

HOW BUILDING RENOVATION CAN UNLOCK AFFORDABLE, SECURE AND SUSTAINABLE ENERGY FOR ALL EUROPEANS

The European Union is facing tough choices regarding its future energy system. In 2019, the European Green Deal was announced – a comprehensive strategy to overhaul EU legislation to deliver a sustainable energy system compatible with a climate neutral Europe. In 2021 EU energy prices skyrocketed, serving as a reminder that energy affordability is crucial for ensuring broad social buy-in for the energy transition. In 2022, energy security has come to the forefront of this debate. Sustainability, affordability, security: this is Europe's Energy Trilemma. It is a trilemma not because the challenges are impossible to address, but because they are often difficult to reconcile with one another; most solutions for addressing one challenge come at the expense of another.

- Deploying large scale offshore wind can make the energy system more sustainable, but this poses challenges related to energy security when the wind doesn't blow;
- Electric vehicles create a more sustainable transport system, but all this additional electricity use inevitably increases costs for developing and maintaining larger electricity transmission and distribution networks; costs that are ultimately passed down to consumers, undermining energy affordability.
- Nuclear power is often hailed as the silver bullet for providing the grid with stable, base-load power to ensure energy security, but its environmental impact is not negligible and has proven highly politically divisive.

Building renovation stands out with its unique ability to address all three aspects of the Energy Trilemma, with no inherent trade-offs limiting its potential benefits.

Building renovation: a unique tool to address the Energy Trilemma

Energy security:

The effective management of primary energy supply from domestic and external sources, the reliability of energy infrastructure and the ability of energy providers to meet current and future demand.

Environmental sustainability:

Encompasses the achievement of supply and demand side energy efficiencies and the development of energy supply from renewable and other low-carbon sources.

Social equity:

Accessibility and affordability of energy supply across the population.



ENERGY SECURITY

Energy efficiency has substantially reduced the need for European gas imports in recent decades. For example, in Germany gas demand has fallen by 11% between 2000 and 2015.¹ The bulk of these savings stemmed from efficiency improvements in the residential sector, particularly in space heating. In this time frame, the amount of gas needed for heating German buildings fell by 44%. Without such efficiency improvements, Germany's 2015 gas demand would have been 21% higher.

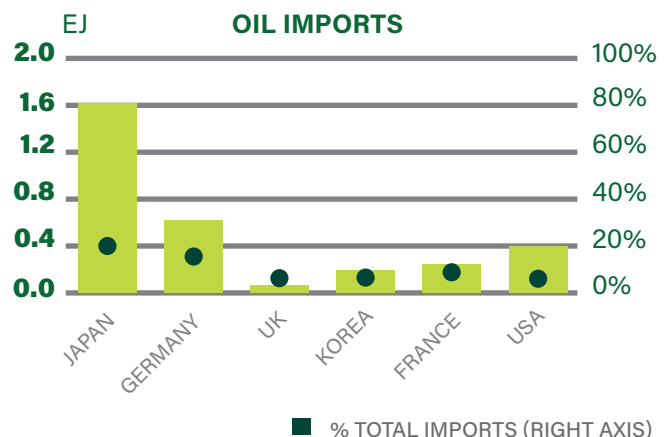
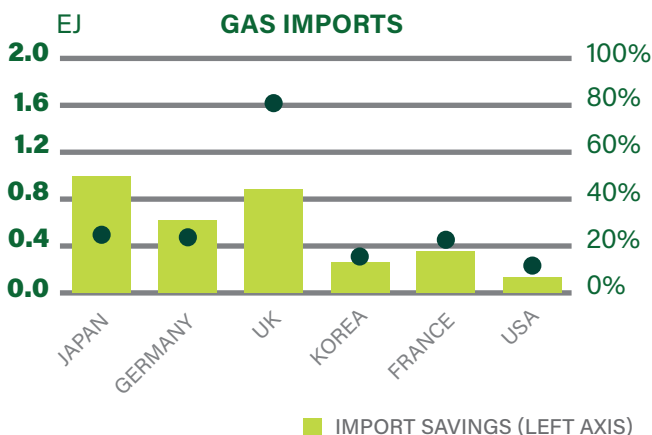
Going forward, energy efficiency will continue to be Europe's most impactful tool for reducing fossil fuel imports. According to the International Energy Agency (IEA), just moving from the current 1% annual EU renovation rate to 1.7% would already save more than 1 billion cubic metres (bcm) in natural gas demand per year, and implementing all the energy efficiency measures announced in the EU's Fit-For-55 Package will save a total of 45 bcm by 2030.²

That is why, in the 2011 aftermath of Europe's last energy supply crisis, the European Commission described energy efficiency as Europe's biggest energy resource.⁴

Buildings are the EU's biggest energy consumer, followed by transport, industry and agriculture³



IEA data shows the quantity of oil and gas imports avoided as a result of energy efficiency measures taken between 2000 and 2015¹



The current energy price crunch has clearly demonstrated the social impact of Europe’s dependence on fossil fuels. Increases in energy prices disproportionately impact the most vulnerable households. EU governments have responded by introducing direct compensation schemes to subsidise energy bills for vulnerable households. However, these are only short-term remedies. In the long-run, the only way to tackle energy poverty is to increase the rate of deep renovation of the building stock.

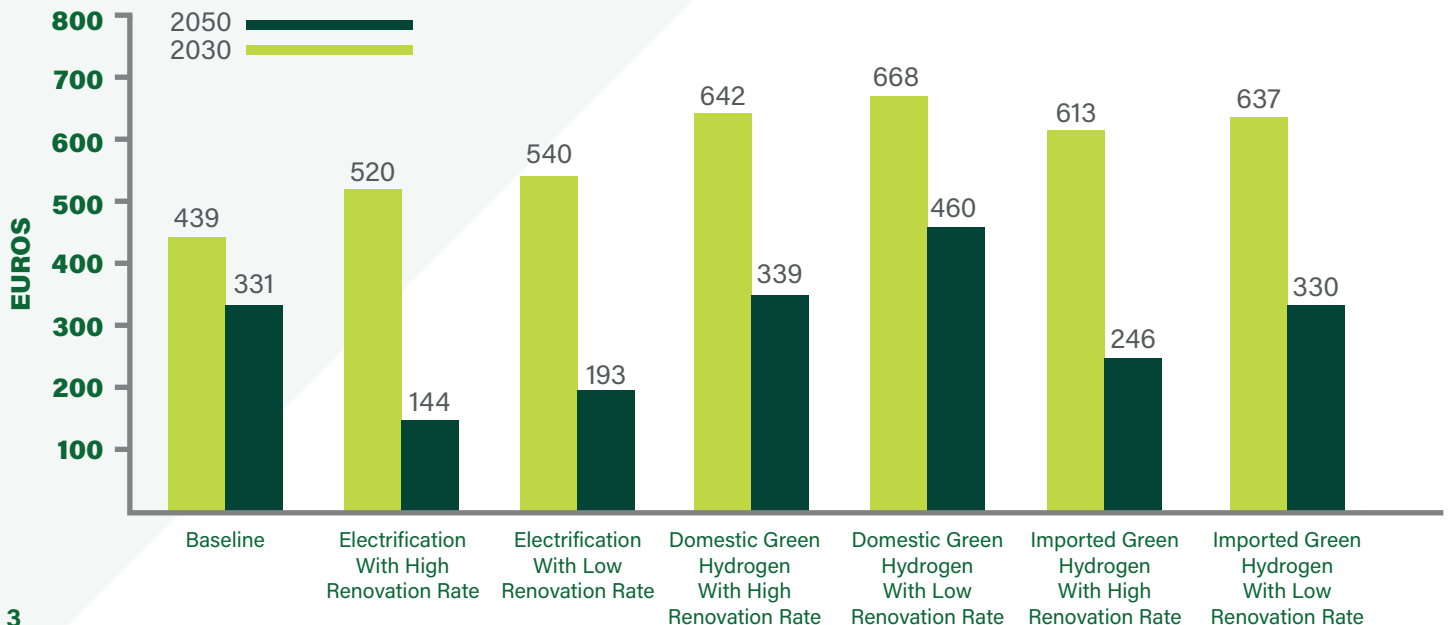
By helping households upgrade their homes, governments will not only protect citizens from future energy market volatility, but will also actively decrease the likelihood of future energy price rises. As European demand for natural gas plummets, gas prices are expected to flatten and eventually decline.

As electrification gathers pace, new infrastructure will be needed to support greater distribution, transmission and storage capacity. The costs of such infrastructure are considerable. This is why organisations like the European Investment Bank call for governments to focus on front-loading energy efficiency investment in the 2020s in order to enable affordable electrification on the road to 2050.⁹

Electrification of residential heating will largely depend on a greater uptake of heat pumps, which can be prohibitively expensive if installed in buildings with poor energy performance. A well insulated building is a heat pump-ready building. Deep renovation of dwellings will ensure that vulnerable households are not left behind in this transition.



Renovation and electrification can cut average heating bills in half by 2050⁵



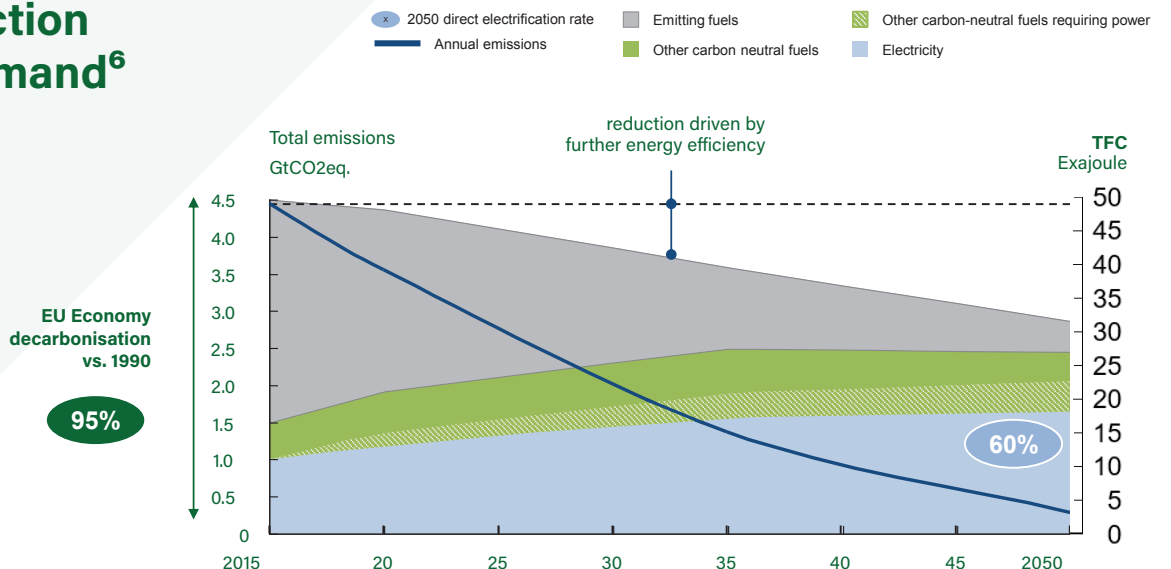
ENVIRONMENTAL SUSTAINABILITY

Renewables like solar and wind power will be the bedrock of tomorrow's energy system. But there are limits to the expansion of renewables: limits in physical space, limits in resources needed to produce these technologies, and limits to government coffers needed to subsidise the infrastructure build-out. Consequently, a successful transition to renewables will not materialise without a drastic reduction in energy demand.

All energy use requires precious resources, even renewable energy use, and therefore should not be wasted. Building renovation reduces the environmental impact of the fossil fuel-based energy system of today and the environmental impact of the renewables-based energy system of tomorrow.



Electrifying the grid requires a drastic reduction in energy demand⁶



HOW TO SPEED UP RENOVATION?

A number of countries have introduced minimum energy performance standards for existing buildings, which require that building owners upgrade their properties to a certain energy performance level by a given year. For example, in France all residential buildings that are currently below Energy Performance Class E must be upgraded by 2028.⁷ These type of measures can dramatically accelerate the rate of renovations.

Recognising that most buildings will only be renovated once between now and 2050, policy makers are increasingly looking at ways to ensure that the quality of renovations also goes up, meaning that so-called 'deep renovations' are prioritised. Take Czechia as an example. Czech households can access grants to insulate their homes to cover up to 50% of the costs, but the amount received will depend on the level of energy savings attained. On top of that, more comprehensive projects, combining a number of energy efficiency measures, are eligible for an additional bonus to encourage deeper renovation.⁸

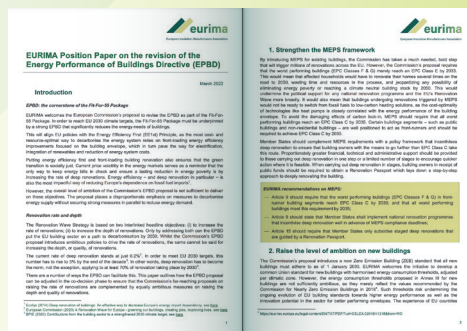
Such policies can be replicated all across Europe, and relatively quickly as well. EU policy makers are currently debating how to revise the EU's Energy Performance of Buildings Directive; a law that could require all EU countries establish minimum energy performance standards and prioritise deep renovations, amongst other measures.

Given the unique role that renovation can play in addressing Europe's Energy Trilemma, this one Directive might hold the key to delivering the green, secure and affordable energy we all need.



SOURCES:

- ¹ IEA (2022) Multiple Benefits of Energy Efficiency: Energy Security
- ² IEA (2022) A 10-Point Plan to Reduce the European Union's Reliance on Russian Natural Gas
- ³ European Commission (2022) Energy performance of buildings directive
- ⁴ European Commission (2011) Energy Efficiency Plan 2011
- ⁵ ECF (2022) Building Europe's Net-Zero Future
- ⁶ Eurelectric (2018) Decarbonisation pathways: Full Study Results
- ⁷ RAP (2021) Next steps for MEPS: Designing minimum energy performance standards for European buildings
- ⁸ SFZP (2022) New Green Savings Programme
- ⁹ EIB (2021) Annual Investment Report 2020/2021



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