



Building 4 People: Impact of Better Buildings

*ECEEE annual policy seminar
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Building 4 People: Key Parameters that influence Health, Wellbeing and Productivity



Temperature

reflecting the basic human need for protection from extremes of temperature



Light

pointing to the need for adequate workspace lighting and the effect of light on wellbeing



Air

demonstrating the needs for clean, healthy air, free from harmful pollutants – many of which cannot be directly sensed, but can nevertheless cause serious health effects



Noise

showing that noise can be extremely disruptive, damage our hearing or cause distress, anxiety, hindered communication and reduced concentration


These four foundations impact the overarching outcome goal of:
Health, Wellbeing and Productivity



Download the White Paper:
www.buildings2030.com/whitepaper

A photograph of a modern, single-story house at dusk. The house features a dark blue garage with two doors and a teal front door. The house is illuminated by warm interior lights and exterior sconces. The sky is a mix of blue and orange, suggesting sunset or sunrise. A semi-transparent blue box with white text is overlaid on the upper half of the image.

**The current renovation rate of
1% needs to be increased to 3%
to meet 2050 goals.**

A low-angle, upward-looking photograph of several modern high-rise buildings. The buildings feature a mix of light-colored stone or concrete facades and large glass windows. The perspective creates a sense of height and architectural grandeur, with the buildings converging towards the top of the frame. A semi-transparent blue rectangular box is centered over the image, containing white text.

**People
do not buy energy efficiency**

**People are motivated by
comfort, health considerations
and cost savings**



Buildings in Context

40%

energy
consumed by
buildings

90%

Time is spent
in buildings

36%

of carbon
emissions come
from buildings

35%

of buildings
are over 50
years old

97%

of buildings in
the EU need an
upgrade

Heathy Buildings in EU Policy

There is no clear champion
within the European Commission
and the issues are not well-addressed and resourced



Pr J. Allen (Harvard): “Green buildings bring nearly \$6 billion in combined health and climate benefits.”

THE 9 FOUNDATIONS OF A HEALTHY BUILDING



IN THE U.S., GREEN BUILDINGS PREVENTED:



Building 4 People: Discovering the Impact of Better Buildings




Building 4 People: Building the business case for better office, school and hospital buildings in Europe


One third of European employees work in an office for an average of 8 hours a day, while most companies spend 90% of their operating costs on people, including salaries and benefits. Investing in building renovation can cut energy costs and improve the environment, though companies could reap the largest benefits by providing a comfortable, healthy and well-designed work space to improve employee performance, decrease staff turnover and absenteeism and thus boost business competitiveness.

Our analysis reveals that a holistic people-centric renovation of a typical office can lead to up to a **12% increase in employee productivity**. At a European scale, that could be worth up to **€500 billion annually**.


PEOPLE-CENTRIC OFFICES = HEALTHIER AND MORE PRODUCTIVE EMPLOYEES

 <p>7-12%</p> <p>Maintaining ideal thermal comfort levels can increase productivity by 7-12%, worth up to 48,500 p.u. on average per employee annually.</p>	 <p>3-6%</p> <p>Plenty of fresh, clean air makes for a healthier working environment, boosting productivity by 3-6%, worth on average 1,500 p.u. on average per employee annually.</p>	 <p>3-6%</p> <p>Getting lighting right – including through good access to daylight and appropriate levels and quality of electric light – means 3-6% more output per employee, typically 1,500 p.u. on average per employee annually.</p>	 <p>3-4%</p> <p>Better acoustics, particularly in open-plan offices, reduce distraction and make for a more conducive working environment. The resulting improvement in productivity is 2-3%, worth on average 1,000 p.u. on average per employee annually.</p>	 <p>2-3%</p> <p>Better acoustics, particularly in open-plan offices, reduce distraction and make for a more conducive working environment. The resulting improvement in productivity is 2-3%, worth on average 1,000 p.u. on average per employee annually.</p>
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Building 4 People: Quantifying the benefits of energy renovation investments in schools, offices and hospitals



METHODOLOGY AND RESULTS




Building 4 People: Quantifying the impact of a better indoor environment in schools, offices and hospitals

Across Europe, **90 million children and young people** spend their weekdays in schools, colleges and universities. More than **one in three of the working population are office-based**. And every year, **90 million patients** spend more than a week on average in hospitals. Yet the impact of the indoor environment on people's health, well-being and performance is not well understood or adequately addressed in EU policy.

EU climate and energy goals require us to **accelerate the renovation of Europe's ageing building stock**, most of which will still be standing in 2050 and beyond, towards **nearly zero energy levels**. Crucially, these renovations need to also improve indoor environmental quality in order to:

 <p>Boost labour force productivity by up to 12%, worth up to €500 billion a year across the EU</p>	 <p>Accelerate educational performance of students by up to two weeks a year</p>	 <p>Reduce the average length of stay in hospitals by 11% (around one day), potentially saving the European health sector €42 billion annually</p>	 <p>Cut CO₂ emissions, reduce energy bills, alleviate fuel poverty, improve energy security and boost innovation in the construction industry.</p>
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On behalf of Buildings 2030, BPiE undertook extensive research into both published and unpublished studies which quantified one or more benefits from building renovations that improved the indoor environment in offices, schools or hospitals. For details of the analysis, including all reference sources, please refer to the [comprehensive methodology](#).

Study Sponsored by:



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Building 4 People: Discovering the Impact of Better Buildings



90 million

students spend their days
in educational buildings.



80 million

workers spend 8 hours
each weekday in an office.



90 million

patients spend on average
7.6 per year in hospitals.

Until recently, buildings have been designed to protect people from the cold or heat,
it is time to consider the indoor climate and its significant impact on people's lives.

This research takes the first step at defining, measuring, quantifying and monetizing the
impact of indoor air quality, thermal comfort, acoustics, and lighting on students, office
workers and patients across Europe.

PARAMETERS



Indoor air quality



Temperature



Noise



Electric and day light

APPROACH

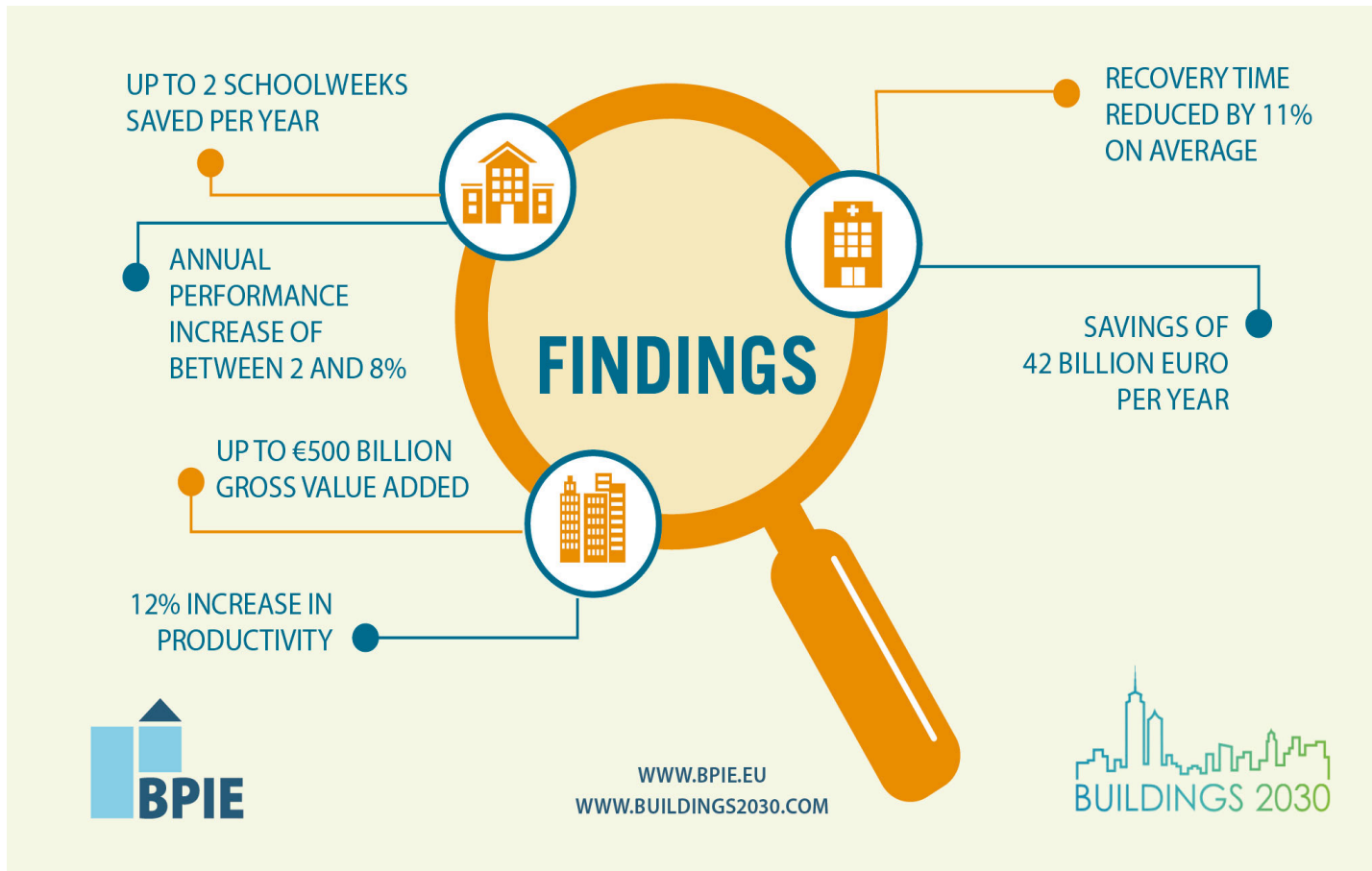
Identifying and linking
beneficial impacts of
Indoor Environmental
Quality on people

Quantifying health,
educational and
performance benefits

Extrapolating
quantified benefits
to Europe

Putting a
monetary value
on the benefits

Building 4 People: Discovering the Impact of Better Buildings



1

Align climate, energy, building, and health policy threads to ensure that indoor environmental quality is fully integrated into national long-term renovation strategies and other building-related policies, with specific targets and indicators to measure progress. Tools such as **building renovation passports** should be promoted and implemented to ensure that measures supporting health and well-being are integrated into renovation plans. A **cross-departmental committee should be established** to ensure that the energy and health agendas related to building policies are developed holistically.

2

Establish a “Healthy Buildings Observatory” to provide a sound evidence base and a good model on which to develop future policies. The observatory should gather, analyse and communicate data, information, studies and other relevant research so that the health, well-being and performance benefits from energy renovation of our buildings can be more widely recognised, at both EU and Member State level. In particular, it should fill the knowledge gaps identified above. Policy-makers should also ensure there are appropriate links to the work of EU-OSHA, the European Agency for Safety and Health at Work.

3

Revise the cost optimality guidelines required by the EPBD such that the value of the benefits in health, well-being and performance count alongside energy cost savings when calculating minimum energy performance requirements.

4

Provide clear and specific guidance to Member States on how to address indoor environmental quality issues alongside improved energy performance within long-term renovation strategies. Exchange of best practices among EU countries, for example through Concerted Action, will be essential in this respect.

5

Make public funding for building renovation, e.g. from EU structural funds, **conditional on achieving improved indoor environmental quality**. Monitoring of such projects post-renovation will help build up experience and the knowledge base.

Thank you!

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