



The perceptions versus realities in building sustainable homes



Perception 1:

People interested in sustainable homes are the enthusiastic minority

Exploring the perceptions versus realities in building sustainable homes

Sustainability has become a defining issue of our time, in all aspects of life, including the way we build homes. It's hard to imagine that anyone could be against sustainable benefits, such as lowering demand for energy.

However, some people have come to believe that sustainable homes somehow compromise on comfort and affordability.

This document explores the perceptions and realities in more detail, to get a true picture of what energy-saving techniques will mean for new homeowners and future generations.

The reality:

Firstly, what is meant by a sustainable home? A common definition is that it's a home designed and built to reduce overall environmental impact during and after its construction. Through the home's design and use of materials, it will achieve a lower carbon footprint and reduce demand for energy.

Sustainable homes may have been a niche long ago, but now the numbers suggest we're all inspired by their benefits. In the UK for example, 82%¹ of new homebuyers are willing to pay a premium for a sustainable home; while 89%² said that an energy efficient home would be more attractive to buy or rent.

The construction industry is also playing its part – changing the ways homes are built and how they perform energy-wise. It's clear that the social and environmental benefits of a sustainable build have hit home, and they're here to stay.

1 Survey of 1,730 prospective new homebuyers in the UK, Redrow
2 CSIRO and Common Capital for the Cooperative Research Centre (CRC) for Low Carbon Living's EnergyFit Homes project

Perception 2:

Homes aren't our greatest worry when it comes to energy consumption

The reality:

In fact, buildings are the most significant consumers of energy – 40%³ of Europe's energy is consumed in buildings and they contribute about 36%³ of EU greenhouse gas (GHG) emissions which alter our planet's climate. Almost 75%⁴ of Europe's building stock is energy inefficient.

40% of Europe's energy is consumed in buildings

Homes represent the biggest untapped potential for energy savings: the use of proper insulation, for example, can reduce heating needs by up to 70%⁵.

That's why building energy efficient homes will help create a sustainable future and protect families for generations to come. It's also why the EU has set targets which require all new buildings to be nearly zero-energy by the end of 2020, and for the total building stock to be renovated to nearly zero-energy standards by 2050.

3 Buildings Performance Institute Europe (BPIE)

4 European Commission: ec.europa.eu/energy/en/topics/energy-efficiency/buildings

5 European Commission: ec.europa.eu/energy/sites/ener/files/DG_Energy_Infographic_heatingandcolling2016.jpg



Perception 3:

Sustainable homes are more expensive to build

Perception 4:

A sustainable home will compromise on indoor comfort

Perception 5:

Sustainable homes take longer to build and require specialist contractors

The reality:

It's a common assumption. However, new standards such as nearly zero-energy buildings have given rise to solutions that are highly energy efficient, comfortable, ecological and affordable.

Today's building regulations – including those related to higher energy efficiency performance – are strictly enforced. So the cost of building a sustainable home versus one that complies with regulations has narrowed.

Some research states that building more energy efficient homes costs between 2.5% and 12.9%⁶ more. Yet every house is different. Building a nearly zero-energy home can now cost exactly the same or even less than a conventional structure.

In addition to the building cost, it's also worth factoring in long-term energy savings. An energy efficient design can save as much as 80% of the operating costs of a building, often at little or no extra cost over its lifetime⁷. And those savings are there from day one, and for the lifetime of the building.

An energy efficient design can save as much as 80% of the operating costs of a building

The reality:

Times have changed. While sustainable homes are airtight to achieve a good class of energy efficiency, using the right insulation now allows the building to 'breathe'. This is supported by modern ventilation which brings fresh air in and pushes stale air out. As a result, sustainable homes can be airy, full of light, open and contemporary in their design all at the same time.

This comfortable living environment, and the fact that the very best sustainable homes are designed to last a lifetime for future generations, is fast changing the way we perceive sustainable homes.

The reality:

It absolutely depends on the design, materials and structure of the home you're going to build. Today, sustainability and high thermal performance can be built into the very fabric of a new home using the latest technology of insulated wall systems.

These are neither complex or technical, and the sustainable home is built using known, traditional construction methods with no need for special tools, new construction skills or experts on-site. Since fast-to-assemble components are used to create high-quality builds, you will often see a reduction in labour which reduces time on-site, and therefore cost.

⁶ Joseph Rowntree Foundation

⁷ Buildings Performance Institute Europe (BPIE)





Perception 6:

Traditional and sustainable construction methods both have good insulation

The reality:

The major difference will be in the thermal properties of the final constructions. Sustainable home designs typically have very high insulation levels built into the structure of the wall itself. The final construction is airtight, yet breathable, with no thermal bridges (sometimes called cold bridges).

Traditional solid wall buildings incorporating insulation will often have thermal bridges, typically at the roof and wall junction or the wall and floor junction.

These weak points can be avoided using modern construction solutions which eliminate thermal bridges. The result will be best-in-class energy performance as calculated; no degradation of that performance for the building's lifetime; and no design constraints on how to build the energy efficient home in the first place.

Perception 7:

Energy saving is the only financial advantage to building a sustainable home

The reality:

Besides fast build times and long-term value from energy savings (see Perception 3), sustainable homes deliver financial benefits in other, often unseen, ways.

There is mounting evidence that building to sustainable standards adds monetary value. For example, Leadership in Energy and Environmental Design (LEED) and Energy Star rated buildings attract a sales price premium of 25% and 26%⁸ respectively.

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High performing wall systems also have very long durability so they don't need refurbishing a few years after construction. And finally, a seldom discussed financial advantage of a super-insulated home is its built-in fire-resistance. This limits any costly damage caused by fire and allows the home to begin functioning normally again in a shorter amount of time.



Perception 8:

Sustainable materials still have an environmental impact

Perception 9:

It's better to wait and build sustainable homes with future new technologies

The reality:

The building sector produces approximately one-third of all waste globally, much of which ends up in landfill. However, insulation based on natural stone wool, for example, is a highly sustainable way to lower energy consumption. Stone is an abundant resource, and creating stone wool insulated wall systems uses secondary raw materials from other industries for less environmental impact. Their creation also has a net positive carbon impact – saving 80 times the carbon emitted in their production through lifetime energy savings.

Solutions like these will perform unchanged for decades, and at the end of their life, can be recycled indefinitely or can be constructed to be reused. This contributes perfectly to a circular economy in the building sector.

The reality:

In many ways, the construction industry has already developed state-of-the-art systems that are ready for the future. The best 'passive' measures (such as insulation) make homes super-insulated – achieving a very low need for additional heating. Due to their nature and materials (which are 97% entirely natural stone), these solutions will go on working and will not need to be replaced with newer products for many, many decades to come.

Stone wool is made from 97% natural stone and recycled material

This is truly sustainable building that enables the world to build the energy-saving homes it needs today.

Discover Rockzero

At ROCKWOOL we are pioneering new ways to build nearly zero-energy homes with solutions such as the Rockzero wall system. It's shaping the future of economical, long-lasting sustainable homes.

Discover more about the benefits of Rockzero today.

Visit rockwoolgroup.com/rockzero

At the ROCKWOOL Group, we're committed to enriching the lives of everyone who experiences our solutions. Our expertise is perfectly suited to tackle many of today's biggest sustainability and development challenges, from energy consumption and noise pollution, to fire-resilience, water scarcity and flooding. Our range of products reflect the diverse needs of the world, while supporting our stakeholders in reducing their own carbon footprint.

Stone wool is a versatile material and forms the basis of all our businesses. With over 11,000 passionate colleagues in 39 countries, we're the world leader in stone wool solutions, from building insulation to acoustic ceilings; external cladding systems to horticultural solutions; engineered fibres for industrial use to insulation for the process industry – as well as marine and offshore.

