

**Scientific Problems of Engineering Economics of Construction and
Real Estate Management, Regional and Territorial Development**

Section in the annual 62nd International Scientific
Conference of Riga Technical University

ENERGY EFFICIENCY OF BUILDINGS IN THE EUROPEAN UNION AND LATVIA

Mg. oec. Raimonds Poga, Swedbank AS, Latvia

Mg. oec. Jānis Zvirgzdiņš, Riga Technical University, Latvia

RIGA TECHNICAL UNIVERSITY



Topicality of the study

- Reducing energy consumption is crucial to tackling the negative effects of global climate change.
- In order to reduce the ever-increasing energy consumption, it is necessary to increase the efficiency of all energy-using appliances and to ensure the rational use of energy.
- The less energy consumed in buildings, the better.

Aim of the study

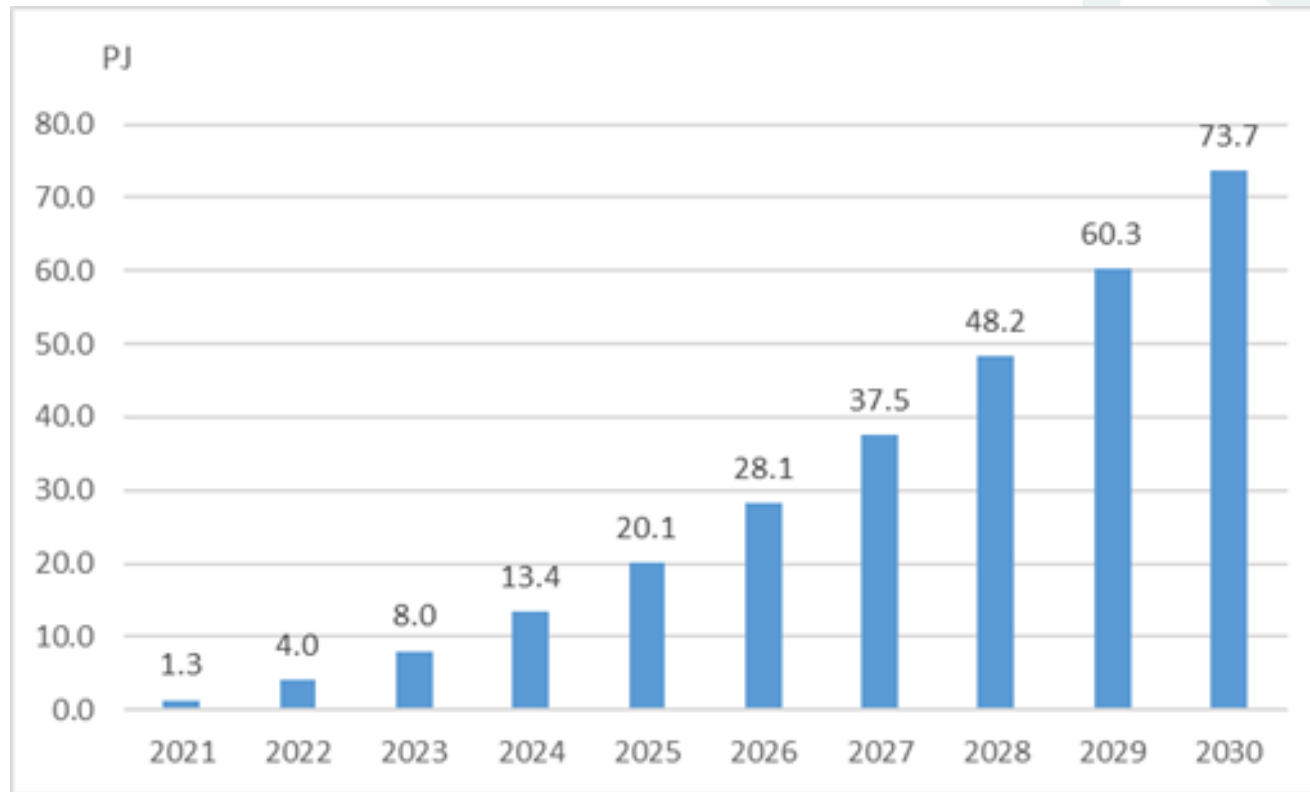
- to identify the current situation and planned actions on the energy efficiency of buildings in the European Union and Latvia.



Source: <http://autosandelectro.blogspot.com/2016/10/aim-of-autos-electro-karachiites.html>

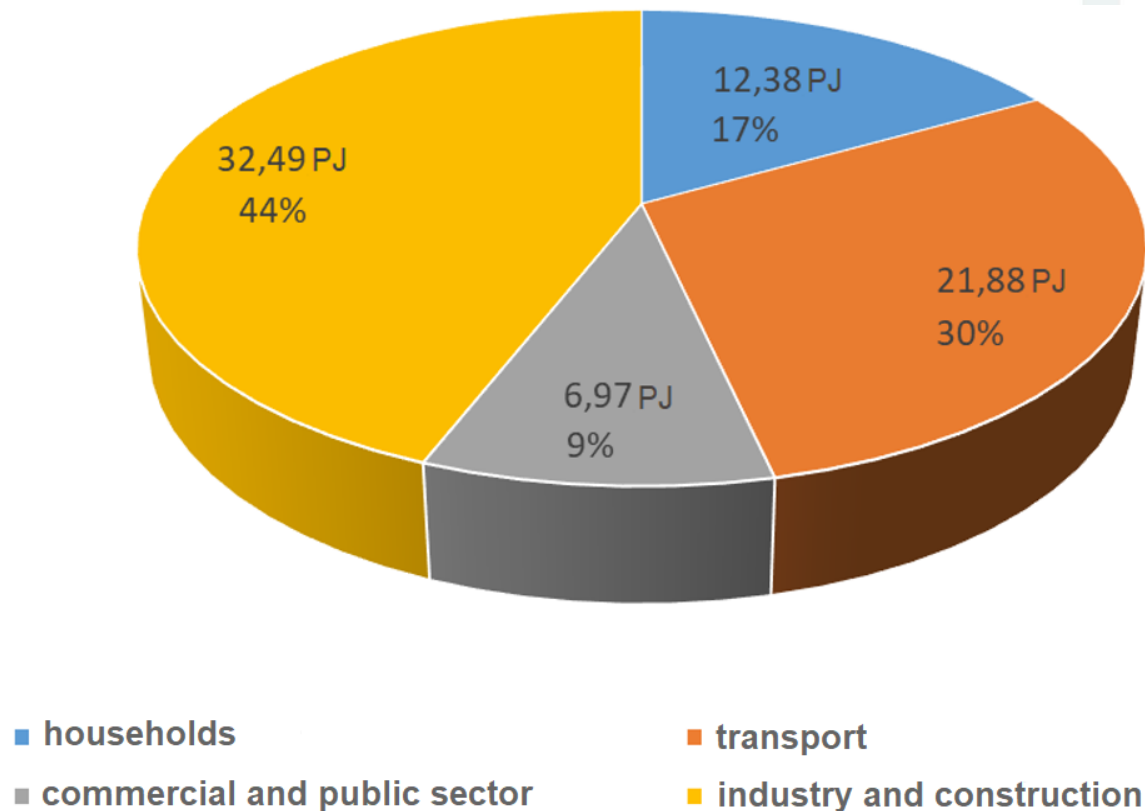
Energy consumption savings target set by EU

- According to the European Union Directive 2012/27 / EU, in the period from 2021 to 2030, Latvia must achieve cumulative final energy consumption savings of 73.72 PJ or 1.76 Mtoe.



Source: (Par Latvijas Nacionālo enerģētikas un klimata plānu 2021.- 2030. gadam, 2020)

Planned cumulative energy savings for energy efficiency improvement measures for 2030 of Latvia



Source: (Par Latvijas Nacionālo enerģētikas un klimata plānu 2021.- 2030. gadam, 2020)

Planned cumulative energy savings for energy efficiency improvement measures for 2030 of Latvia

- When implementing energy efficiency measures, the largest share of savings of 32.49 PJ, which makes up 44% of the total cumulative savings in 2030 is planned to be obtained from increasing the efficiency of electricity and fuel consumption in industry and construction. This will be achieved by: 1) involving large companies and energy consumers in a system of voluntary agreements; and 2) meeting mandatory energy audit requirements. Companies will be motivated to actively implement energy efficiency measures in accordance with energy efficiency obligation schemes.
- The second largest saving of 21.88 PJ, which is 30% of the total, is planned to be achieved in the transport sector. This is mainly achieved by: 1) the transition of vehicles from internal combustion engines to electric motors; 2) when converting train traffic from diesel engines to electricity.
- The third most important savings sector is planned for households with 12.38 PJ and 17% of the total.
- According to the plan, the savings of the commercial and public sector make up the smallest part of 9% or 6.97 PJ. In the household and commercial and public sectors, it is planned to achieve energy savings by taking measures to improve the energy efficiency of buildings and increase the energy efficiency of used electrical equipment, including replacing lighting with LED solutions.

Energy efficiency of buildings

- In Latvia similarly to the European the building sector consumes approximately 40% of the total energy balance, therefore the contribution of the building sector to the achievement of overall energy efficiency targets is very significant.
- In order to achieve its energy and climate goals, the European Union must improve the energy efficiency of buildings.
- In Latvia, the total area of the building stock is 204.7 million m², which consists of 1.37 million buildings.
- In general, it can be concluded that energy consumption is high for most part of Latvian buildings and based on average energy consumption for heating, buildings have significantly lower thermal properties than can be provided by currently available technologies.

Energy efficiency of buildings

- In Latvia, minimum energy efficiency requirements have been set for buildings, which regulate the permissible amount of heat energy consumption (kWh/m² per year).
- For the planning period from 2021 to 2030, newly built office buildings must correspond to almost zero energy buildings.
- In the planning period from 1 January 2020, the new version of the regulations related to the thermal engineering of the enclosing structure of the building must be complied with (the aim of the new version of the regulations is to improve the quality of projects in order to increase the physical thermal insulation parameters of buildings).

Energy efficiency of buildings

- Latvia plans to renovate 3% of public administration buildings annually in the planning period from 2021 to 2030.
- Latvia's goal is to reduce the average heat consumption in the country to 120 kWh / m² / year.
- Considering the ten-year term, positive technological development trends in the field of energy efficiency, as well as climate change, the national target of 120 kWh / m² / year is not considered ambitious enough and will be easily achieved.

Conclusions and Proposals

1. It is necessary to invest in buildings to improve energy efficiency in order to promote the sustainability of the planet.
2. The European Union must provide greater financial support to the Member States of the European Union in improving the energy efficiency of buildings in order to achieve the energy and climate goals set.
3. Progressive energy efficiency requirements for buildings in Latvia help to move towards the country's overall energy savings target in the planning period until 2030 and facilitate the transition to a low-level heat consumption.
4. The Latvian government must provide support to reduce heat and electricity consumption in both the private and public sectors by 2030.



Thank you for your attention!

Raimonds.Poga@gmail.com