ROCKWOOL®

5 CONSIDERATIONS FOR A MORE RESILIENT HOME

A homeowner's guide

#ThisFutureRocks

5 CONSIDERATIONS FOR A MORE RESILIENT HOME

Whether you are building a new home or renovating an older property, you must consider its overall resilience as part of the project. A resilient house is one that is robust, efficient and prepared to withstand adverse impacts, such as chronic stresses and acute, unexpected shocks. These can range from persistent challenges, like air and noise pollution, climate conditions and damp, to more extreme impacts including storms, heatwaves and earthquakes.

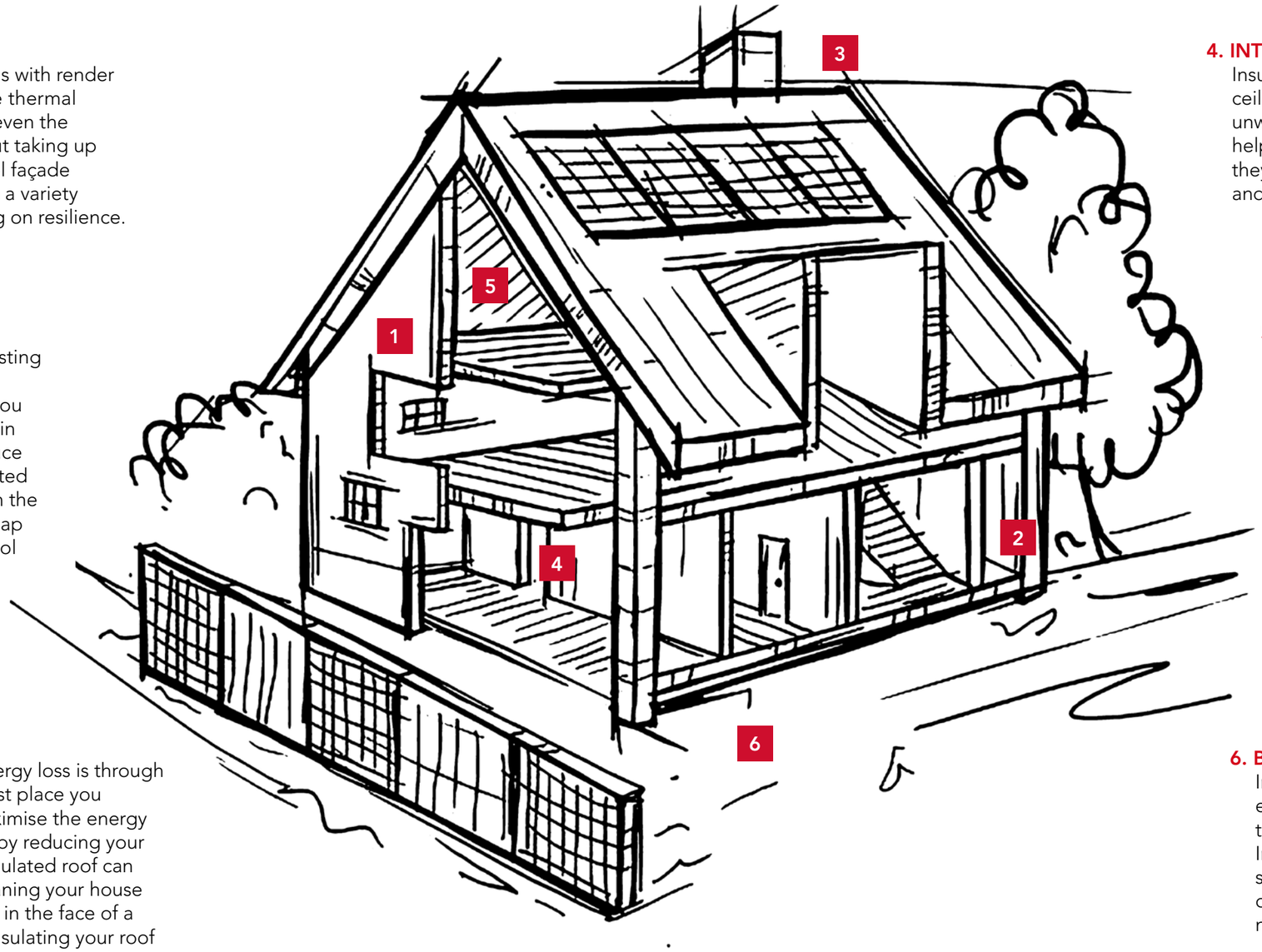
Resilience refers to how much stress an object can absorb and retain its original state – like elastic returning back to form after being stretched. With today's densely populated urban environments and rapidly changing climate, investing in solutions that make homes more durable and robust will only become more important in the future. Every renovation or construction project presents an opportunity to adopt sustainable, resilient materials and building designs to promote your family's health and wellbeing. If you are investing in improving your home with a renovation project, you will need to factor these considerations into your designs and plans.

6 WAYS TO MAKE YOUR HOME MORE RESILIENT

1. FAÇADES
External wall insulation systems with render or cladding materials improve thermal performance, fire safety, and even the acoustics of your home without taking up internal floor space. Rockpanel façade cladding lets you choose from a variety designs without compromising on resilience.

2. EXTERIOR WALLS
If you want to maintain the existing appearance of the house, e.g. bricks or old stone walls, but you want to keep the house warm in winter or cool in summer, reduce energy usage and limit unwanted noise, consider insulating from the inside. This will allow you to reap the many benefits of stone wool insulation while preserving the aesthetics of your house.

3. PITCHED ROOF
A large part of a building's energy loss is through the roof. Therefore, it is the first place you should seek to insulate to maximise the energy efficiency or your home, thereby reducing your reliance on the grid. A well-insulated roof can significantly cut heat loss, meaning your house will stay warm for longer, even in the face of a heating outage. In addition, insulating your roof with stone wool will greatly increase fire safety.



4. INTERIOR WALLS
Insulation of interior walls, floors, and ceilings can improve comfort and reduce unwanted noise in the home. It will also help contain fires to the room in which they started, both keeping residents safe and limiting damages to your home.

5. LOFT
Hot summers can make a poorly-insulated loft unbearably hot – and cold winters make it expensive to heat. The high density of stone wool makes it an efficient material for creating a comfortable indoor climate all year round, reducing noise and helping you save money on your energy bill.

6. BASEMENT
Insulation of the basement can reduce energy use, provide a comfortable temperature and protect from damp. In case your basement gets flooded, stone wool will not retain water after draining, limiting the potential for mould growth.

WHAT MAKES A HOME RESILIENT?

Regardless of where you live, there are many stresses that persistently challenge the resilience of your home, and some are more evident than others. It's important to understand how the area you live in may increase certain risks, and what they could be. For instance, if your area has a history of experiencing localised flooding, or if there is a higher chance of fire damage due to your surroundings, you may need to investigate which materials could help you to increase resilience in case of these events occurring. Real resilience requires identifying the range of risks your residence could face and planning for those events accordingly.

Risks can be broken down into two categories – 'chronic stresses' and 'acute shocks'.

Chronic stresses are smaller, indirect effects such as noise pollution and poor air quality due to increased urbanisation

An acute shock is an unexpected event that disrupts the supply of services, and can often require evacuation or extensive repair. Such events could be a natural disaster or a terrorist attack, and could result in an extended loss of power supply.

By using modern materials and design practices, you can reduce the long-term effects of persistent stresses, and that preparation in turn will better equip your home to deal with a shock. It is equally important for homeowners as it is for city administrators to invest in sustainable solutions that improve the resilience of a building and its occupants.

BUILDING RESILIENCE AT HOME AND WORK

Having raced around the planet in some of the toughest conditions on Earth, Denmark SailGP Team helmsman Nicolai Sehested understands what makes a strong team, ready to face any challenge.

"Solid foundations are key," says Nicolai. "The more prepared you are, the better you'll be able to deal with adversity – however unpredictable." Although Nicolai is far more used to spending his time on the water, the global pandemic outbreak means that he's recently found himself unusually dry, and working from home – a situation that he admits he's found more challenging than racing a supercharged F50.

"Working remotely can be tough," he admits. "Teamwork and collaboration are more difficult when you're not physically together – but as a team, we've spent a lot of time connected virtually to maintain our relationships." As we adapt to the 'new normal', many people will be working from home more. Nicolai gives us three tips to 'keep the boat going fast' in the face of adversity.

1. Environment is important
Working from home can be tricky if your house isn't equipped with an office. Find a quiet spot where you can concentrate and tick off the task list. Look for an area where you can work effectively – without noise pollution, and in a comfortable temperature – and then close the door when you're done for the day.

2. Teamwork takes work
When you're out of office, it can be tough to keep up the relationships we build at work. People are, without doubt, the most important aspect of any great team. It's easy to be a good team when things are going well – but you learn a lot about people in adversity. Don't forget to check on your colleagues. The more you understand the people in your team, the better.

3. Switch off
Working from home, your day can lose structure. It's important to be able to focus when necessary, but also to know when to switch off. As athletes, we strive to improve at that all the time. Build structure into your day with short-term goals to focus in bursts.

STEPS TO A MORE RESILIENT HOME

Many of the challenges facing your home can be prepared for – but there are many situations, such as pandemics and extended loss of supply from a utility or service provider, that are much less predictable and can become sudden shocks. To deal with these situations, you should invest in passive support systems. These are structures that can reduce your reliance on the grid and create a more self-sufficient home that can remain resilient even in the most unexpected situations.

Before you start any new construction or renovation project, consider these five factors, which can help to increase resilience.

1. YOUR INDOOR COMFORT

A clean and comfortable living environment is essential for both human health and childhood development. In the case of an acute shock or if you are required to spend extended periods of time at home, your house should be comfortable enough to support you and your family.

Considering factors like temperature, noise, and humidity can help you find the necessary solutions to improve comfort within your house. Noise pollution and higher humidity in homes can lead to adverse health effects. Specifically, noise pollution can increase the risk of heart problems, aggravate stress, reduce focus and mental performance in children and teenagers, and cause loss of sleep. Reducing the effects of noise pollution requires acoustic insulation that helps absorb noise from external sources and the indoor environment. According to the European Environmental Agency (EEA), roughly 10,000 premature deaths occur every year due to the adverse health effects of noise pollution.

Meanwhile, increased humidity provides ideal conditions for mould to grow and spread, which can lead to asthma and other respiratory problems. A report by the National Institute of Health outlined that a humid home can feature higher levels of dust mites and fungi, two troublesome elements for allergy and asthma sufferers. Investing in solutions that reduce the effects of excessive noise and humidity is the first step to improving the resilience of your home.

STEPS TO A MORE RESILIENT HOME

INSULATING WITH STONE WOOL CAN **REDUCE HEATING** AND COOLING NEEDS BY

UP TO 70%

2. IMPROVED THERMAL PERFORMANCE

The thermal efficiency of your home should also be a primary consideration. In the European Union, some 79 percent of total household final energy went towards heating and cooling homes. This is concerning as according to figures from Eurostat, 75 percent of the energy used for heating and cooling still comes from non-renewable energy sources. Creating a home that is more resilient to extreme temperatures, and reducing your reliance on these sources can begin with improving your insulation.

Insulation such as stone wool isn't just about keeping your home warm during winter. It also helps to regulate temperature and keep your environment cool and comfortable during the warmer months. This carries distinct health benefits, as the UK's Office for National Statistics found a correlation between Britain's hottest day on record in July 2019, and a dramatic spike in death rate – with provisional figures showing a significant rise in cases on the warmest 24-hour periods.

Using the strengths of stone, stone wool insulation can help to increase the thermal retention characteristics of your house, which not only makes it more comfortable, but can also lead to increased concentration and productivity for those working from home. It has the added benefit of reducing your utility costs, sometimes by as much as 70 percent, as it will require less power to maintain a comfortable temperature inside the house. In Europe, a tenth of families live in energy poverty, meaning that they can't afford the heating bills generated by their existing energy system.

STEPS TO A MORE RESILIENT HOME

STONE WOOL LASTS
FOR MORE THAN
55 YEARS

3. THE DURABILITY OF THE MATERIALS

Now that you've considered the indoor comfort of your home, it's time to select the right materials to secure it. Choosing durable materials that can withstand changes in temperature, humidity and vibration over long periods without losing their performance will keep your home safe and comfortable for years to come. Investing in durable materials now means reduced maintenance and renovation costs down the line. A material such as stone wool insulation provides excellent thermal and acoustic properties for over 55 years without loss of performance, and also retains dimensional stability, avoiding gaps and warping which can lead to energy loss and inefficiency. The water management properties of stone wool – known as 'vapour permeability' – can help to mitigate against rot and mould by allowing water to pass through the material, avoiding unwanted moisture – a common problem that can leads to around 80 percent of durability issues facing a home, according to the Building Science Corporation.

LEVERAGING THE NATURAL ROBUSTNESS OF STONE, STONE WOOL WITHSTANDS

Fire · Water · Moisture · Compression

WITHOUT LOSS OF PERFORMANCE

WATCH US TEST THE ROBUSTNESS OF STONE WOOL

STEPS TO A MORE RESILIENT HOME

STONE WOOL WITHSTANDS
TEMPERATURES OF UP TO
1,000°C

4. INVESTING IN FIRE SAFETY

Fire resilience should be a priority for homeowners and city governments alike. Across Europe, an estimated 5,000 deaths occur due to building fires every year – and those fires can begin in a variety of different ways. Common causes of fires in urban environments include electrical and heating system faults, natural causes such as lightning strikes and arid conditions, and man-made causes such as accidents and arson. With growing populations and urbanisation increasingly expanding into new area, studies show that urban sprawl can increase risk of natural disasters, such as wildfires and hurricanes occurring, and dramatically speed up the spread of the impact.

Although fatalities through fire have fallen by 65 percent over the last 30 years, legislators rightly believe that every death is preventable. Stone wool helps to improve a structure's fire resilience, and while all efforts should be made to prevent fires through strict adherence to safety regulations and standards, using the appropriate insulation material on the floors, walls, ceilings, and exteriors of buildings can significantly reduce the effects of fire and stop it from spreading. If you can't prevent a fire from starting, then limiting its spread is the next best option available. Stone wool insulation is non-combustible, since it's made from stone, and can withstand temperatures of up to 1,000 degrees Celsius.

The added benefit of stone wool is that it doesn't create massive amounts of toxic smoke while experiencing these temperatures. It helps to alleviate the effects of fire while keeping the majority of the structure safe, giving precious time to evacuate. Stone wool is the perfect solution for increasing your home's fire resilience.

STEPS TO A MORE RESILIENT HOME

USING HIGH-PERFORMANCE INSULATION, YOUR HOME **CAN STAY WARM FOR UP TO 4 DAYS** WITHOUT HEATING SUPPLY

5. SUSTAINABILITY AND REDUCED ENERGY RELIANCE

An important consideration to boost resilience is to reduce your home's reliance on external energy systems, such as the power grid. The first step on this journey is to reduce your use of energy as much as possible. Not only is that a sustainable step to take, it is also cost-efficient.

Stone wool insulation is an extremely energy-efficient material, and can cut the amount of heating required in a home by up to 70 percent. A recent study by the Politecnico di Milano describes how well-insulated buildings can maintain a comfortable interior temperature for up to four days after a single day of 'thermal charging' through heating – essentially acting as their own battery, and preserving energy and heat generated. This increases a home's self-sufficiency and circularity.

When unexpected shocks hit and local infrastructure is damaged or suspended, extended loss of power supply isn't uncommon. If your home is able to generate its own power, through insulation – and other solutions such as solar panels, a back-up generator or even a wooden stove – it will allow your environment to remain comfortable for longer.

WHY RENOVATING FOR RESILIENCE IS GOOD

– FOR INDIVIDUALS AND COMMUNITIES

Renovation projects for improved resilience serve both the individual and society as a whole. They reduce the burden on public infrastructure, like electricity and district heating systems, while providing healthier living environments to the population. The effects of the COVID-19 pandemic have put much of the global population under pressure and refocussed attention on the conditions in which citizens spend the majority of their time due to increased period spent indoors while working and studying from home.

AN AVERAGE UK HOME
COULD SAVE UP TO
£400
ON THEIR ENERGY
BILLS BY RENOVATING

ECONOMIC BENEFITS OF RENOVATION PROGRAMMES

Renovating your home can provide benefits beyond your own property costs. You can benefit from improved insulation by reducing your bills, making your house safer, and saving on maintenance costs. In the EU, 64 percent of energy bills go towards heating. Using proper insulation like stone wool can help to reduce your heating costs by as much as 70 percent. Starting a renovation project can help you save a lot of money in the long-term as, for the average home in the United Kingdom, this equates to a yearly saving of £400.

Indeed, some city programmes encourage renovation by providing financing options or other incentives for residents who carry out these types of projects. With energy-efficient solutions providing the greatest amount of savings to individuals and local governments, resilience begins with improved thermal insulation.

This will help reduce energy costs, increase the fire resilience of structures, and limit noise pollution from internal and external sources. Stone wool products can help make your home more resilient while dealing with chronic stresses or acute shocks. You can use insulation in walls, roofs, ceilings, floors as well as attics or basements. Increasing the thermal efficiency of your home with recyclable material and excellent mechanical performance should be your first consideration for improving resilience.

INVESTING IN THE FUTURE RESILIENCE OF YOUR HOME

As a homeowner, it is important to consider improving the resilience of your home. The solutions to achieve this can bring instant benefits, such as lower energy bills, a more comfortable living environment and a more sustainable home, plus many more benefits in the future, such as safeguarding against potential risks and reduced need for future renovation. If your house is currently supported by an active system, including a traditional electricity and heating supply, consider whether you could take steps towards a passive system, using innovative solutions such as thermal insulation and solar panels to reduce your reliance on the grid. Passive systems are much less likely to fail, and provide a greater return on investment over time if the right materials, such as stone wool, are used from the start. Stone wool is versatile enough to produce a variety of products suitable for any kind of insulation application. Products range from ceiling tiles to acoustic panels and external cladding or façades.

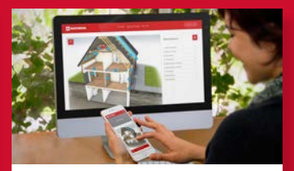
Keeping your own home in order is the first step to making future cities more resilient. Stone wool insulation can help you achieve your resilience goals and keep your family safe and comfortable, while also doing your part for your city and the climate.

WANT TO LEARN MORE?

YOUR DREAM RENOVATION

Looking to improve the resilience of your home? Why not reduce your energy bills while you're at it!

DOWNLOAD GUIDE



VISUALISE YOUR NEXT PROJECT

Try our renovation tool and visualise your next home renovation!

TRY IT NOW

SUSTAINABLE RENOVATION

Did you know that making a home more resilient and making it more sustainable often goes hand-in-hand?

READ MORE

CASE STUDIES

HOME RENOVATION

CHERASCO FAMILY HOUSE – CHERASCO, ITALY

CHALLENGE: When architect Maria Grazia Novo bought a traditional, centuries-old home in northern Italy, she was motivated by a desire to create something truly unique – a reimagination of the family home. The house she chose for her family needed to be totally renovated while staying in harmony with local building traditions. With a lack of mains gas for heating, and a concern for the environment, Maria searched for an ambitious solution that would bring the home into the 21st-century, while retaining its traditional charm and character.

SOLUTION: Maria opted for a 'passive' house build – a pioneering approach that made her home one of the first such projects to be completed in a Mediterranean climate. The technique uses passive influences in a building – like sunshine, shading and ventilation – together with high levels of insulation and airtightness, to create a more resilient home and achieve a pleasant interior environment using up to 90 percent less energy than a traditional building. Insulation is central to the passive approach, which aims to reduce the energy needed for heating and cooling to an absolute minimum. ROCKWOOL materials are perfect for sustainable standards like the passive house because they offer excellent thermal insulation, are vapour-permeable and have a long lifespan – and because stone wool can be easily fitted within a house's roofs and walls, the home's traditional appearance was retained, creating the perfect sustainable family home.

READ THE FULL CASE STUDY

NEW BUILD HOME

NEARLY ZERO-ENERGY HOUSE – GLOSTRUP, DENMARK

CHALLENGE: Every person dreams about achieving a good quality of life, while doing their bit for the planet – but with buildings accounting for a significant part of energy consumption around the globe, how do you choose a family home solution that can reduce your impact, and is both resilient and cost-efficient? One suburban family in Glostrup, Denmark faced that question when purchasing a new home – and turned to ROCKWOOL to find a solution.

SOLUTION: Development company HusCompagniet used ROCKWOOL materials to deliver a top-class sustainable home, without breaking the bank. Using Rockzero – a pioneering new wall system that integrates stone wool insulation into the structural support of the home – the house meets the highest available energy class and remains only a little more expensive than a regular home. It's sustainable, energy efficient and fire resilient, and also offers a wide range of benefits during the construction process as it's lightweight and fast to build. That makes it the perfect fit for ordinary families who want to contribute to sustainability while achieving a low heating bill and a high level of comfort.

READ THE FULL CASE STUDY