

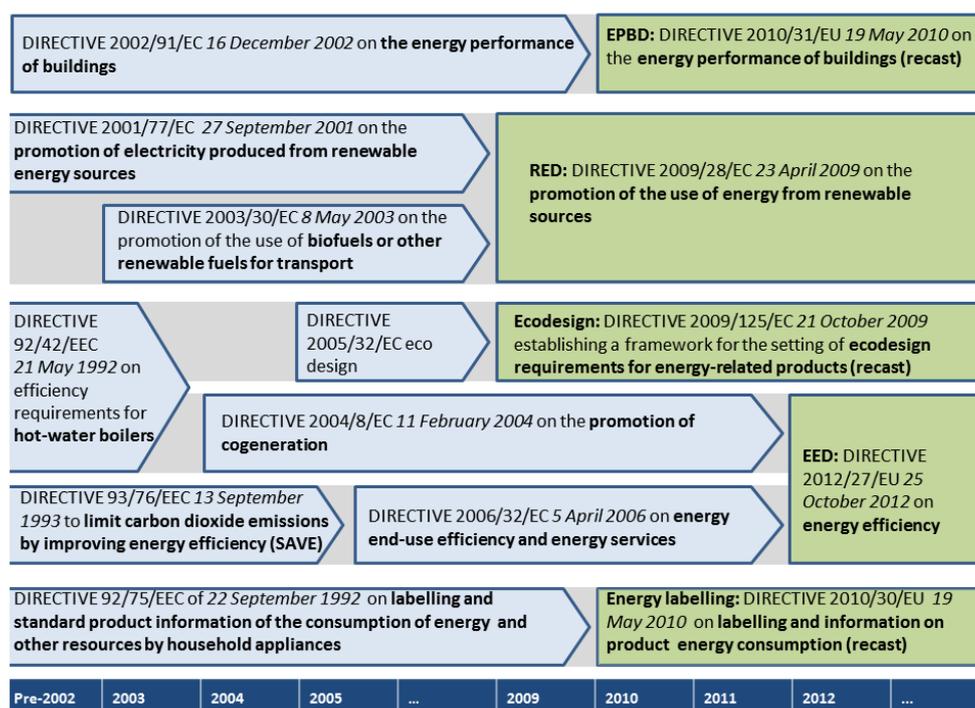
### Energy consumption in European Buildings

The European building stock is responsible for almost 40% of EU energy consumption, with 27% used by households and 13% used by services. Whereas the energy use of residential buildings has been relatively stable over the past 20 years, the energy use of tertiary buildings has increased by 36% during the same period, leading to a total increase in the energy consumption of buildings by roughly 12% since 1990<sup>1</sup>.

The inefficient building stock across Europe causes negative impacts on the net trade balance of energy. For example, in 2013 the EU spent almost €400 billion on energy imports<sup>2</sup>. The building sector in particular relies on approximately 37% imported energy, especially natural gas<sup>3</sup>.

### European legal framework on energy efficiency in buildings

Since the 90s, the EU has seen a steady decline in the energy use of buildings per unit of floor space after legislative actions targeting the energy performance of the building stock. This important legislative framework is given below:



Current gains in efficiency prove the positive effect that buildings policy and legislation have had on buildings<sup>4</sup>. However, over 80% of the building stock has an Energy Performance Certificate rated C or worse demonstrating that in practice much still needs to be done. There is therefore significant technical and economic potential for improvement.<sup>6</sup>

<sup>1</sup> Enerdata/ Odysee data 2012

<sup>2</sup> Eurostat 2013 accessed at [http://ec.europa.eu/eurostat/statistics-explained/index.php/Trade\\_in\\_energy\\_products](http://ec.europa.eu/eurostat/statistics-explained/index.php/Trade_in_energy_products)

<sup>3</sup> ECOFYS 2014 Deep Renovation of Buildings <http://www.ecofys.com/files/files/ecofys-eurima-2014-deep-renovation-of-buildings.pdf>

<sup>4</sup> EEA data update 2012, accessed online at <http://www.eea.europa.eu/data-and-maps/figures/trends-in-heating-energy-consumption-2>

### **nearly Zero-Energy Buildings (nZEBs)**

At the EU level, significant targets have been set for the near future, such as the requirement that all buildings built after 2020 must be nearly Zero Energy Buildings. As a result, a definition of nZEBs is available in 17 countries and is often accompanied by requirements for indicators such as CO<sub>2</sub> emissions, thereby providing the standards for developers to deploy state of the art buildings<sup>5</sup>.

Following the adoption of the Energy Performance of Buildings Directive (EPBD) and the definitions for nZEBs, there is a clear indication that new constructions can rise to the challenge. For the countries where data exists, it is becoming obvious that new buildings go beyond the mandatory standards set by legislation and proves that the technology, products and services for nZEB to be implemented in the market exists<sup>6</sup>.

### **Renovation of the existing building stock**

Renovation rates however are not as encouraging as new build with approximately 1% of the building stock being renovated each year. Clearly renovation as a business opportunity has not been maximised. However, it has been demonstrated that deep renovation can decrease energy consumption by more than 75%, thereby creating a new and significant revenue stream.

The present inefficiencies offer significant savings potential and increased returns for the construction and renovation sectors. But to ensure scale and replication, our findings strongly support a more robust regulatory and policy framework is required to both address the financing needs of renovation activities and reap the benefits of energy efficiency across all building types.<sup>7</sup>

### **Required changes in regulation**

Implementation of the nZEB directive Member States is lagging behind and there is a need for further governance and technical provisions to increase its effectiveness.

The following changes to the existing regulatory framework are required:

- Stimulate higher and deeper energy renovation rates of the current building stock, with the necessary attention to technical and economic feasibility, quality, health and comfort-issues.
- Ensure regulatory ambition and stability, alongside supportive mechanisms such as project development and technical assistance, to ensure implementation.
- Data on buildings energy efficiency, standardisation of reporting requirements and harmonisation of procedures to support energy upgrades will be vital for the financing of operations.
- New buildings and deep energy retrofits (post-nZEB) must be smart, active and demand responding.

In addition, a long-term buildings roadmap should be in place with concrete regulatory and market support objectives for both enabling the implementation of nZEB requirements for new buildings, as well as ensuring that progress is made on nZEB renovation rates even if these are still not enshrined in EU law.

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<sup>5</sup> BPIE (2015) Nearly Zero-Energy Buildings Definitions Across Europe

<sup>6</sup> Data available from ZEBRA's online tool: [www.zebra-monitoring.enerdata.eu](http://www.zebra-monitoring.enerdata.eu)

<sup>7</sup> Energy Efficiency Financial Institutions Group (2015) - Energy Efficiency – the first fuel for the EU Economy