MINISTRY OF THE ENVIRONMENT DECREE ON THE ENERGY EFFICIENCY OF NEW ZERO-EMISSION BUILDINGS

1 Impacts of the Decree

1.1. Cost-optimality

The cost-optimal level refers to a situation where an investment in energy efficiency yields more benefits than the additional investment cost over a usage period of 30 years for residential buildings and 20 years for other buildings. The costs during the usage period include maintenance costs of structures and technical systems affecting the building's energy consumption, as well as energy costs.

The cost-optimality of energy efficiency requirements was tested using four building types representing different types of developers (e.g., households, housing companies, the public sector, and the private sector). The difference between the cost-optimal levels and the requirements is -13% for single-family houses, -1% for blocks of flats, -12% for educational buildings, and -7% for office buildings. The market share weighted difference compared to the required level is -7%.

The requirements are at a cost-optimal level for developers representing households, housing companies, the public sector and the private sector. Tightening energy efficiency requirements increases investment costs by 1.5%, but reduces the building's energy costs over its service life so that total costs over 20 years (non-residential buildings) or 30 years (residential buildings) do not increase.

A 10% tightening of energy demand compared to the energy efficiency requirements introduced at the beginning of 2018 increases
the construction costs of an average-sized single-family house by EUR 6,000 (including 25.5% value-added tax and margins) or the construction costs of an average-sized flat in a block of flats by EUR 3,000 (including 25.5% value-added tax and margins).

Of new buildings completed after 2021, 80% meet the proposed energy efficiency requirements for zero-emission buildings. The remaining 20% almost meet the proposed requirements. Their energy efficiency also falls within a 15% tolerance. The requirements to be set for zero-emission buildings formalise the energy efficiency of new buildings that is already being achieved on a market basis.

Finland's energy efficiency requirements for zero-emission buildings (ZEB) will be 10% stricter than nearly zero-energy building requirements (nZEB), i.e. they will reduce the energy consumption of new buildings by 10% compared to buildings constructed in accordance with the requirements that entered into force in 2018. The preparation of the revised Energy Performance of Buildings Directive took several years. Some companies in the sector have anticipated the upcoming requirements in their production,
so a 5–8% reduction in energy consumption is expected compared to the present situation.

Operational emissions are calculated from purchased energy consumption using national coefficients. The level of emissions is additional information to be provided in the energy certificate and does not increase costs. At EU level, the share of renewable energy in heating was approximately 26% in 2023, while in Finland it was 61%. As the share of renewable energy is already high in Finland, the threshold values can be achieved without additional investments.

1.2. Economic impact

Minimum requirements increase investment costs somewhat, but reduce the building's energy costs over its service life. The requirements are at a cost-optimal level for developers representing households, housing companies, the public sector and the private sector. Tightening the requirements leads to a 5–10% reduction in energy consumption depending on the building type compared to nearly zero-energy construction, as some new buildings are already being built to be more energy efficient than nearly zero-energy requirements.

Compared to the requirements of the Ministry of the Environment Decree 1010/2017, the directive that entered into force in 2024 increases the costs of an average-sized 127 m² single-family house by approximately EUR 4,100. The impact on the cost of a 50 m² flat in a block of flats is approximately EUR 2,000.

Tightening energy efficiency requirements increases investment costs by 1.5%, but reduces the building's energy costs over its service life so that total costs over 20 years (non-residential buildings) or 30 years (residential buildings) do not increase.

Airtightness measurements are already carried out in most new buildings. A marginal additional cost will arise for those buildings where airtightness tests have not previously been carried out. The measurement obligation set out in the decree increases, particularly among single-family house developers, the understanding that the test is not carried out solely for the energy certificate, but rather to ensure that air leakage does not increase the risk of mould and moisture damage, energy consumption, or weaken indoor environmental conditions.

Lower energy and power demand also has a positive effect on consumers' energy bills. In addition, good thermal insulation increases resilience in situations where energy prices rise significantly or energy is not available for heating. In particular, calm, very cold days are the most challenging, as for example wind power is not available at such times and there may be a shortage of electricity.

1.3. Impact on the activities of the authorities

The new decree does not have any significant impact on the division of tasks between the state and municipalities, nor on the internal distribution of powers among state authorities. The amendment also does not have effects on the duties of authorities. The new decree is based in substance on the current decree, so the new situation caused by the change is likely to be quickly adopted by building control authorities. Supporting guidance material is being prepared, along with updates to the simple calculation spreadsheets published on the Ministry of the Environment's website. These are intended to serve not only authorities but also designers and other parties involved in construction.

1.4. Environmental and health impacts

The decree improves the energy efficiency of buildings by approximately 10% compared to the current decree, depending on the building type, and promotes the use of environmentally favourable energy sources. Improving energy efficiency reduces emissions from energy production and their associated environmental and health impacts in proportion to the current decree level. However, buildings are long-lasting, so the economic, environmental and health benefits of improved energy efficiency are long-term.

Emissions are calculated from purchased energy consumption using national standard coefficients or certified/verified coefficients.

The level of emissions is additional information to be provided in the energy report and does not increase costs. At EU28 level, the share of renewable energy in heating was approximately 26% in 2023, while in Finland it was 61%. As the share of renewable energy is already high in Finland, the threshold values can be achieved without additional investments.

Greenhouse gas emissions from district heating are expected to decrease by 35% from the current level by 2030. In addition, as the energy efficiency of buildings improves, it will be possible to stay below the emission limits without extra investments, such as installing on-site renewable energy production systems. If district heating emissions do not decrease as expected, staying below the emission limits will require either electrification or on-site renewable energy production.

The regulation improves the energy efficiency of buildings by 10% compared to the current regulation. In addition, limit values will be set for the CO_2 emissions of energy use in new buildings. As a combined effect of these measures, both emissions from energy production and other harmful environmental impacts will decrease.
Energy efficiency, particularly the airtightness of the building envelope and the consideration of extreme weather conditions in design, improves indoor conditions.

Each year, new buildings are constructed at a rate of about 1% compared to the existing building stock. However, buildings are long-lasting, so the environmental and health impacts of improved energy efficiency are long-term.

1.5. Other social effects

The 10% reduction in energy demand required by the EPBD, implemented through balancing calculations, also fulfils the directive's requirement to improve structural energy efficiency and is a technology-neutral way to enhance energy efficiency and reduce a building's power demand. Structural energy efficiency is a key means of reducing heating-related peak loads in electricity and heating systems. This helps to reduce the need for fossil fuels during demand peaks and also lowers the risk of problems in the electricity grid.

In addition, good thermal insulation increases resilience in situations where energy prices rise significantly or energy is not available for heating. In particular, calm, very cold days are the most challenging, as for example wind power is not available at such times and there may be a shortage of electricity.