

# WHY INSULATE? WHY RENOVATE?

WITH MINERAL WOOL INSULATION



QUALITY OF  
LIFE STARTS  
IN BUILDINGS



**Insulation is a ‘win-win’ for people, business, government and the planet alike!**

We spend nearly **90% of our lives** indoors, so it's essential that our **buildings and homes** are **comfortable, safe, healthy, stress-free, and affordable** to maintain.

An insulated building is a better-quality building in every respect.

Insulation provides **thermal comfort, saves money** by cutting energy costs and creates **healthier environments**. The benefits of **insulation** can be enjoyed for generations to come.

When the energy **renovation of buildings** is scaled up — from individual buildings to **millions** of buildings — the **whole of society wins**, through the many ancillary benefits like CO<sub>2</sub> emissions reduction, job creation and better overall living conditions.

For every **€1 million** invested in **energy renovation of buildings**, an average of **18 jobs** are **created** in the EU. These are local, long-term jobs that will stimulate economic activity across Europe<sup>2</sup>.



**75%<sup>2</sup>**

of EU buildings were built with minimal or no energy-related requirements, offering massive potential to make a difference with insulation and renovation

**40%<sup>3</sup>**

buildings are responsible for 40% of energy consumption and 38% of total CO<sub>2</sub> emissions in the EU. Renovate them to be more energy efficient and the gains will be enormous

**-50%<sup>4</sup>**

a 50% reduction in energy use in the European building stock would reduce CO<sub>2</sub> emissions by 18% by 2030

**89-153€ billion<sup>5</sup>**

highly efficient buildings can reduce energy demand and peak loads by 57 GW and cut capital cost requirements in power sector between 89-153€ billion all by 2050



**1%<sup>6</sup>**

new buildings account for less than 1% of the entire buildings stock every year. New builds are more energy efficient than old, but they will not change the energy efficient landscape as quickly as renovation



**1.2%<sup>7</sup>**

is the existing renovation rate per year in the EU



**2.5%<sup>8</sup>**

should be the minimum renovation rate per year in the EU

# **WHY SHOULD WE INSULATE OUR HOMES?**

Insulation is an **essential part of the Building Envelope**, securely separating the interior of dwellings from the outdoor environment constraining the movement of heat, moisture, air and noise.

Insulation stabilizes indoor temperatures and helps to better **preserve buildings for longer periods of time**.

Proper insulation can **reduce household energy needs by 70%**<sup>9</sup>.

Insulation works as a barrier to heat and cold keeping out unwanted heat in the summer while retaining precious warmth in the winter.

One letter improvement in the energy class of a building through insulation, leads to an **increase in property value of between 0,5% – 10,5%**<sup>10</sup>.

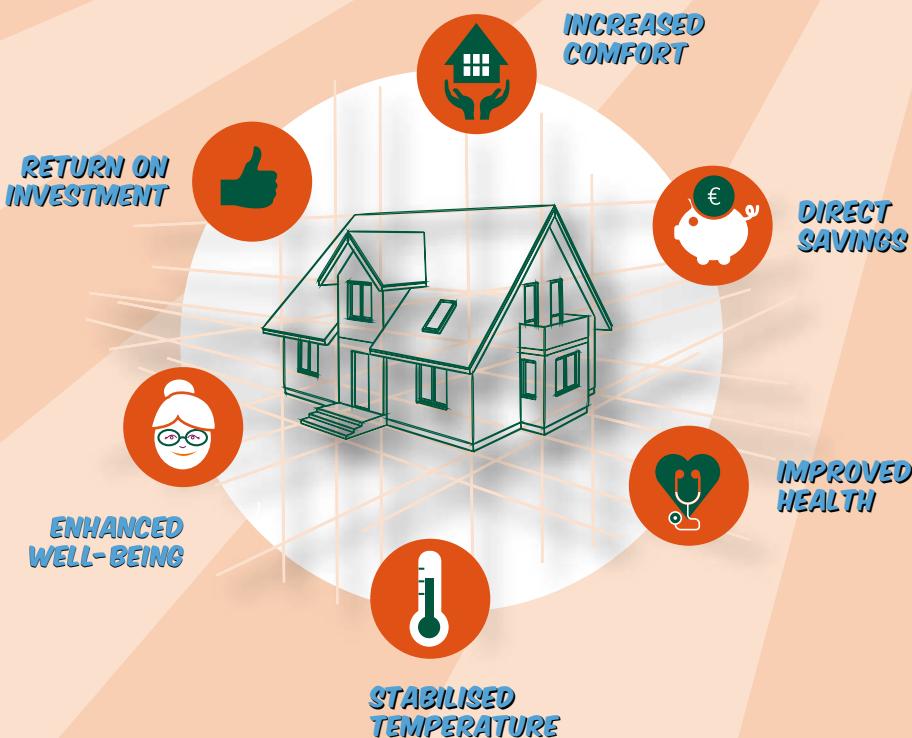
A well-insulated home provides a **healthy indoor environment** without cold surfaces and risk of mould.

Insulated homes are critical to the living conditions of Europe's population especially for the vulnerable and elderly.

Insulation **reduces the amount of external noise**, allowing for a quiet, peaceful living environment, in particular this is the case of Mineral Wool.

Insulation has a “fit-and-forget” benefit as it requires **little to no maintenance** and/or replacement once well-installed.

# DID U KNOW ?



# MINERAL WOOL INSULATION MATTERS TO YOU

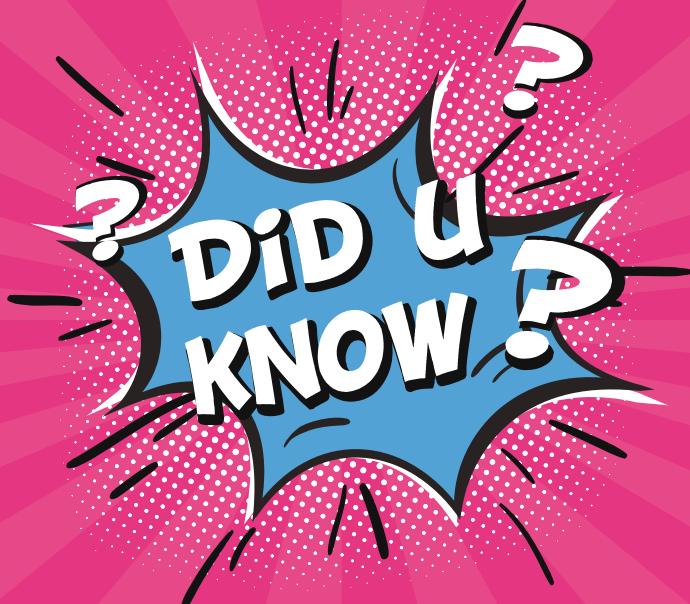


**FOR COMFORTABLE  
AND HEALTHY BUILDINGS**

A direct **positive effect** on **health** and **wellbeing** results from insulation. Improving indoor and outdoor air quality with insulation provides **enormous savings to society**; both in terms of health and life expectancy, an annual EU gain of 70,000<sup>11</sup> life years can be achieved by reducing emissions. In addition, related economic savings amount to at least 6.64€ billion/year across the EU<sup>12</sup>.

Mineral wool insulation in particular, transforms people's lives by **making buildings better places** in which to live — whatever the climate — by making it **easier** to keep a **home warmer** or **cooler** for longer. Building quality is built on comfort. Insulation creates comfort zones that allow everyone — particularly the young, old and vulnerable — to flourish in **healthier environments**.

Mineral wool insulation provides warmth by preventing heat loss, providing **comfortable indoor temperatures** and **reducing stress-inducing noise pollution**.



DID U  
KNOW?

**70.000 ANNUAL**

GAIN OF LIFE YEARS THROUGH REDUCED EMISSIONS

**6.64€ BILLION**

YEAR RELATED ECONOMIC SAVINGS

# **MINERAL WOOL INSULATION MATTERS TO YOU**

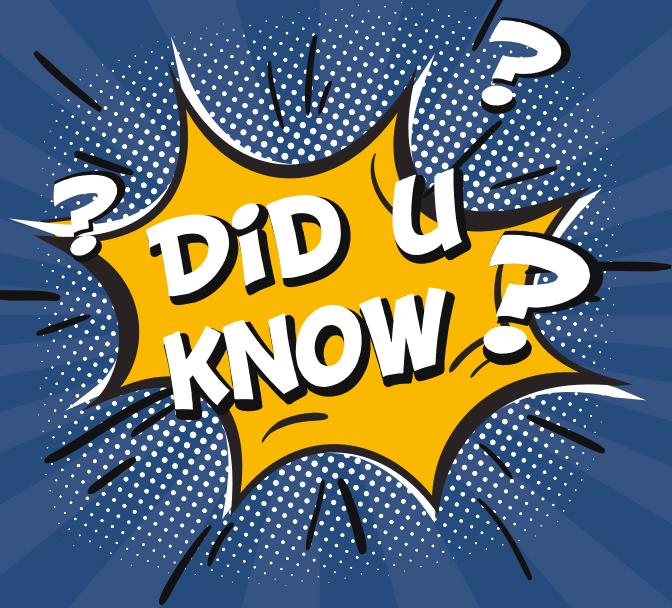


**FOR ACOUSTIC COMFORT**

**Noise pollution** is a major environmental health problem in Europe. The EEA estimates that traffic noise directly affects the lives of **125 million<sup>13</sup> Europeans**, and probably yourself!

The sleep of 8 million Europeans is of lesser quality because of exposure to too high noise levels. Environmental **noise is linked** to approximately **43,000 hospital admissions, 900,000 cases of hypertension** and up to **10,000 premature deaths per year**. The European Commission estimates the **social cost** of rail and road traffic noise in the EU as being **40€ billion per year<sup>14</sup>**.

**Mineral wool insulation** provides a highly **effective barrier to noise**. That is because the structure of the fibres in glass and stone wool significantly dampens sound. There is a range of mineral wool products which help to better manage sound, these products are used in all kinds of settings – from offices, public buildings and homes through to hospitals, laboratories and industrial facilities.



DID U  
KNOW?

**125 MILLION**

EUROPEANS AFFECTED BY NOISE

**40€ BILLION**

SOCIAL COST OF NOISE PER YEAR

**10,000**

PREMATURE DEATHS PER YEAR

# MINERAL WOOL INSULATION MATTERS TO YOU

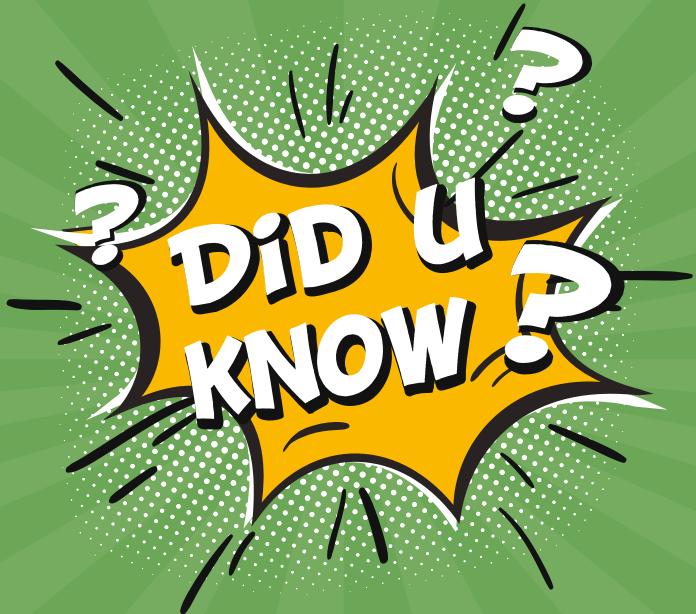


**FOR SAVING MONEY**

Insulation unlocks massive long-term **financial benefits and is cost effective** by cutting energy bills.

Heating a home is now one of the largest household costs and the best way to reduce bills is with a more efficient, **better insulated home**.

How much you can save depends on e.g. the **size of your home** and the **type of insulation** you install.



INSULATION SAVES UP TO<sup>15</sup>

**1,350€**

A YEAR FOR AN INEFFICIENT HOUSE (300KWH/M<sup>2</sup>/YEAR)

**670€**

A YEAR FOR AN AVERAGE HOUSE (150KWH/M<sup>2</sup>/YEAR)

**90€**

A YEAR FOR A PASSIVE HOUSE (15KWH/M<sup>2</sup>/YEAR)

# **MINERAL WOOL INSULATION MATTERS TO YOU**



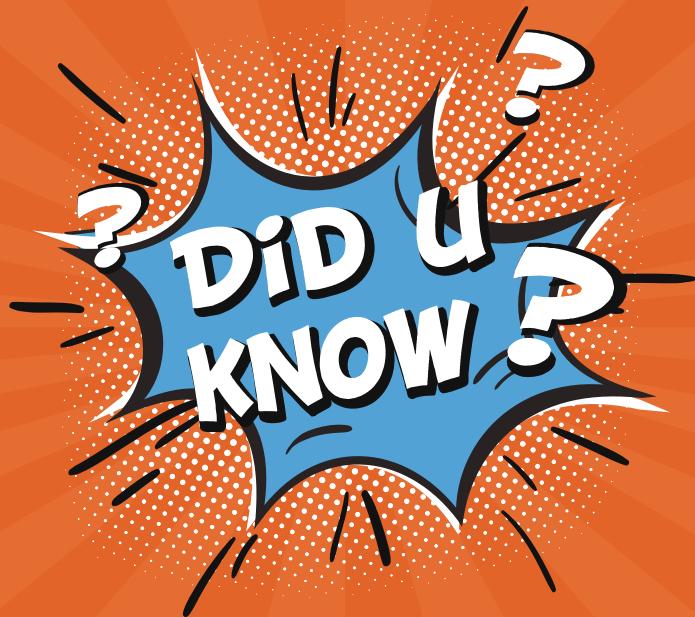
**FOR FIRE SAFETY**

By **building sensibly** using adequate fire protection materials, the **risk of fire** can be **significantly reduced**.

Taking one single year in Germany as example, fire damage costs to the insurance industry was estimated at around 6€ billion<sup>16</sup>.

**Buildings** as well as **their contents contribute** to the **spread of fire**.

Mineral Wool insulation contributes to **safer buildings**. In fact, mineral wool insulation **acts as a fire barrier**, slowing down house fires and giving the emergency services extra time due to its qualities which delay fire spread; this **helps save lives, money and property** and keep pollution to a minimum.



# 6€ BILLION

INSURANCE FIRE DAMAGE COSTS PER YEAR  
FOR GERMANY ALONE

# **MINERAL WOOL INSULATION MATTERS TO SOCIETY**



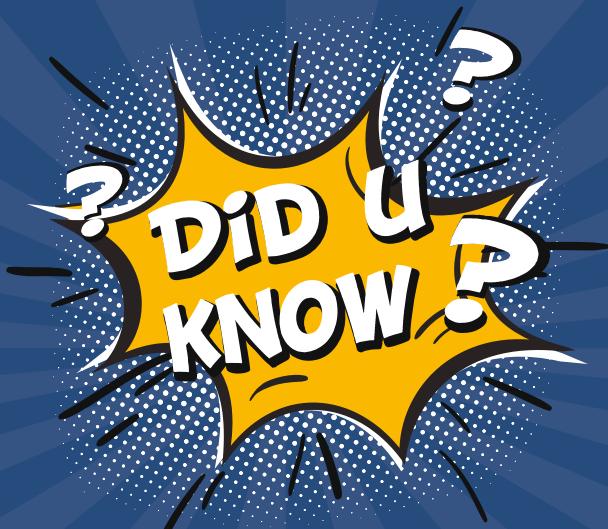
## **THE COMMITMENT TO LIFE CYCLE ASSESSMENT**

In order to **assess the environmental impact** of a product, each of its positive and negative **contributions** on the **environment** from “cradle-to-grave” must be **carefully valued**. Mineral wool producers are **committed to LCAs** and the use of related Environmental Product Declarations (**EPDs**).

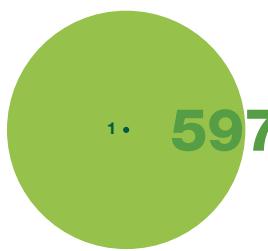
Over the 50-year lifetime of a home, **mineral wool** insulation can **save more than 200 times<sup>17</sup>** the CO<sub>2</sub> emissions that are **generated during its manufacture, transportation, installation and disposal**.

This is based on the **Eurima mineral wool LCA calculations**, which compares the **environmental impacts and savings** during the **life-cycle** of mineral wool products in a **standard building** (located in Strasbourg, France).

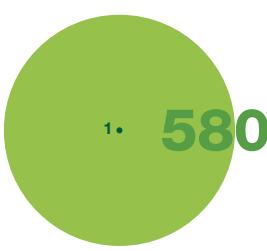
As it can be clearly seen, the negative **impact during production and construction stages** is overwhelmingly **compensated by the positive impact** of the **energy savings** during the **use phase**. This is calculated for all LCA indicators and especially striking for Global Warming Potential, Primary Energy Use, and Ozone Depletion Potential.



## Ratios for energy related environmental impact indicators<sup>18</sup>



Ozone Depletion Potential



Primary Energy non-renewable



Global Warming Potential



Acidification Potential



Photochemical Ozone Creation Potential



Eutrophication Potential

● Environmental benefit through energy savings during 50 years use

● Environmental impact

# **WHY SHOULD WE RENOVATE OUR HOMES?**

New buildings only account for 1% of the entire building stock in Europe every year! This means that **Europe's largest untapped energy source** are **existing buildings!**

**75%** of EU buildings<sup>19</sup> were built with **minimal or no energy related requirements** offering **massive potential** to make a difference.

The EU's **Renovation Wave Strategy** has the potential to **create** an additional **160.000 jobs** in the construction sector **by 2030**<sup>20</sup>.

**Every 1€** spent on **thermal renovation** in the EU **saves 42 cents** in public health expenditure.<sup>21</sup>

**Increasing** the **rate and depth of renovation** in line with the EU's Renovation Wave Strategy will lead to a **60% reduction in CO<sub>2</sub> emitted from buildings.**<sup>22</sup>

The most effective way to **tackle energy poverty** is **through renovation** and **insulation!**

For **every 1% improvement in energy efficiency** in Europe, EU **gas imports drop by 2.6%**<sup>23</sup> with the **existing building** stock as **main contributor.**

DID U  
KNOW ?



REDUCING  
ENERGY  
POVERTY



CREATING  
LOCAL JOBS



IMPROVING  
PUBLIC HEALTH



A CATALYST FOR CLEAN  
AND FLEXIBLE ENERGY  
SUPPLY

TACKLING CLIMATE  
CHANGE



IN 2015 THE EU RENOVATION MARKET  
WAS ESTIMATED AT

**109€ BILLION<sup>26</sup>**

# **RENOVATION MATTERS TO SOCIETY**



## **CREATE MORE LOCAL JOBS**

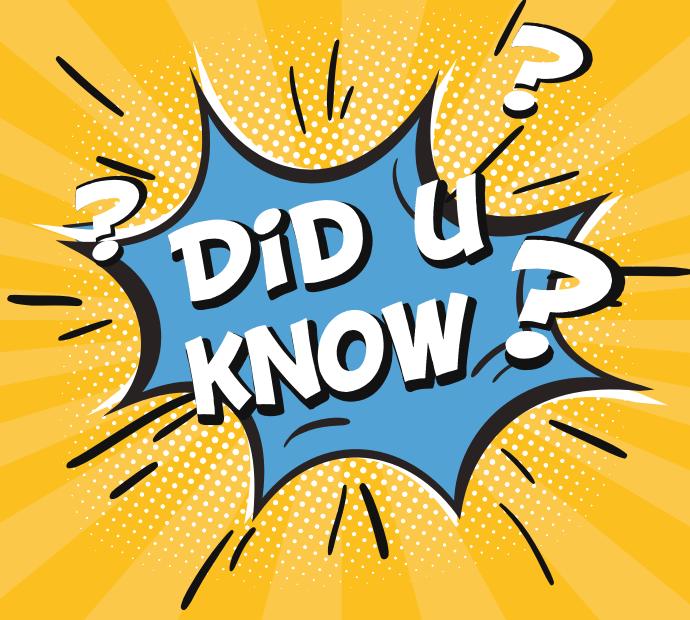
When **energy renovation** and **insulation** are scaled up they **drive economic growth** and **job creation**.

For **every €1 million** invested in **energy renovation of buildings**, an average of **18 jobs** are **created** in the EU. These are **local, long-term jobs** that will stimulate economic activity across Europe.

In **cities** alone, **investments in residential energy renovation** to meet the goals of the Paris Agreement **would create 5.4 million urban jobs worldwide<sup>24</sup>**.

At least **50%** of the **value-added** of the building sector is generated by work on the **building envelope**.

The **greater depth of renovation required** to meet EU energy and climate objectives means that demand for **highly skilled construction workers** is **set to rise** exponentially.



DID U  
KNOW?

# 18 JOBS

FOR EVERY €1 MILLION INVESTED IN RENOVATION

# 5.4 MILLION URBAN JOBS

TO BE CREATED GLOBALLY

# RENOVATION MATTERS TO SOCIETY

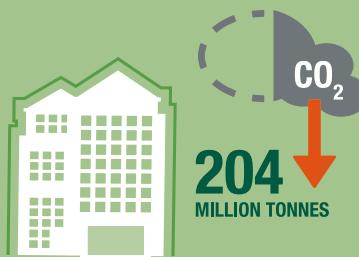


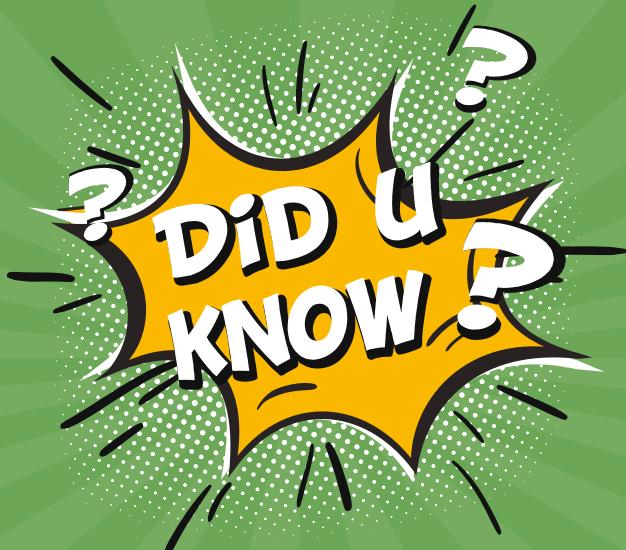
## FOR SAVING THE PLANET

A total of **197<sup>28</sup>** countries agreed to deliver a **below 2°C** in order to **tackle climate change** at the Conference of Parties in Paris (COP) in 2015.

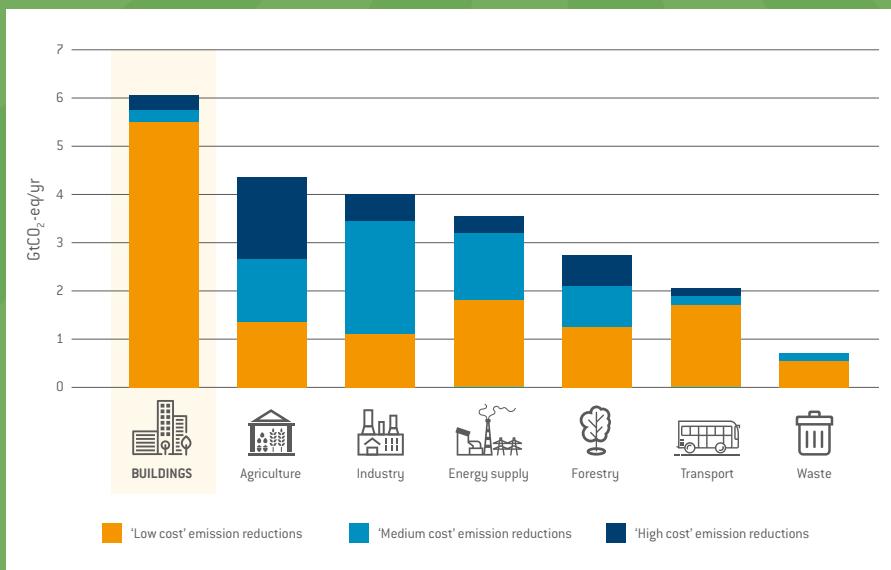
How can they boost that? **Energy efficient renovation** involving the **insulation of existing buildings** is the **key to success**. In the EU, buildings consume **40% of final energy** and are responsible for **36%** of our **greenhouse gases<sup>29</sup>**.

Insulating the **75%** of EU **buildings which are still inefficient**, could **reduce CO<sub>2</sub> emissions by 204 million tonnes per year<sup>30</sup>**; the equivalent of 43 million cars being taken off the road for one year<sup>31</sup>.

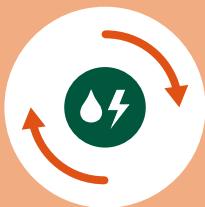




## BUILDINGS HAVE THE BIGGEST POTENTIAL IN EMISSIONS REDUCTION



# RENOVATION MATTERS TO SOCIETY



A CATALYST  
FOR CLEAN AND FLEXIBLE  
ENERGY SUPPLY

**Highly efficient buildings** would transform our energy landscape by **reducing peak demand** and improving the integration of renewable energy and smart technologies.

By **renovating** and **insulating** the **75% of our buildings** which are **inefficient**, peak demand for **electricity could be cut by 57GW by 2050<sup>32</sup>** — equal to the current total electricity production capacity of the Netherlands and Austria.

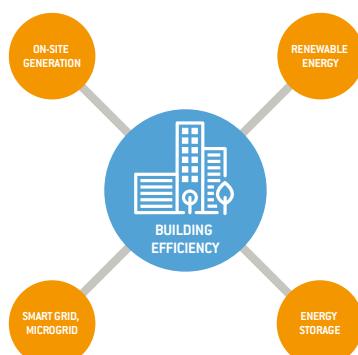


# DID U KNOW?

WITH HIGH ENERGY, ADVANCED  
TECH = HIGH ADDITIONAL COST



WITH HIGH EFFICIENCY, ESTABLISHED  
TECH = LOW OR NO ADDITIONAL  
COST



Note: Size of circles represents relative investment cost.

# RENOVATION MATTERS TO SOCIETY

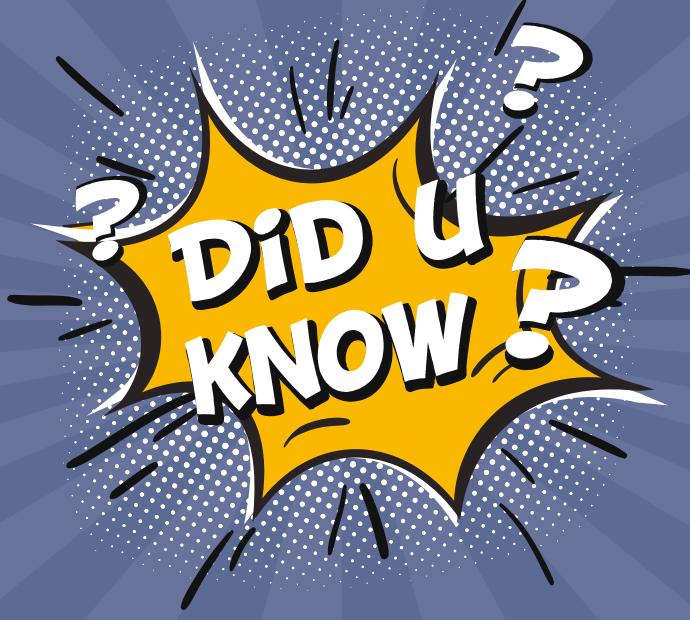


## REDUCED FUEL POVERTY

Over 50 million Europeans or 10% of the EU population<sup>33</sup> suffer from fuel poverty. The three top reasons for this are a **poor building envelope with little insulation, high energy prices** and **low income**.

The result of **fuel poverty** is that **6.9% of the EU population** said that they **cannot afford to heat their home** sufficiently in a 2019 survey. In some EU countries, this figure **exceeded 30%**.<sup>34</sup>

**Heating and cooling** can amount to **16% of EU consumers' bills**, **renovation and insulating properly** can **save up to 70% of heating**<sup>35</sup> needs.



DID U  
KNOW?

# OVER 50 MILLION

EUROPEANS SUFFER FROM FUEL POVERTY

16%

OF EU CONSUMERS' BILL IS FOR HEATING & COOLING

70%

OF HEATING NEEDS SAVED, IF INSULATING PROPERLY

# RENOVATION MATTERS TO SOCIETY

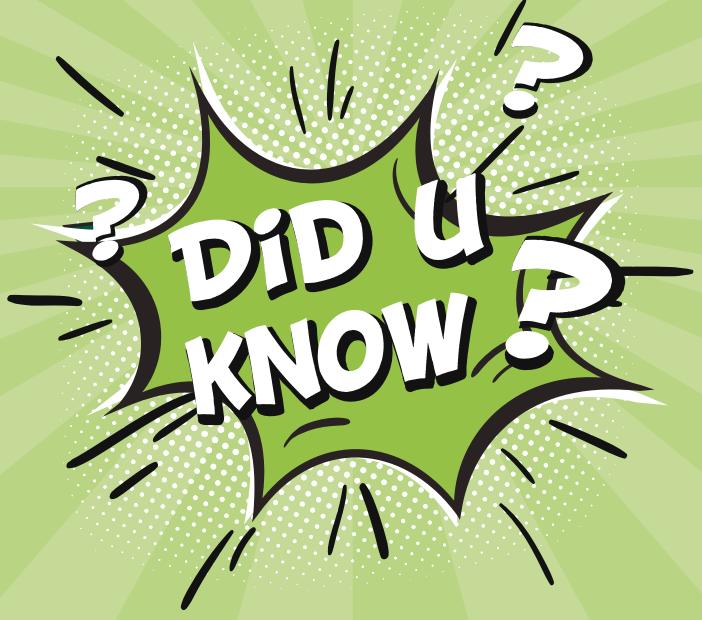


## IMPROVED ENERGY SECURITY

For every **1% improvement** in **energy efficiency** across Europe,  
EU **gas imports drop** by **2.6%**.<sup>36</sup>

We **import 53%** of our energy<sup>37</sup>, costing us **1 billion/day**.

**Buildings** use 61% of all imported gas<sup>38</sup> and an **energy renovation programme** across Europe **could reduce** the sector's **energy imports** by over 60% by 2030 and 100% by 2050.<sup>39</sup>



DID U  
KNOW?

61%

OF ALL IMPORTED GAS IS USED IN BUILDINGS

1€ BILLION/DAY

IS THE COST OF ENERGY IMPORTS

100%

REDUCTION IN GAS IMPORTS BY 2050

# RENOVATION MATTERS TO SOCIETY



## IMPROVED PUBLIC HEALTH

The **human cost** of living in **inadequate buildings** is staggering. For example, the **total societal cost** of having people live in **existing ‘unimproved’ housing** is estimated at **194€ billion**.<sup>40</sup>

Studies carried out in different countries show that for **every 1€ invested** in the **thermal renovation** of buildings, **a saving of 42 cents** is achieved on **health costs**.<sup>41</sup>

**Children** in cold buildings are more likely to have respiratory problems. There are also clear links between **cold housing** and **excess winter deaths** among the elderly. Renovating with insulation contributes significantly to **creating warmer buildings**.



**90%** OF OUR BUILDINGS WILL  
STILL BE HERE IN 2050

DID U  
KNOW?

194€ BILLION

TOTAL COST OF SOCIETAL HEALTHCARE SAVINGS

EVERY 1€  
INVESTED SAVES 42 CENTS

# NZEB BUILDING STOCK: A VISION FOR EUROPE

Did you know that **all new buildings** have to be **Nearly Zero-Energy Buildings (NZEBs)** as of 1 January 2021? This is a **requirement** of the Energy Performance of Buildings Directive (**EPBD**). NZEBs have very high-energy performance.

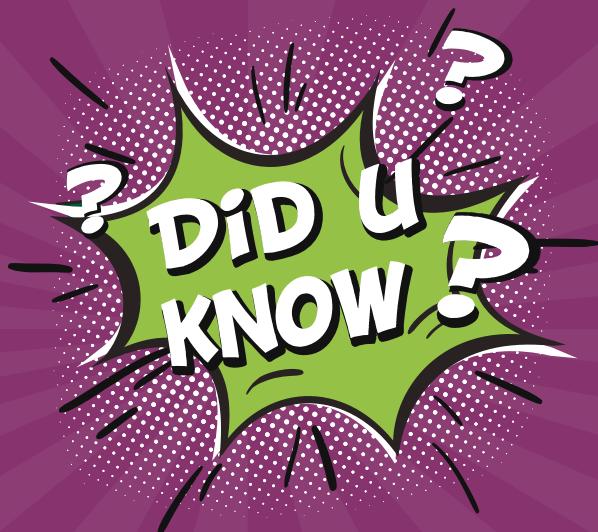
However, there is **no clear plan for** dealing with the **buildings and homes** that **we already have**. What **we need** is a plan that is seen as doable by Member States, provide business and building owners with certainty and that brings **confidence** to the **construction market**.

A **solution** would be to **extend** the known **NZEB principle** to **existing buildings**, and setting a realistic **timeframe to 2050**. Insulating the **building envelope** is a prerequisite for the **transition to NZEBs**.



**1.241€ BILLION**

THE BUILDING SECTOR TURNOVER IN THE EU 28 IN 2013,  
THIS IS THE EQUIVALENT TO MORE THAN 9% OF THE  
EU'S GDP THAT YEAR<sup>42</sup>



Once a **building** has been transformed by **renovation** it can be left alone to get on with its job of **saving energy**.

An **energy efficient building envelope** is **easy to run** for anyone — **owner or tenant** — there is no need to change their habits.

High levels of **energy-saving performance** can be achieved with **energy renovation** of **buildings**.



A resilient **smart building** begins with a high **performing building envelope**. Mineral wool insulation provides that start.

An **energy efficient renovated building** requires **little to no ongoing maintenance**. Even better, its **trouble-free benefits** are enjoyed **for decades**.

# THE WAY FORWARD



## EDUCATE

Too often people take insulation for granted, they only notice when it's not there. **People need to be informed**, when **buying or renovating a building**, how insulation will improve their lives and how to proceed from the decision to renovate to enjoying a **warmer** and more **cost-efficient building**.



## REGULATE

**Renovation** can only thrive with an ambitious long-term vision to make **Europe's building stock Nearly Zero Energy by 2050** helped by milestones along the way and **robust regulatory drivers**, such as **minimum energy performance standards (MEPS)**. Energy and climate policy must enshrine the **principle of Trias Energetica**, also known as the **energy efficiency first principle**.



## FACILITATE

**Public authorities** need to **facilitate renovation** by **incentivising improvements**, providing **assistance and information**, enabling workforce **training** and securing a **stable investment climate**.

# OUR FIVE POLICY ASKS

**Renovating the existing building stock to NZEB level by 2050.**

**Strengthening key enablers for building renovation such as Energy Performance Certificates (EPCs).**

**Ensuring that the EPBD revision is coherent, consistent and mutually reinforcing with other initiatives in the European Green Deal.**



**Introducing MEPS for existing buildings and a deep renovation standard at the level of at least 60% energy savings.**

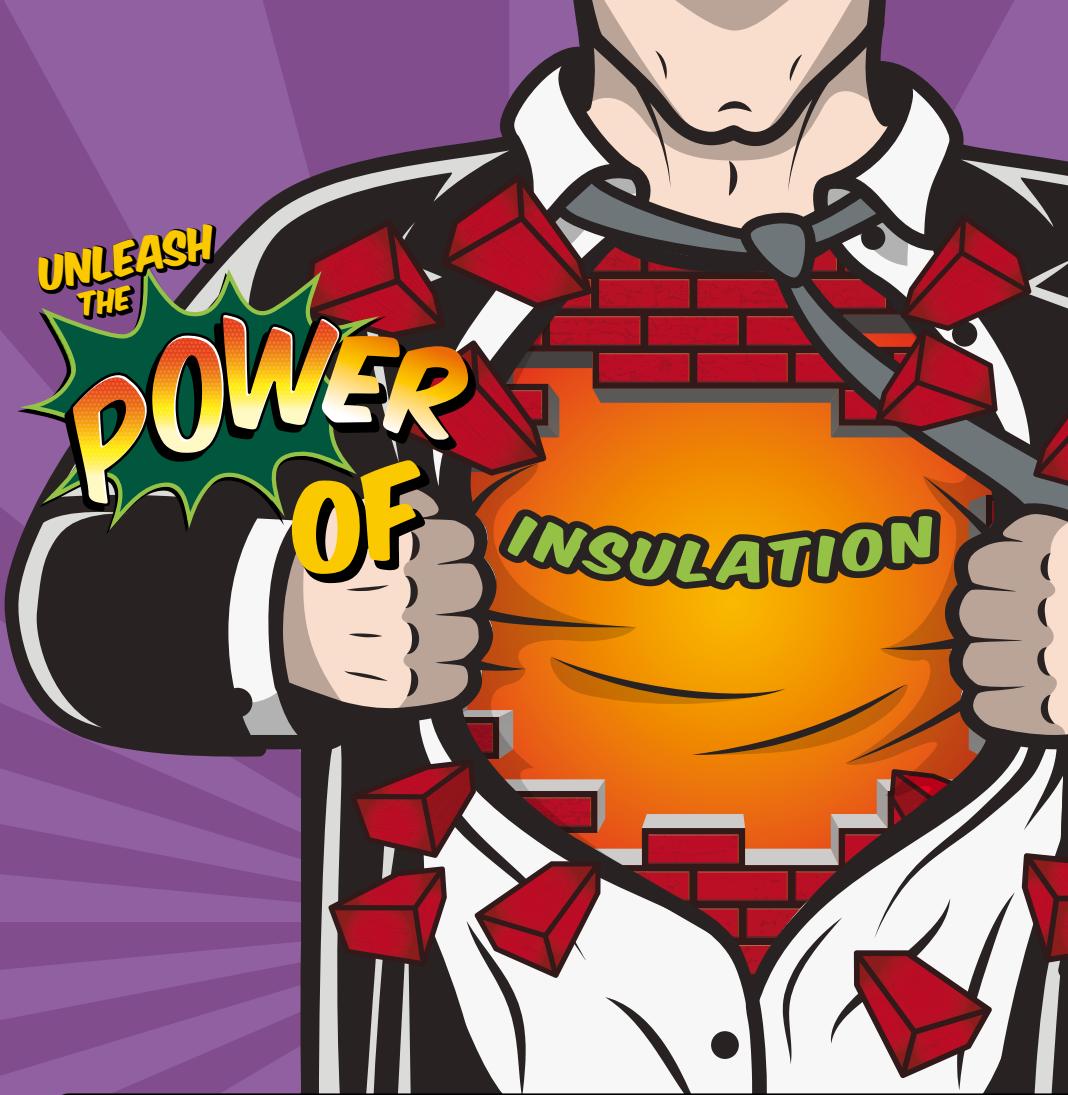
**Unlocking financial bottlenecks for investment and using ETS revenues to finance building renovation.**

# REFERENCES

- <sup>1, 26, 42</sup> OpenExp, 2016. Energy Transition of the EU Building Stock - Unleashing the 4<sup>th</sup> Industrial Revolution in Europe. By Yamina SAHEB
- <sup>2</sup> BPIE [2020], Building Renovation: A kick-starter for the EU recovery  
[https://www.renovate-europe.eu/wp-content/uploads/2020/06/BPIE-Research-Layout\\_FINALPDF\\_08.06.pdf](https://www.renovate-europe.eu/wp-content/uploads/2020/06/BPIE-Research-Layout_FINALPDF_08.06.pdf)
- <sup>19, 23, 36, 37</sup> COM[2015] 80 final - A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy
- <sup>3</sup> JRC, 2015. Energy Renovation: The Trump Card for the New Start for Europe
- <sup>4</sup> <https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings> (derivate from EC figures)
- <sup>5, 32</sup> Ecofys, 2015. The role of energy efficient buildings in the EU's future power system
- <sup>6</sup> Investing in energy efficiency in Europe's buildings - A view from the construction and real estate sectors (Economist Intelligence Unit 2003)
- <sup>7, 33</sup> COM[2016] 51 final - An EU Strategy on Heating and Cooling
- <sup>8</sup> Ecofys Postion Paper - A heating & cooling strategy for the European building sector until 2050
- <sup>9, 35</sup> JRC, 2016. Synthesis Report on the National Plans for Nearly Zero Energy Buildings (NZEBs)
- <sup>10</sup> BPIE, 2015
- <sup>11</sup> <http://lodel.irevues.inist.fr/pollution-atmospherique/index.php?id=4780>
- <sup>12</sup> Modeled effects of an improved building insulation scenario in Europe on air pollution, health and societal costs
- <sup>13, 14</sup> EEA Report: Noise in Europe 2014
- <sup>15</sup> <http://oilprice.com/Latest-Energy-News/World-News/How-Much-Money-Could-a-Well-Insulated-House-Save-You.html>
- <sup>16</sup> VFDB - German Fire Protection Association
- <sup>17, 18</sup> Eurima mineral wool LCA calculations in a standard building (located in Strasbourg, France)
- <sup>20</sup> European Committee of the Regions (2021) Financing the Renovation Wave: boosting jobs and energy savings in the EU  
<https://cor.europa.eu/en/news/Pages/Financing-the-Renovation-Wave.aspx>
- <sup>21</sup> WHO Regional Office for Europe, OECD (2015). Economic cost of the health impact of air pollution in Europe: Clean air, health and wealth
- <sup>22</sup> European Commission (2020), A Renovation Wave for Europe - greening our buildings, creating jobs, improving lives
- <sup>24</sup> C40 Cities (2018) Climate Opportunity: more jobs; better health; liveable cities.  
<https://www.c40.org/researches/climate-opportunity-more-jobs-better-health>
- <sup>28</sup> UNFCCC
- <sup>29</sup> <https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings>
- <sup>30</sup> At an oil price of 40 dollars a barrel
- <sup>31</sup> <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>
- <sup>34</sup> European Commission (2021) Can you afford to heat your home?  
[https://ec.europa.eu/info/news/can-you-afford-heat-your-home-2021-jan-07\\_en](https://ec.europa.eu/info/news/can-you-afford-heat-your-home-2021-jan-07_en)
- <sup>38</sup> JRC, 2015. Securing Energy Efficiency to Secure the Energy Union
- <sup>39</sup> Ecofys, 2014. Deep renovation of buildings - An effective way to decrease Europe's energy import dependency
- <sup>40</sup> <http://www.housingeurope.eu/resource-732/building-the-future-of-health>
- <sup>41</sup> European Commission

Purpose: The present information note was prepared by Eurima and is intended as a tool among others to help policy makers understand the benefits of insulation and renovation. It is for general information purposes only.

Disclaimer: This document reflects the best knowledge of industry experts across Europe at the time of writing [October / November 2016]. Eurima declines any and all liability for any measure taken or not taken on the basis of this document, which is a non-binding information note to be possibly used and accommodated by National Associations to address their own policy makers. It is not intended as a substitute for each stakeholder's own assessment and decision making.



Avenue Louise 375, Box 4, B-1050 Brussels, Belgium  
Tel: +32.(0)2.626.20.90 - Fax: +32.(0)2.626.20.99

[www.eurima.org](http://www.eurima.org)  
[www.mineralwool.eu](http://www.mineralwool.eu)