RENOVATE EUROPE

BRIEFING

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WHY GOOD HEALTH BEGINS IN A GOOD HOME

Good health can come from many sources, but maybe none is as overlooked as the value of a good building. We spend about 90% of our lives indoors. Most of the air we breathe over our lifetimes is found there. Our buildings' temperatures, lighting, humidity, draughts and noise can determine our vulnerability to illness. They can even affect our moods and mental wellbeing.

At the same time, the air we find between four walls can be two to five times more toxic than outdoor air – and sometimes more than 100 times more hazardous. The people exposed to the greatest volumes of toxic air tend to be those already most vulnerable to its effects through age, ill health or poverty.

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Bad indoor air can come from many sources – outdoor air pollution, mould, gases, smoke, allergens, and chemicals used in everyday household activities. Trapped pollutants such as particulates, ozone, nitrogen dioxide and volatile organic compounds are some of the deadliest forms of air pollution.

THE PROBLEM IN NUMBERS

More than 80 million Europeans live in damp homes.

Around 15% of homes in the EU have moisture problems.

10% of homes are infected with fungi.

Indoor mould is responsible for 12% of new childhood asthma cases.

The World Health Organisation estimates that 4.3 million people die prematurely each year from exposure to indoor air pollutants. The most deadly impacts are respiratory and cardio-vascular complaints, lung cancer and chronic obstructive pulmonary disease. Experts increasingly describe the problem a public health crisis on a par with tobacco smoking.

Poor indoor air quality has even spawned an illness in its own right: 'Sick building syndrome' with non-specific symptoms that include: headaches, dizziness, nausea, eye, nose or throat irritation, coughs, dry or itching skin, allergies, asthma and fatigue.

One in ten Europeans – around 54 million people – are unable to adequately heat their homes in winter, and as many are behind on their energy bills. How serious is this problem? Studies suggest that around one third of Europe's 250,000 excess winter mortalities are caused by poor housing conditions, even in developed countries such as the UK.

In summertime, the situation is reversed with one in five European unable to keep their homes cool. The sometimes fatal results were evident for all to see in the 2003 heatwave, which claimed over 14,800 lives in France. More than half of the dead in Paris lived on the top two floors in traditional 'service rooms'.

SO, DOCTOR, WHAT'S THE PRESCRIPTION?

Reams of studies on the subject have incontrovertibly linked healthy bodies to healthy buildings, but none has been so detailed as a new study by the Buildings Performance Institute Europe (BPIE). In the first attempt at quantifying and monetising how indoor environments affect our health, BPIE analysed the three most common non-residential building types. Here is what they prescribed.

Students' health, attendance, concentration and learning performance all suffer when the indoor climate is substandard. Children are more vulnerable to poor air quality because they breathe more air relative to their developing body size than adults do. The occupancy density of classrooms is also much higher than in homes or offices.

BPIE found that healthy school renovations would allow children to achieve their current educational attainment ten days earlier each year. That could enable additional teaching, extra-curricular activities or an extra two weeks' holiday for students and teachers each year. In the process, academic performance would be annually improved by between 3-8%.

> *"… every 1°C reduction in temperature within the 20-32°C range increases students learning performance by 2.3%."*

To be precise, **every 1°C reduction in temperature within the 20-32°C range increases students learning performance by 2.3%.** The healthiest building temperatures are 21°C in winter and 26°C in summer. **Good daylighting too can increase academic performance, which can increase by up to 18% in well daylit classrooms.** Equally, every 100ppm decrease in indoor CO_2 concentrations is associated with a relative fall in absences from school due to illness of between 0.1-1%.

A healthy indoor environment in hospitals can literally be a matter of life and death. Good ventilation is essential to containing the risk of cross-infection while access to daylight and good sound-proofing both accelerate patient recovery times.

The BPIE discovered that health renovations could cut the length of patient stays by 11% - or about one day for the average patient. They could also **reduce medication costs by 21% and whittle down employee turnover by a fifth.** The cost benefit of taking renovation action was tallied at €114 billion a year.

Startlingly, **one study from 2014 that the BPIE analysed found that improved indoor environmental quality would lower mortality rates at a children's hospital by 10%** and increase the time doctors can spend with patients by the same amount. It would also cut staff turnover by 20%.

THE BENEFITS OF A HEALTHY HOSPITAL

Health renovations of hospitals could cut the length of patient stays by 11% - or, about one day for the average patient.

Medication costs could be reduced by 21%.

Employee turnover could be reduced by a fifth.

One report analysed by BPIE found that better environmental quality would lower mortality at a children's hospital by 10%.

Around 81 million Europeans – 36% of the workforce – spend eight hours a day or more working in offices. Within their confines, employers also spend around 90% of their operating costs on their employees. **Renovating for comfortable, well-lit, healthy and thoughtfully-designed workspaces improves staff morale and performance, while decreasing staff turnover and absenteeism rates**.

With health renovations, the BPIE says that worker productivity can be increased by up to 12%. **That would equal a cost saving of €500 billion annually**, on a scale of €40 billion saved for every percentile improvement in building performance.

"With health renovations, the BPIE says that worker productivity can be increased by up to 12%."

Why? Because every **1°C reduction in temperature in the 22-32°C temperature range increases a worker's performance by up to 3.3%**. And every **100 ppm decrease in CO2 concentration increases their performance by 4.25%**.

Benefits from health renovations would be felt in almost half the continent's non-residential floor space and enjoyed by 260 million people. They would also have a profound effect on Europe's emissions, maximising energy use and preventing costly power waste that we can no longer afford, if our planet is to have a sustainable future. So much for the big picture. How can the situation be improved on the ground?

A CASE STUDY: THE PAIN IN SPAIN

More than a third of Spain's population live in unrenovated homes built in the 1960s-80s period and **one in three of these are inadequately heated.** A 2016 study by the Catalonia Institute for Energy Research (IREC) found that if one and a half million of these buildings were given health renovations with facade and roof insulation, reinforced windows, improved heating and passive measures, the results could be profound.

Around 120,000 cases of cardiovascular illness could be prevented, with €370 per household savings per year in health and labour costs. Feelings of good health would be improved for an estimated 100,000 people.

Families could also save between €400-550 per year in reduced energy bills and Spain's annual 7,000 additional winter deaths could be slashed. Within 18 years, public subsidies for 50% of the upfront cost of home energy renovations could be recovered from health improvements alone, the study says.

This would remove the largest single barrier to energy renovations, noted in a new survey. Some 60% of tenants are worried about higher rents if their landlords renovate their homes, 58% of respondents are anxious about loan repayments and 53% are deterred by the lack of government support for costly building remediation work.

WHY WAS RENOVATION THE SOLUTION IN SPAIN?

A large number of Spain's population live in homes that are inadequately heated.

It was found that if these homes were health renovated, there would be profound quality of life benefits.

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Families could also save between €400-550 per year in reduced energy bills.

RENOVATING FOR RECOVERY IN IRELAND

Since 2016, Ireland has been trailblazing a Warmth and Well-Being pilot scheme (WWBS) to scientifically prove a causal link between cost-effective health benefits and health renovations. The project has been limited to 900 homes in five postcodes of one Dublin health district that suffer from high levels of deprivation.

RENOVATE TO BENEFIT HEALTH

In Ireland, work is being done to prove the link between renovations and health benefits.

Buildings with a high rate of illness are offered 100% grants and provide further follow-up information on subsequent illnesses.

The project targets children under 12, those over 55, and those suffering from chronic respiratory diseases.

Participants are selected by referrals from health or social workers **in buildings with a high rate of illness and offered 100% grants along with a request for follow up information about subsequent illnesses**. The project is targeted on residents over 55-years-old, under 12, or suffering from chronic respiratory diseases.

Around 800 homes are already participating in the scheme. Interim results are due later this year ahead of a full report in 2021. **Early indications are that the project is making a real difference to the lives of participants.**

One official working on the programme said that of the words they heard the most, *"Comfort is often spoken about. A lot of the time, people are living in discomfort to keep their bills down. Two brothers living together became so much more sociable because their health improved after the house was done up. They were so poor that they didn't want to have people visiting them before. That had an impact on mental health as well. They said that the project had opened up a new phase in their lives."*

The project's 2-week home makeovers can involve standard attic insulations, ventilation upgrades, wall insulation of the cavity, dry lining or external varieties, boiler replacements and draught proofing. **It is run in tandem with a Warmer Homes project that offer home owners insulation, heating upgrades and replacement windows.**

> *"[The project] focusses on people in fuel poverty who may never be able to upgrade homes themselves, giving them greater comfort and reducing their fuel bills."*

Aileen Duffy, the warmer homes programme manager for the Sustainable Energy Authority of Ireland described the WWBS as "a continuation of warmer homes". She said: *"It focusses on people in fuel poverty who may never be able to upgrade homes themselves, giving them greater comfort and reducing their fuel bills."*

"The significant thing is that, hopefully, it will clearly show that by spending money on these upgrades, obviously carbon emissions targets can be more easily reached and there will be an impact on the exchequer in terms of reduced spending for hospital visits. People will live longer, with lower winter mortality rates and that will powerfully make the case for focusing on the home, where people spend so much of their time."

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Renovate Europe is a political communications campaign with the ambition to reduce the energy demand of the building stock in the EU by 80% by 2050 compared to 2005 levels through legislation and ambitious renovation programmes. This will bring the energy performance of the entire building stock in the EU to a Nearly Zero Energy (NZEB) performance level.

Renovate Europe brings together 40 partners from across the building value chain (trade associations, companies, trade unions, city networks and 15 National Partners):

WHY SHOULD WE CARRY OUT HEALTH RENOVATIONS?

UNHEALTHY HOMES

More than 80 million Europeans live in damp accommodation, a key cause of respiratory illness

Around 15% of homes in the EU have moisture problems, and 10% are infected with fungi

Indoor mould is responsible for 12% of new childhood asthma cases.

ENERGY POVERTY

One in ten Europeans – around 54 million people – are unable to adequately heat their homes in winter

Studies suggest that around one third of Europe's 250,000 excess winter mortalities are caused by poor housing conditions

THE BENEFITS OF HEALTHY HOMES

HEALTHY SCHOOLS

BPIE states that healthy school renovations would allow children to achieve their current educational attainment ten days earlier each year

Every 1˚C reduction in temperature within the 20-32˚C range increases students learning performance by 2.3%.

Good daylighting too can increase academic performance, which can increase by up to 18% in well daylit classrooms.

HEALTHY HOSPITALS

BPIE found that health renovations could cut the length of patient stays by 11% - or about one day for the average patient

Healthier hospitals can also reduce medication costs by 21% and employee turnover by a fifth

Improved indoor environmental quality would lower mortality rates at a children's hospital by 10%

THE CASE IN SPAIN

It was found that if homes in Spain were renovated, 120,000 cases of cardiovascular illness could be prevented

There could be €370 per household savings per year in health and labour costs

Families could also save between €400-550 per year in reduced energy bills.

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ALL INFORMATION IS TAKEN FROM THE BPIE BUILDING 4 PEOPLE STUDY