

# WHAT IS THE STATE OF THE EU BUILDING STOCK?

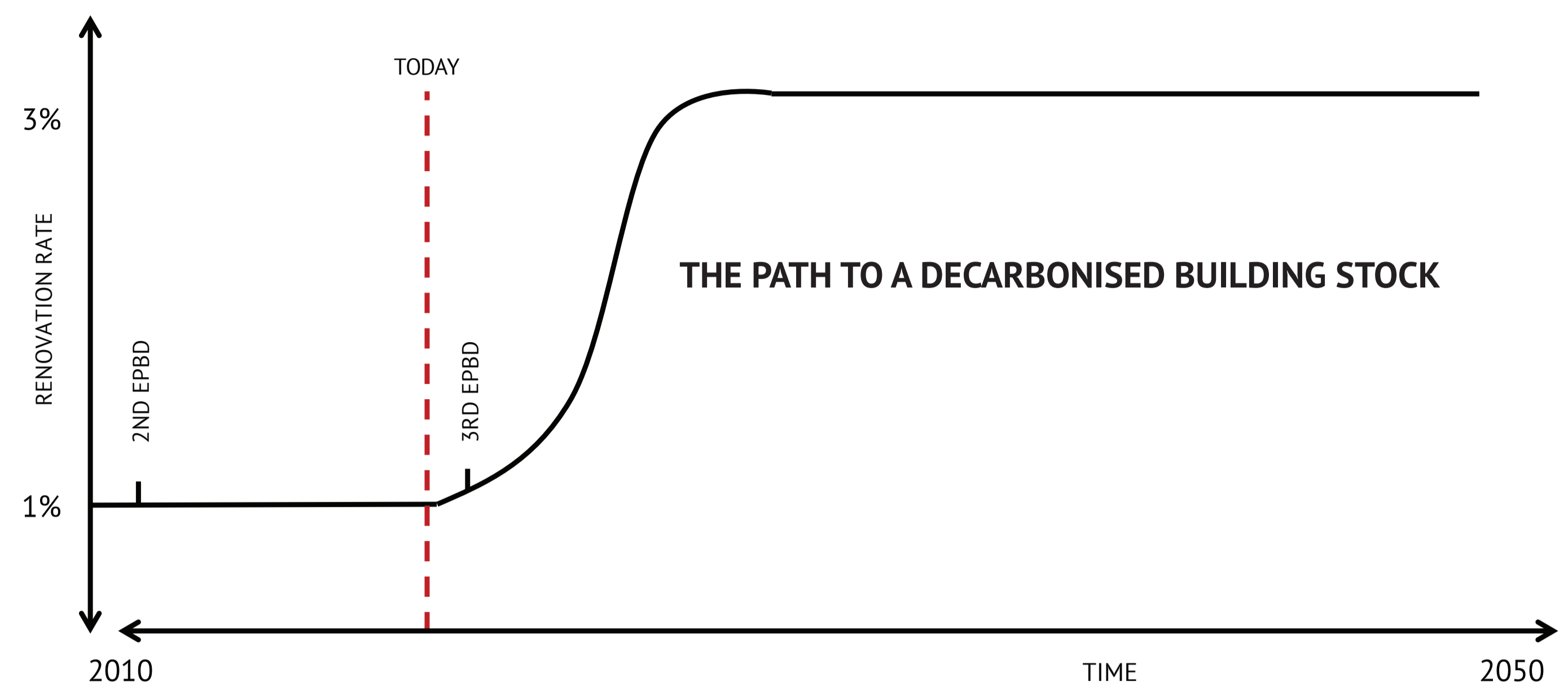
AUTHOR: JONATHAN VOLT

## THE CHALLENGE

The building stock must be fundamentally transformed by 2050. The EU has concluded that “by 2050 Europe’s entire building stock should be “nearly zero emissions” and that “emissions from buildings can be almost completely cut”.

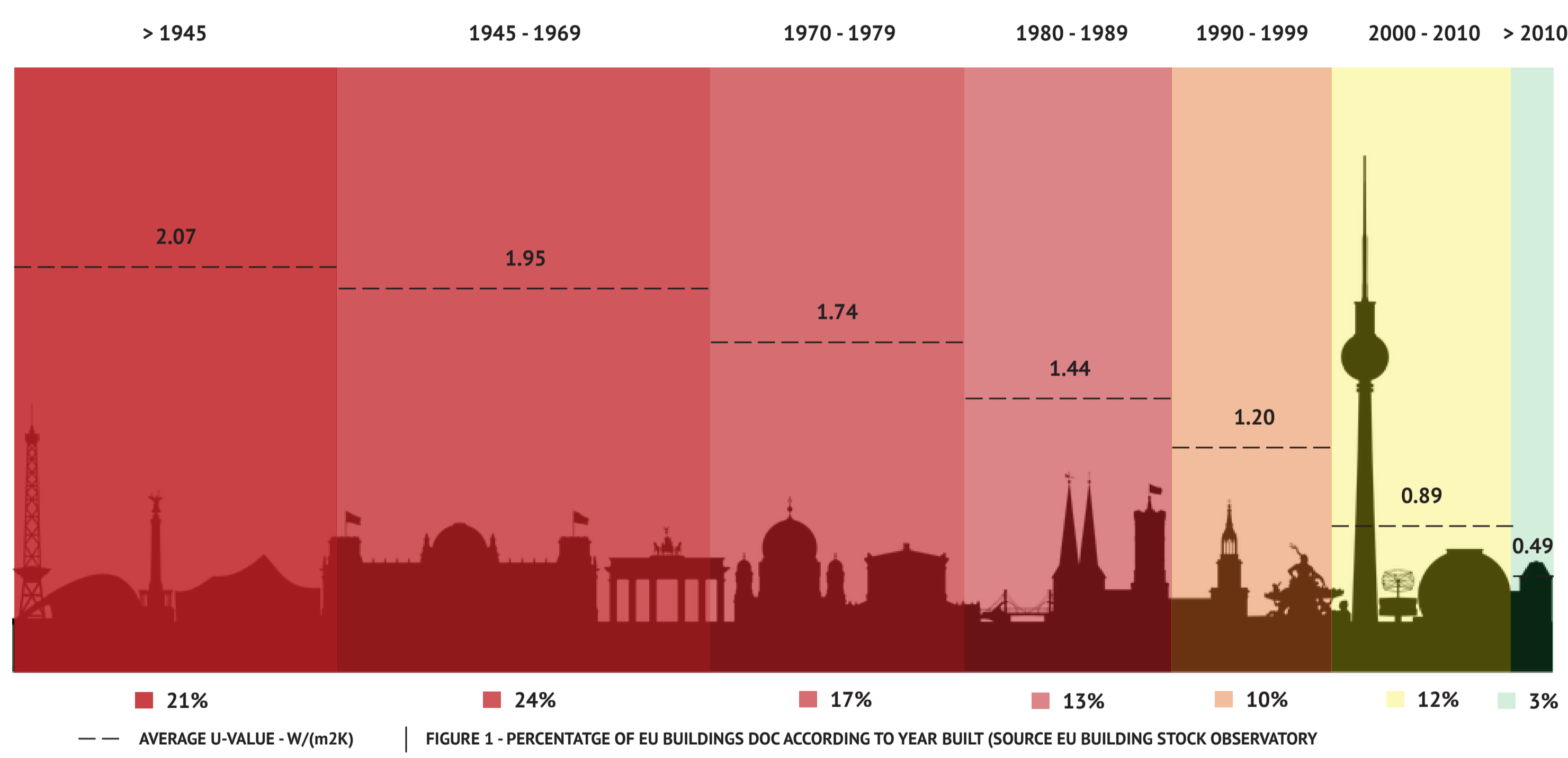
The renovation rate in EU lingers at 1%, out of which the share of deep energy renovations represents around 5%. Standard renovation will often achieve energy savings ranging between 20% and 30% and sometimes less. With deep renovation it is possible to reduce a building’s energy use by more than 75%. To achieve the 2050-vision, the renovation rate must increase to about 3% while deep renovations should become the norm.

A decarbonised building stock by 2050 requires ambitious and targeted efforts today.



## THE CURRENT SITUATION

### BUILDING STOCK ACCORDING TO YEAR BUILT



The state of the building stock is generally evaluated through its age. Most commonly it is stated that “75% of the building stock is inefficient”, suggesting all buildings built before 1990 are inadequate. Behind this lays a simplified assumption that all buildings built before EU building regulations are inefficient and all buildings built after this date are efficient. The reality is not that simplistic. Some countries had building regulations in place much earlier (Denmark already in 1961), while many newly built buildings cannot be considered efficient.

An alternative indicator is the energy performance level of an individual building indicated on its Energy Performance Certificates (EPCs). The EU’s 2050-vision requires the majority of buildings to be highly energy efficient, in other words at least compliant with Label A, which represents a ‘very energy efficient building’ (exact definition depends on the country’s calculation methodology, ambitions, climate zones etc.). BPIE compiled and compared EPC-data from 16 countries/regions across the EU and the result shows that 97% of the building stock must be upgraded to achieve the 2050 vision.

### BUILDING STOCK ACCORDING TO EPC LABEL

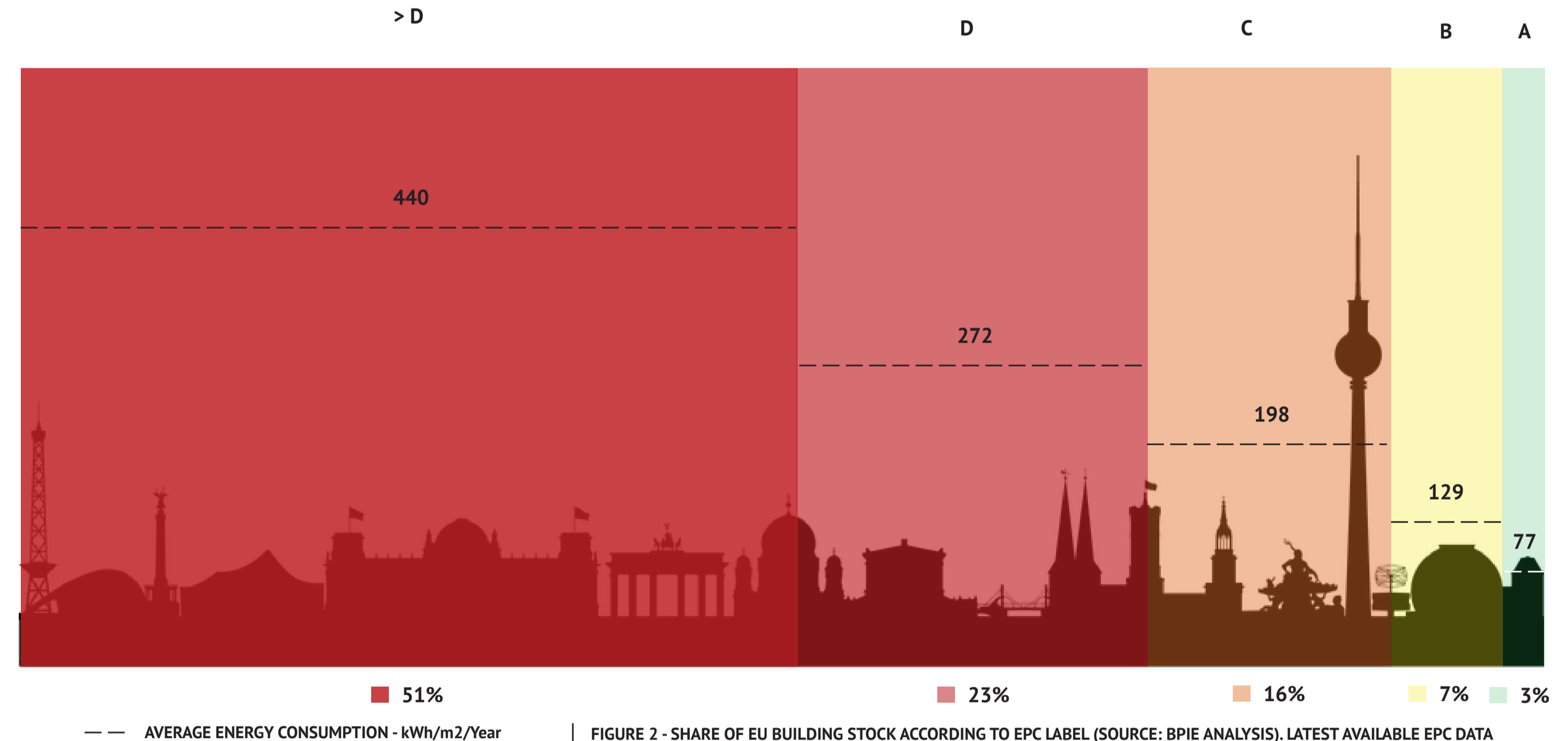


FIGURE 2 - SHARE OF EU BUILDING STOCK ACCORDING TO EPC LABEL (SOURCE: BPIE ANALYSIS). LATEST AVAILABLE EPC DATA RETRIEVED FROM THE EU BUILDING STOCK OBSERVATORY (BG, FR, ES, NL, IT, FI), NATIONAL DATABASES (DK, HU, PT, EN & WAL, IE, LT, FL) AND REPORTS BY THE CONCERTED ACTION EPBD (EE, SL, WL). THE SAMPLE COVERS HALF OF EU MEMBER STATES, WITH A MINOR BIAS TOWARDS WESTERN EUROPEAN COUNTRIES THE ENERGY CONSUMPTION LEVEL IS REFLECTING A SIMPLE AVERAGE OF THE EPC REQUIREMENTS IN FIVE GEOGRAPHICALLY DIFFERENT COUNTRIES (BULGARIA, DENMARK, FRANCE, PORTUGAL AND ROMANIA).

## BUILDING A BETTER FUTURE

### CUMULATIVE DISCOUNTED COST OF VARIOUS RENOVATION SCENARIOS IN POLAND

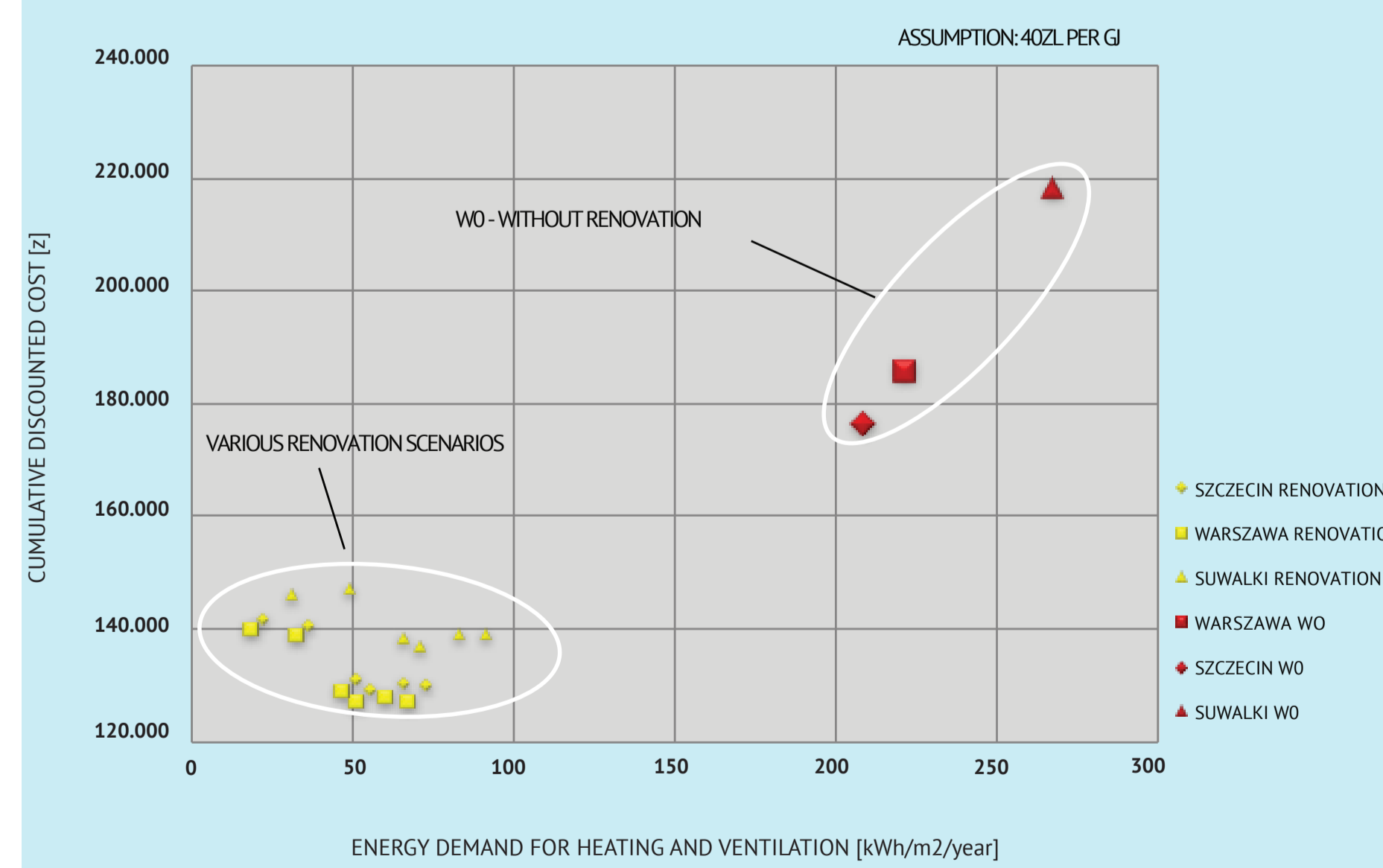


Figure 3: Cumulative discounted cost of various renovation scenarios, covering energy and renovation costs for a 30-year period. Source: Szymon Firsiog, BPIE

Deep renovation makes economic sense. Figure 3 shows the long-term cumulative cost for three buildings located in different geographic areas of Poland. All the renovation scenarios (yellow symbols) are cheaper over a 30-year period compared to the scenarios where no renovation takes place (red symbols). The analysis finds that the cost-effective level for energy renovations is around 60 kWh/m<sup>2</sup>/year; an average reduction of the energy need by around 80%.

### INABILITY TO KEEP HOME ADEQUATELY WARM

Deep renovation makes societal sense. A large share of Europeans lives in inadequate housing, where poor indoor air quality and damp homes are causing health problems. In France alone, the cost of indoor air pollution, such as health care, sick leave etc., has been estimated at approximately €19 billion per year. The map illustrates that energy poverty is a continental-wide problem, yet more severe in Southern and Eastern Europe. In 2016, 8.7% of the European households were unable to keep their home adequately warm.

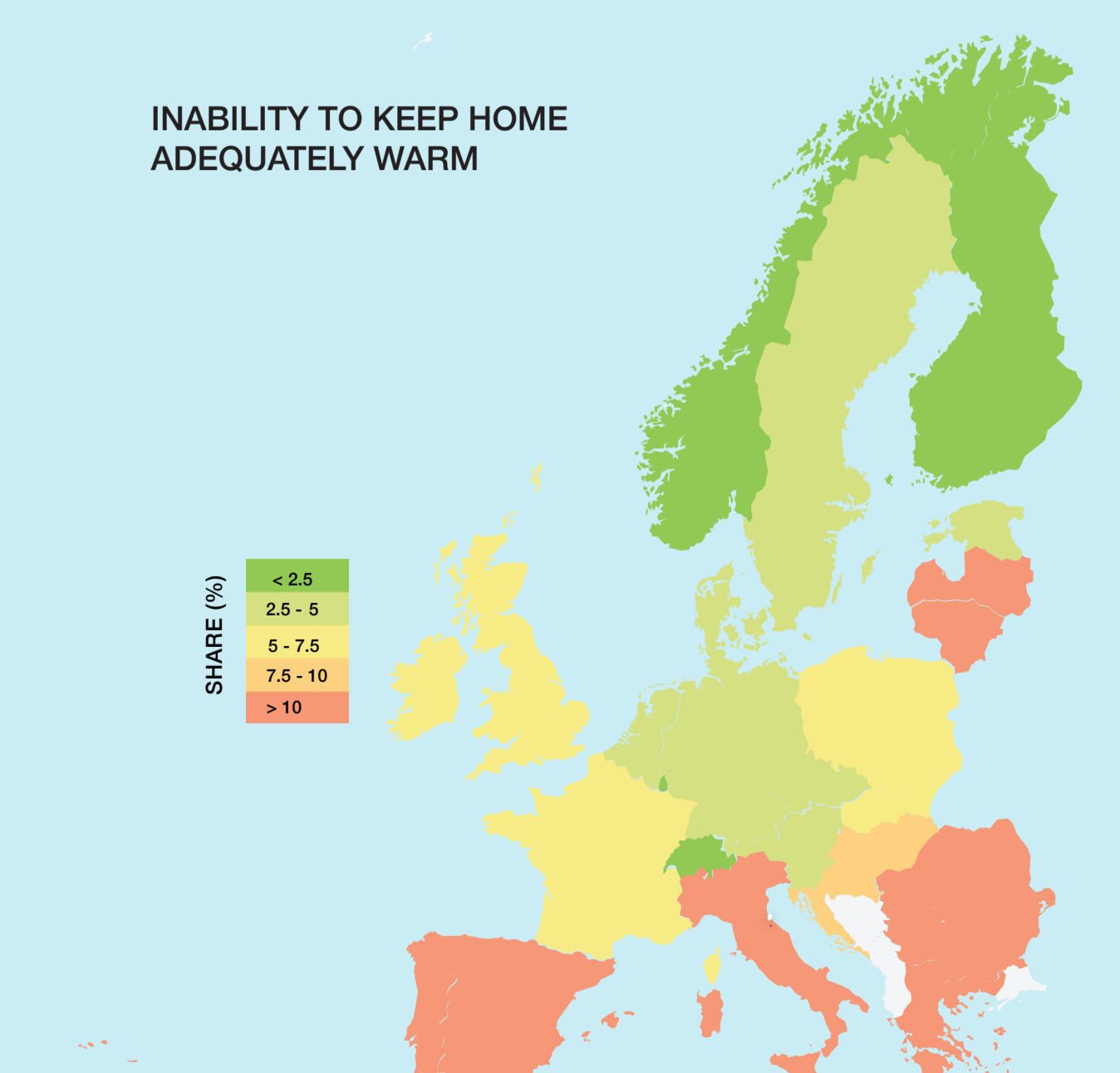


Figure 4: Inability to keep adequately warm. Source: Eurostat: ilc\_mdex01.

### COMPLIANCE WITH RENOVATION STRATEGY REQUIREMENTS

MEMBER STATES	OVERVIEW OF NATIONAL BUILDING STOCK	COST-EFFECTIVE APPROACHES TO RENOVATION	POLICIES AND MEASURES TO STIMULATE RENOVATION	FORWARD-LOOKING PERSPECTIVE TO GUIDE INVESTMENT DECISIONS	ENERGY SAVINGS AND WIDER BENEFITS	DOES THE STRATEGY MEET THE MINIMUM REQUIREMENTS OF ART.4 EBD?
CROATIA	●	●	●	●	●	●
CZECH REPUBLIC	●	●	●	●	●	●
FRANCE	●	●	●	●	●	●
ITALY	●	●	●	●	●	●
SPAIN	●	●	●	●	●	●

Figure 5: Compliance of national renovations strategy requirements. Source: BPIE analysis. The full analysis can be found at bpie.eu and an assessment of additional strategies will soon be published at EmBuild.eu

The revised Energy Performance of Buildings Directive aims to facilitate a transformation of the building stock to nearly Zero Energy Building-level by 2050. A central instrument is national renovation strategies, in which EU Member States have to set 2030 and 2040 milestones and define “measurable progress indicators” such as renovation rate or energy consumption per square meter.

BPIE has conducted an analysis of to what degree the second national renovation strategies are compliant with the requirements. The initial assessment shows that only 2 out of the 5 strategies analysed can be considered somewhat compliant with the requirements. Making the nearly Zero Energy Building-vision a reality by 2050 will, at least, require more ambitious renovation strategies.