



Energy efficiency of existing buildings in Lithuania

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Cartagena





European Union (EU) information on energy efficiency:

EU law was passed on 19th of December, 2017 on Energy Performance of Buildings Directive (EPBD).

The Directive was amended in a way that all new and old buildings in Europe (inclusive of the ones being renovated) must be nearly at zero emissions by 2050.

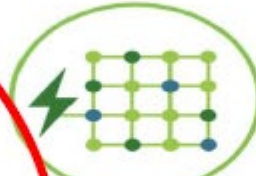


IN A CLIMATE-NEUTRAL EUROPE, BUILDINGS WILL BE...



HEALTHY AND FOSTER WELL-BEING

People will live, work and study in buildings with thermal comfort in all seasons, good air quality, sufficient access to daylight and very low noise levels.



PART OF THE ENERGY SYSTEM INFRASTRUCTURE

Buildings will fully interact with the power and heat networks.



HIGHLY ENERGY EFFICIENT

Energy in buildings will not be wasted. Both new and existing buildings will have very low energy consumption.



CIRCULAR IN MATERIALS AND USE

Material circularity should be the norm. Buildings should also adapt to occupants' changing needs and allow for a variety of uses over time.



FOSSIL FUELS FREE

Renewable energy will cover the low energy needs of the building sector.



RESILIENT TO CLIMATE RISKS

Buildings must be resilient and adaptable to impacts caused by a changing climate.



Why we need to make buildings more energy efficient?

One of the reasons is climate change – heating houses produces a lot of CO₂ – around 36% of emissions in European Union come from heating

That generated heat is wasted and escapes from:

- Building walls, thermal bridges (38%)
- Unsealed, old technology windows (26%)
- Lack or recuperation (air circulation) (25%)
- Non-insulated roofings (11%)



Another big reason - COST

Now D class **~220-320 kWh/m²/a**

After renovation to C,B class **~120-140 kWh/m²/a**

After renovation to A, A+ class **~12-20 kWh/m²/a**

Savings when renovating

From D to C, B **~ 40 %**, cost **300-350 eur/m²**

From D to A, A+ **~ 90 %**, cost **400-450 eur/m²**

777 Terawatt hours (TWh) in energy savings – equivalent to the [electricity consumption of Germany and Spain](#) combined – would be achieved by renovating EU's residential buildings.

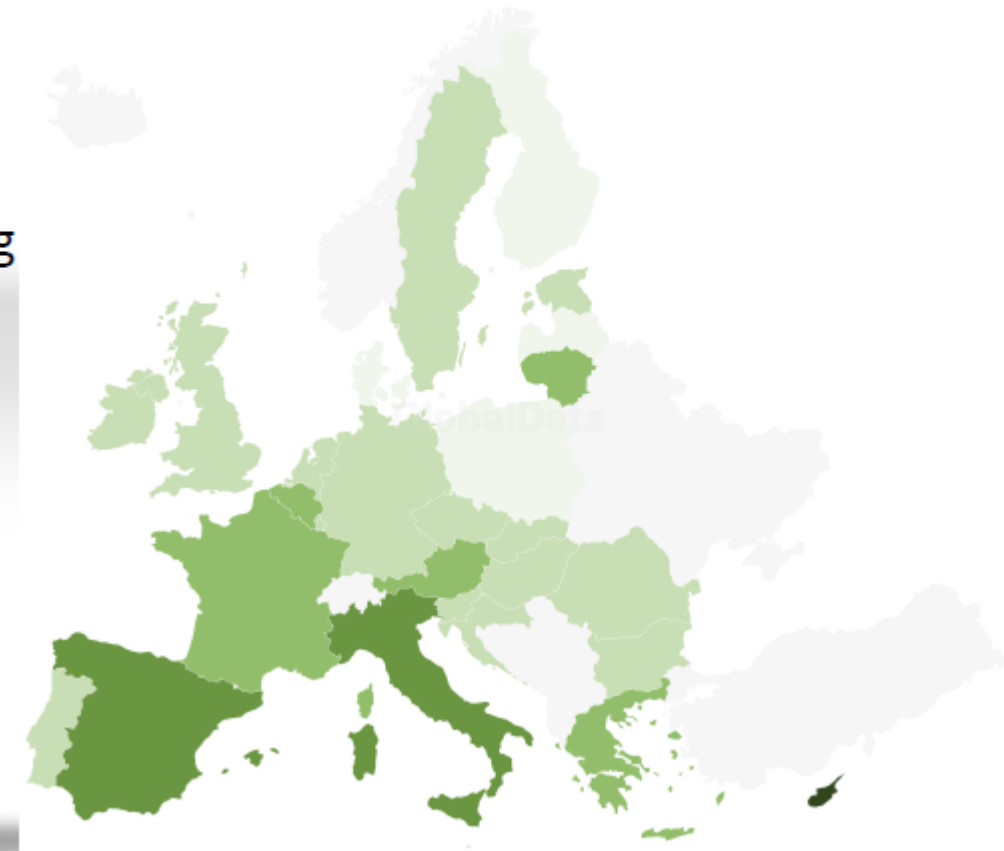


Situation in Lithuania and European Union

- Only **0.2%** houses on average are being renovated in European Union, Lithuania currently is achieving the average, while Cyprus is leading with 0.4%
- We need to increase to 3% of buildings being renovated to achieve zero emissions
- Lithuania has 50,000 soviet buildings rated at D energy class and lower
- Lithuania has a programme that gives incentives for renovating old buildings
- From 2013 m. **3,739 houses** were renovated (12.4%), **1,224 are being renovated in Lithuania**

Deep building renovations languish at 0.2% per year and need to rise to 3% by 2030

Deep energy renovation in residential buildings, average, 2012-16



Which is best renovation

Priemonės/ Objektai	“C”	“B”	“A”	“A+”	“A++”	
APVALKALAS U (W/m ² K)						
Roof insulation	0,16	0,16	0,13	0,12	0,10	0,12
Walls	0,2	0,2	0,14	0,13	0,11	0,15
Basement separation	0,25	0,25	0,19	0,2	0,2	0,18
HEATING SYSTEMS	TAIP	TAIP	TAIP	TAIP	TAIP	TAIP
WINDOWS U (W/m ² K)/QTY/g value	1,20 (1/5) g=?	1,30 (1/4) g=?	0,9 (visi) g=55	0,9 (visi) g=55	0,9 (visi) g=55	0,8 (visi) g=32-55
THERMAL BRIDGES	NE	NE	NE	NE	TAIP	TAIP
AIR TIGHTNESS	NE	NE	1,0	0,6	0,6	0,6
RECUPERATION SYSTEM ≥ 75%	NE	NE	≥ 65%	≥ 75%	≥ 80%	≥ 75%
ALTERNATIVE ENERGY DEVICES (solar rooftops, heating pumps, collectors)	-	-	NE	TAIP	TAIP	TAIP
				≥ 50%		





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RENOVATION OR BUILDING NEW?



Conclusions:

- **A and A+ class buildings are proven to conserve the environment, saving money and guarantee high quality of life and comfort**
- **It is a huge challenge set by EU and we need to increase the speed and type (to A+) of renovation so we reach the goals by 2050**
- **We need to think if it is better to renovate or build anew**

