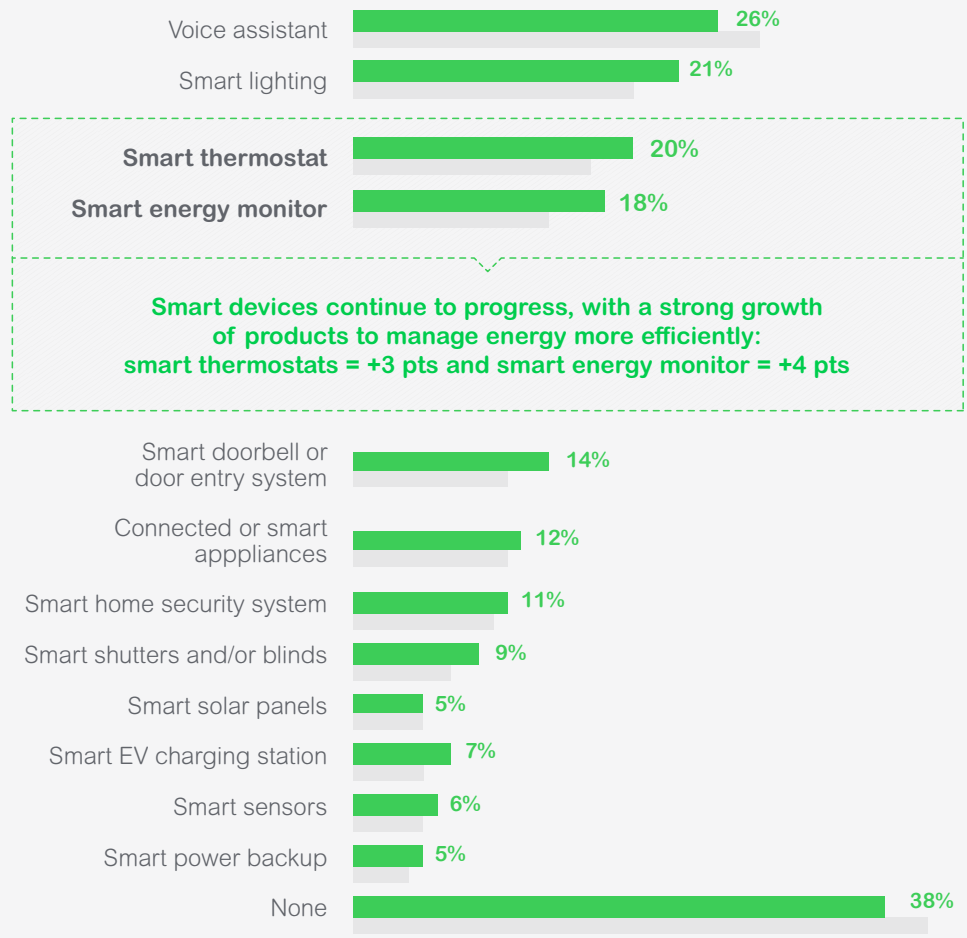
Smart home technology is an affordable way to reduce my energy use – 38% selected 'Agree' (36% in 2021)

Smart home technology makes my home more sustainable – 40% selected 'Agree' (40% in 2021)



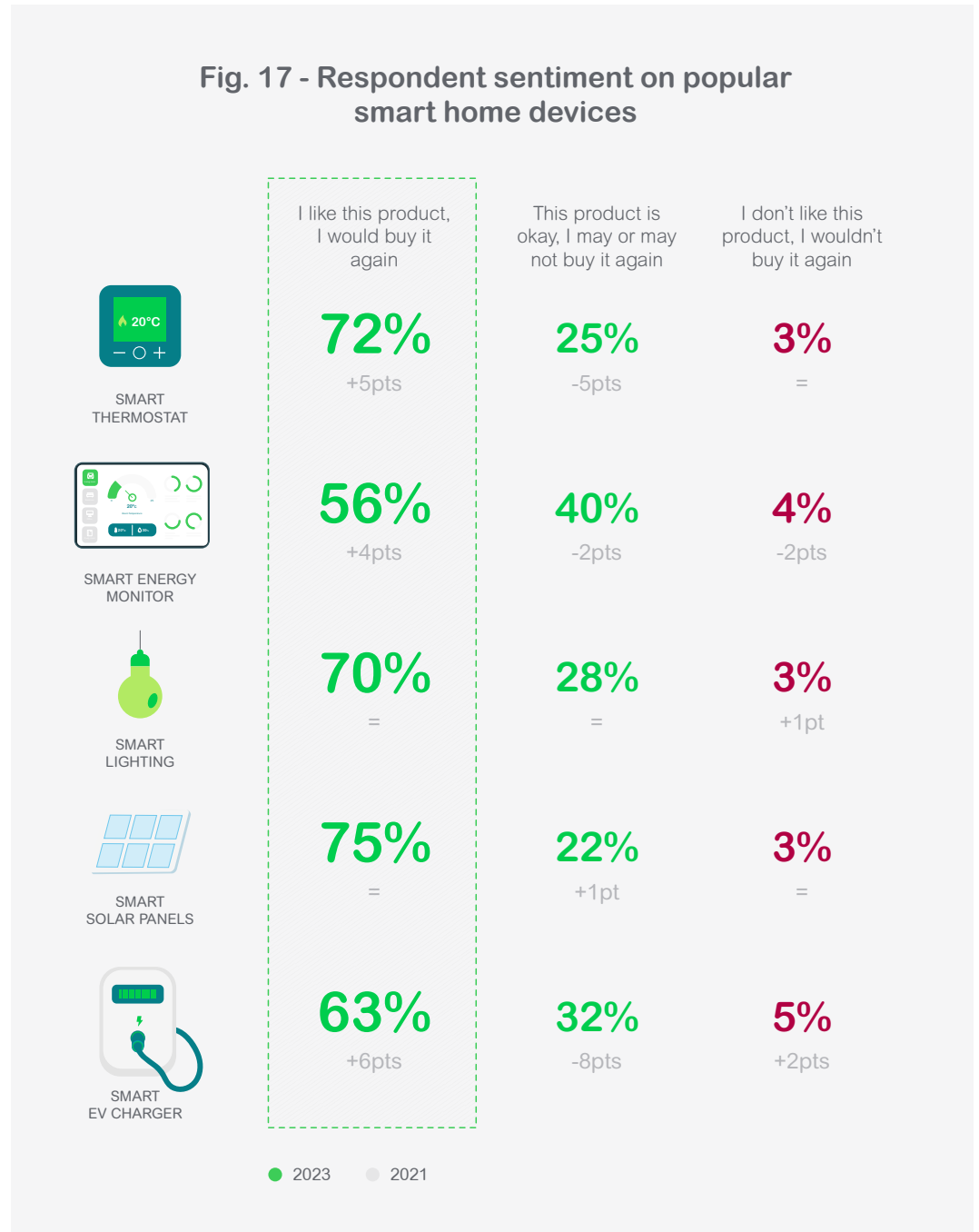
With consumers increasingly turning to technology to make their lives easier, it is hardly surprising that the idea of smart devices in the home is so appealing. However, many individual devices need to come together to deliver a truly smart home. Currently, most householders have just a few such devices, rather than full home solutions. Voice assistants (26%) and smart lighting (21%) rank highest, with 2023 also seeing a significant increase in the number of people investing in smart thermostats (20%) and smart energy monitors (18%) – up 3 percentage points and 4 percentage points respectively – which is likely a direct result of the energy crisis.

**Fig. 16 - Most popular smart home devices in respondent homes**



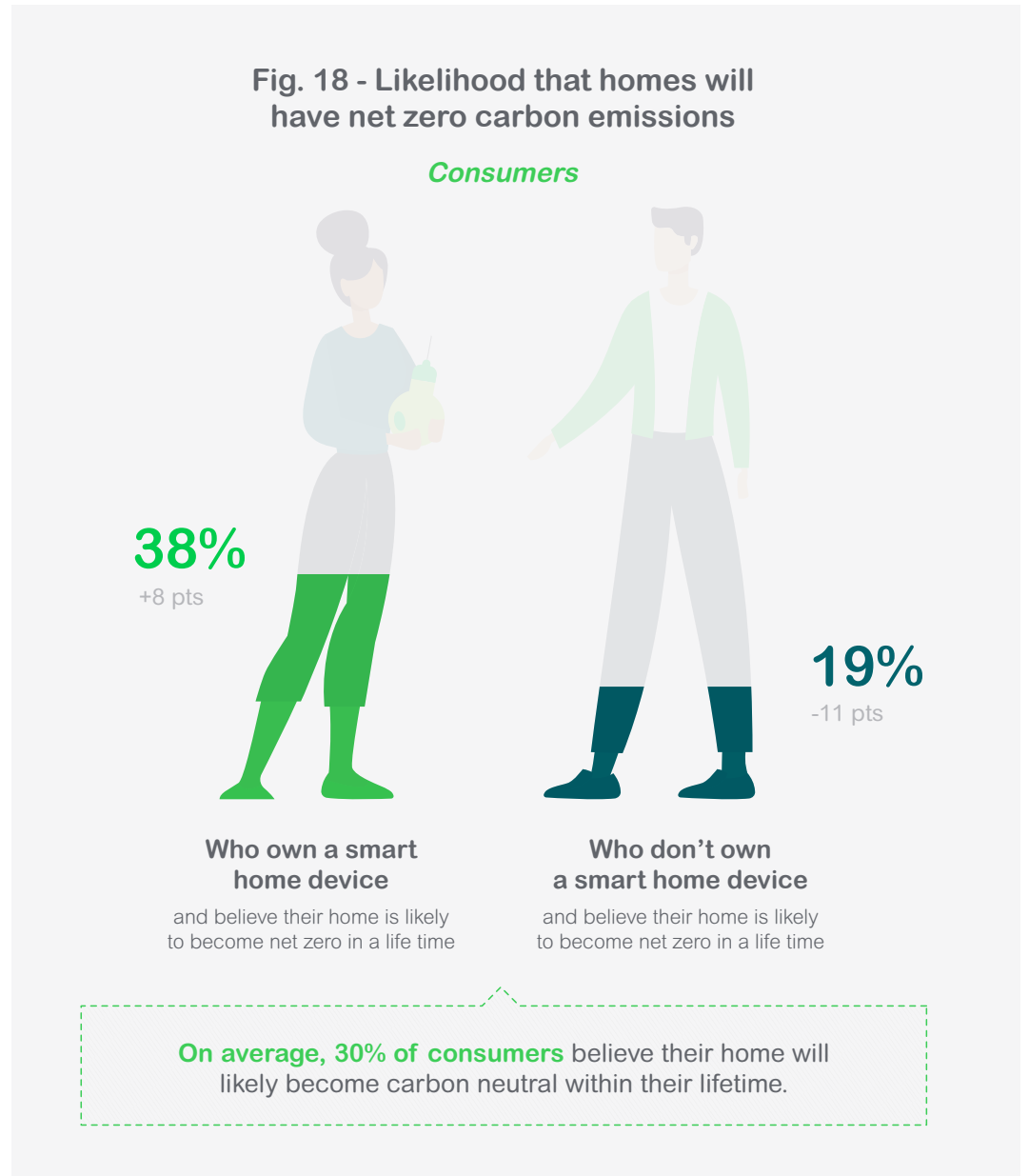
Which, if any, of the following smart home devices do you currently have in your home? Please select all that apply.

Although over a third of the population shy away from technology, those that have it certainly appreciate it and 'love' it. For example, 72% liked the smart thermostat and would buy it again, while 70% had similar views on smart lighting and 75% on solar panels.



Which of the following statements best describes your thoughts with regards to the named smart device?

While Finding 2 in this report highlights the fall in optimism in 2023 about the likeliness of our homes becoming Net Zero (40% unlikely), the implementation of smart technology in our homes does have a positive effect on people’s expectations. In fact, smart home device owners are twice as optimistic about their homes becoming more sustainable.



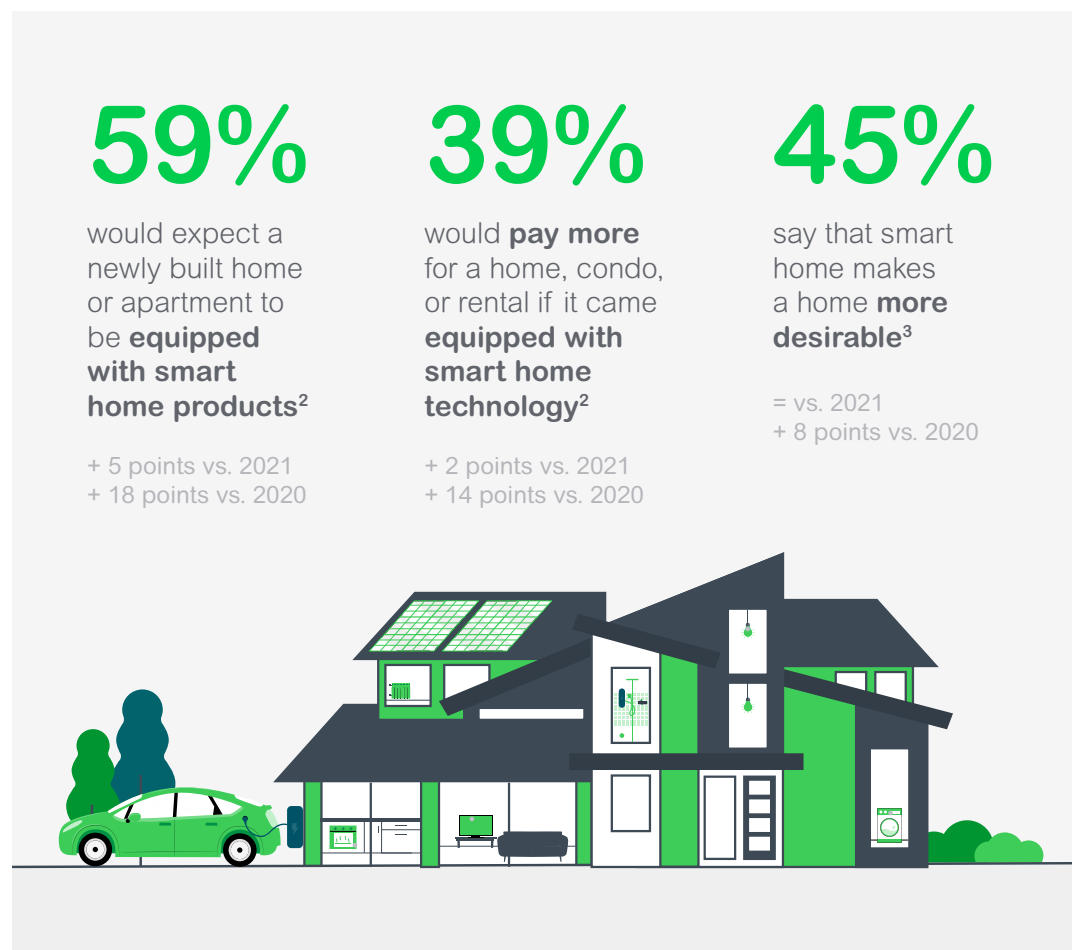
How likely do you think it is that your home will become net-zero in terms of carbon emissions within your lifetime?

So, the next question is this: if the use of smart home technology fosters a more positive outlook, how should it be incorporated in homes of the future?

## Finding #4

### Homes of the future, today

For our survey respondents, smart technology should be a no-brainer when it comes to the development of new homes, with 59% expecting a newly built home or apartment to be equipped with smart home products. Unsurprisingly, 67% of those whose homes are already equipped with smart home devices expect new homes to have this technology, whilst almost half (44%) of non-smart home owners still expected this technology in new builds.



<sup>2</sup> When thinking about smart home products, how much do you agree or disagree with each of the following statements? Extract 'NET Agree' answers

<sup>3</sup> How much do you agree or disagree with each of the following statements about smart home technology? Extract 'Agree' answers

Not surprisingly, the addition of smart devices adds value to a home, with 39% stating that they would be prepared to pay more for such a property, including 50% of current smart home owners versus only 20% non-smart home owners. Even more of total respondents (45%) felt it would make a home more desirable, again, expectedly 54% of current smart owners felt this way compared to only 30% of those currently without smart home devices. Such sentiment is building year-on-year, so it is vital that home developers take note and keep up with consumer demand.

As we continue to add smart technology to our homes and move towards the electrification of energy for both cost and sustainability reasons, we must not underestimate the impact this has on our properties – both old and new. From replacing petrol and diesel cars with electric vehicles, to adopting more sustainable technologies such as ground source heat pumps as we phase out gas boilers, we are continually adding more electrical loads to our homes. These new technologies rely on the electrical panel, also known as the fuse box, which is at the heart of the home and acts as the gatekeeper for ensuring the safety of our devices, appliances and families.

Within an electrical panel are multiple breakers, which control the flow of electricity into the house and can be used to shut off a circuit in the event of an emergency or during maintenance. Electrical panels supply electricity to each area of the house and gauge the right amount of power to each space, while preventing domestic electrical fires from occurring.

It is critical for safety, and for efficacy of energy efficiency measures, that homes are equipped with the appropriate electrical panel. Coupled with home energy management solutions, such as Schneider Electric's Schneider Home and Wiser solutions, an electrical panel that allows energy to be monitored or even better controlled puts people in the best position to be in control of their energy use, and therefore their bills and emissions.



## Conclusion

### The time for wiser energy use is now.

The energy crisis has had a profound impact on how we view our energy use, making it more visible to us than ever before. **These challenging times have forced us to find ways to reduce energy consumption,** with many of us compromising on comfort in order to pay our bills.

As technology continues to develop, the role of smart home technology, such as a home energy management system (HEMS), is only going to become more important with each passing year. With the automation offered by this technology, homeowners will be able to benefit from reduced energy waste and shift their loads to run during cheaper tariffs. This is possible without needing to make manual adjustments or compromising on the comfort they enjoy at home, so that homes can remain the sanctuary we treasure. While a HEMS will guide you through reducing energy bills, it will have a direct positive effect on reducing the CO<sub>2</sub> emissions produced by homes, by tackling in priority the biggest energy guzzlers such as heating or EV. HEMS will prioritize consumption when solar production is available, or will pause the heating in empty rooms.

Whatever their motivations - be they for financial or sustainability reasons – this is our role to ensure that the right support and solutions are in place to guide us all on this energy-saving journey.

The implementation of HEMS is also going to be crucial in the ongoing electrification of energy. Indeed, with electricity being an energy which can be easily monitored and controlled by digital technology, this puts unprecedented power in the hands of consumers. They can easily better understand where energy is consumed and make informed decisions to decrease inefficiencies or waste. Even better, as more and more people switch to using more renewable sources of electricity such as solar or greener loads such as heat pumps and electric vehicles, we can make sure we help them make the most of their sources and loads, driving greater energy independency.

What's more, with growing electrical pressure set to be placed on the grid, governments and local authorities are going to need ways to understand energy consumption on a national level, in order to make adjustments and prevent systems from becoming overwhelmed.

Here at Schneider Electric, **we have a deep understanding of these issues** and our innovative technology specialists are already helping to deliver the solutions that will help homeowners manage their energy use more sustainably and live a more sustainable lifestyle. **With this support, a greener, more sustainable future will be achievable.**

**Schneider Electric**  
©2023 Schneider Electric. All rights reserved.