

**TAL
TECH**

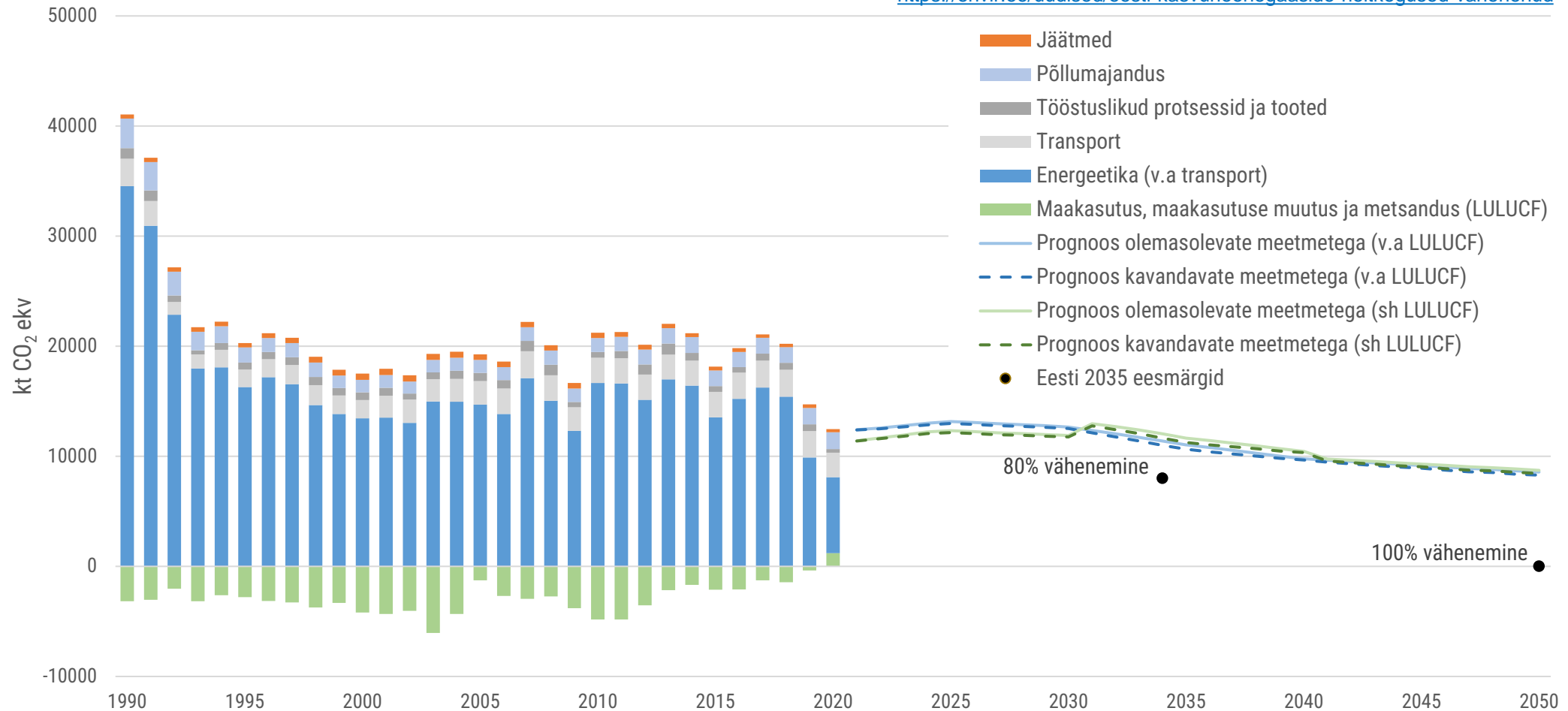
HOONETE ENERGIAEFEKTIIVSUS

Jarek Kurnitski

30.05.2022

KASVUHOONEGAASIDE HEIDE

<https://envir.ee/uudised/eesti-kasvuhoonegaaside-heitkogused-vahenenud>

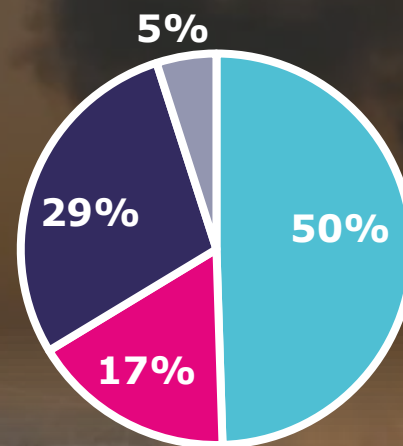


- Eesti KHG heite vähendamise sihttase on 8 mln t CO₂ ekv Eesti 2035 strateegia järgi
- 2019 algtase 14 mln t CO₂ ekv ja 2020 12,8 mln t CO₂ ekv
- Aastaks 2050 on Eesti kliimanetraalne riik – strateegia Eesti 2035 eesmärk
- **Energeetika** (= hooned + osa tööstusest) osakaal 54% 2020, millest suurem osa **elektri, soojuste ja kütuste** kujul langeb hoonete energia lõpptarbimisele

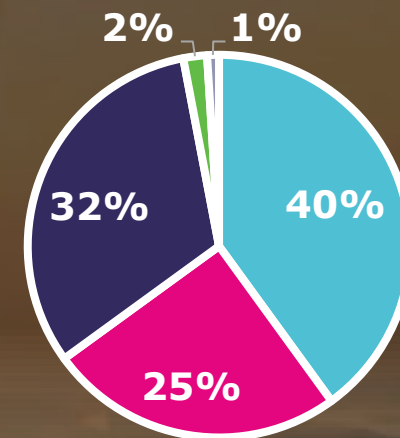
SEKTORITE OSAKAAL ENERGIA LÕPPTARBIMISES

- Hoonete osakaal ca 50%*
- EL keskmine 40%
- Olemasolev hoonefond EL-i kõige suurem energeetiline ressurss

2019 lõpptarbimine 32,9 TWh



EU-27, 2010

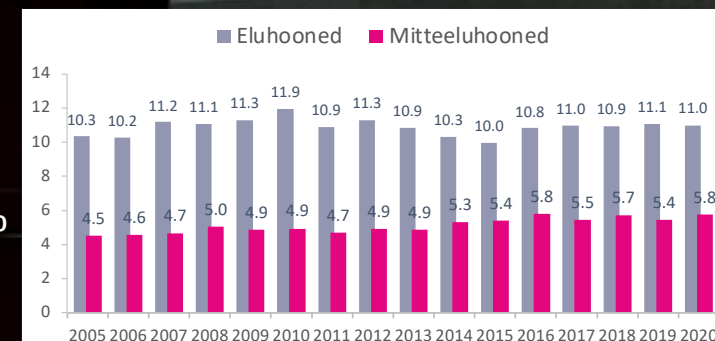


■ Hooned ■ Tööstus ■ Transport ■ Muud ■ Põllumajandus



* 2020 52,5%

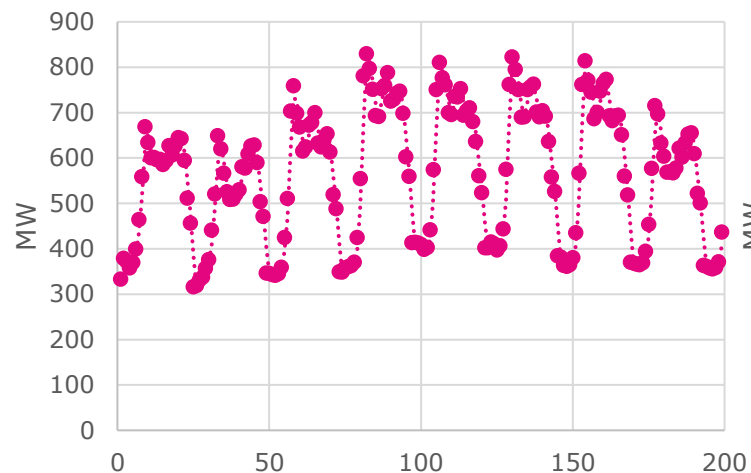
- Eluhoonetes stabiilne – meetmete mõju nähtav
- Mitteleuhoonetes 15 aastaga +30% – meetmete vajadus nähtav



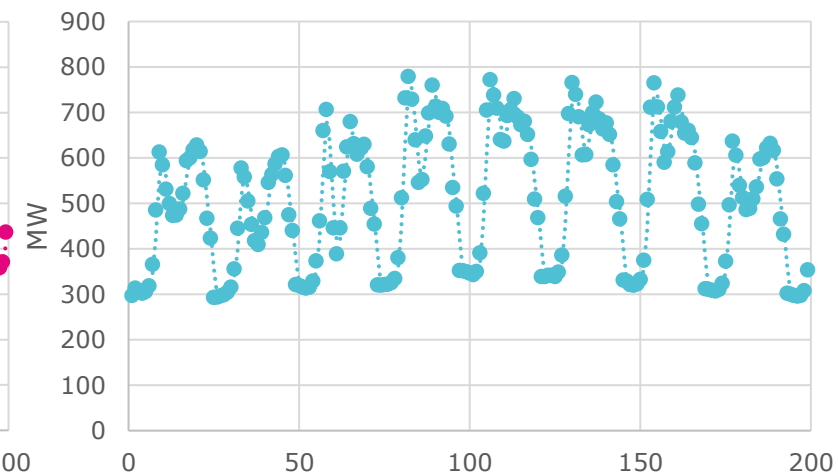
HOONETE OSAKAAL ELEKTRI TARBIMISES JA TIPUKOORMUSES

- Hoonetes tarbitakse täna ca 60% elektrienergiast
- Hoonefondi tipukoormus ca 85% kogu tarbimise tipukoormusest
- 2050 tarbimine/tipukoormus suureneb (soojuspumbad, uusehitus jne) või väheneb (tõhususe parandamine) sõltuvalt meetmetest
- REKS strateegia – kulutõhusad meetmed – hoonefondi täisrekonstrueerimine:
 - kütuste tarbimine väheneb 60%
 - soojuse tarbimine väheneb 30%
 - elektritarbimine ei muutu

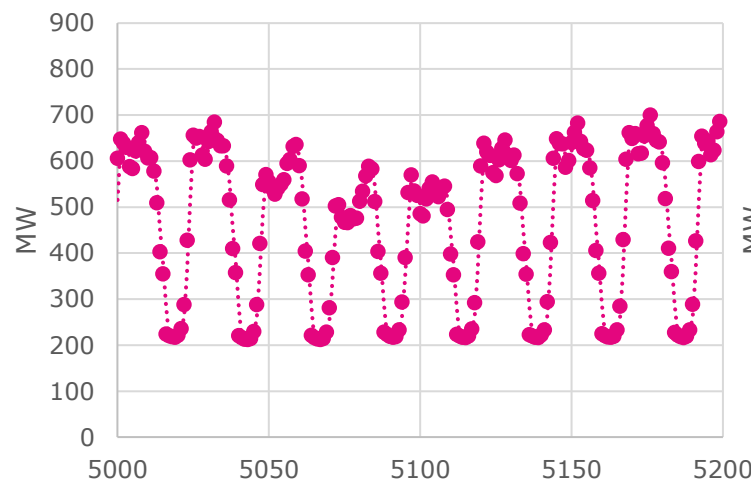
Electricity winter 2020



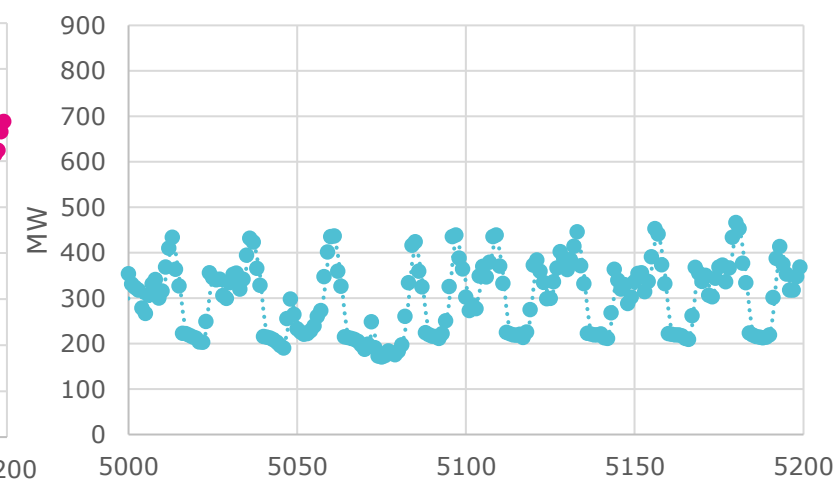
Electricity winter 2050



Electricity summer 2020



Electricity summer 2050



KredEx-i RIIGIELARVENEUTRAALNE RENOVEERIMISTOETUS: VÕIDAB NII ELANIK, RIIK, ETTEVÕTTED KUI KA KESKKOND

Rohepööre käib:

- 3 000 korterelamut tehtud
- 14 000 ootab oma järke



Quantification of economic benefits of renovation of apartment buildings as a basis for cost optimal 2030 energy efficiency strategies

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ARTICLE INFO

Article history:
 Received 21 April 2014
 Received in revised form 30 September 2014
 Accepted 4 October 2014
 Available online 17 October 2014

Keywords:
 Economic benefits
 Renovation of apartment buildings
 Cost optimality
 Energy and cost savings
 Tax revenue
 Job generation

ABSTRACT

As a part of the 2030 energy and climate policy discussion, the Estonian energy roadmap ENMAK 2030¹ is being developed to set optimal national targets for 2030. Developing such a national roadmap requires solid evidence of which scenarios with varying ambition can be developed. This study looked at economic benefits, including tax revenue, job generation, and disposable net income per 1 M€ of investment, and energy savings on both an individual and national level. In addition, economic quantification for the three scenarios was carried out. The study relied on secondary data collection with validation of the data through a sample analysis and interviews with project stakeholders. The main findings show that in all 17 jobs per 1 M€ of investment in renovation were generated per year and direct tax revenue was between 32–32€, depending on the renovation project. Results revealed that over a 20 year period, there are essentially two national energy policy options: both the living quality and asset value brought about by integrated renovation at 106€/m² or alternatively, that brought about by non-energy efficiency repairs at 31€/m². The study confirms that investment in energy efficiency is not only environmentally important but provides economic benefits on an individual and government budget level.

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1. Introduction

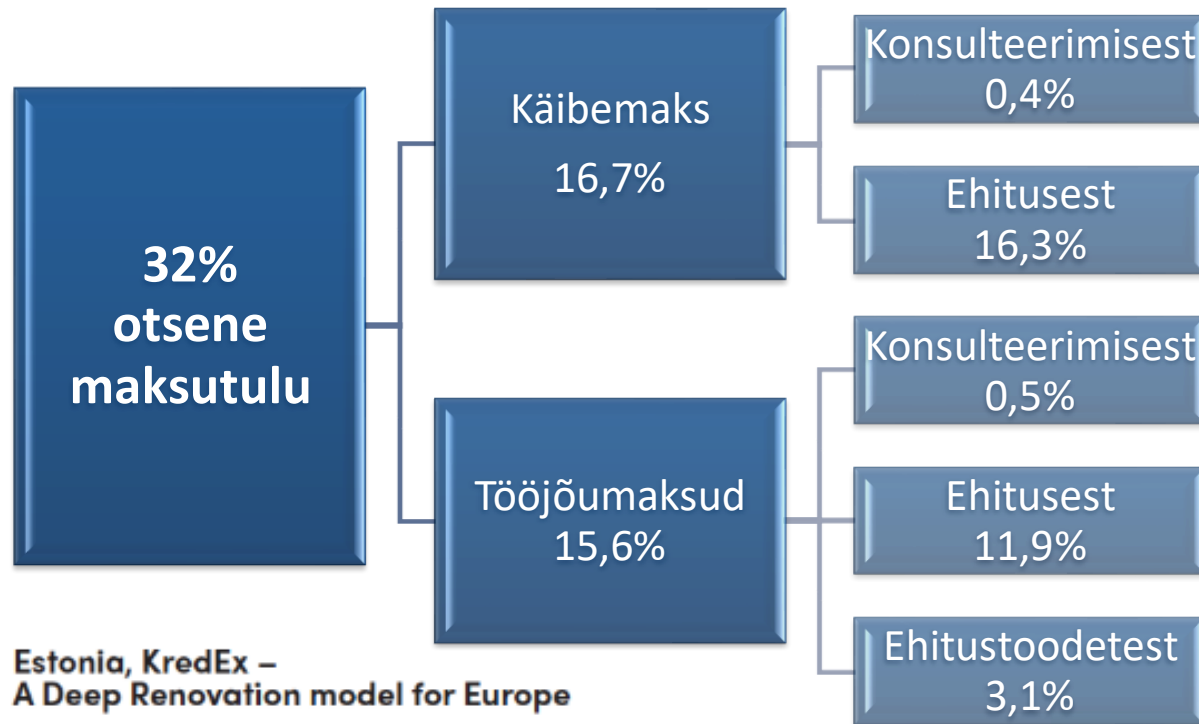
"I believe that renovation of buildings to high energy performance standards could be one of the most cost effective investments a nation can make, given the benefits in terms of job creation, quality of life, economic stimulus, climate change mitigation and energy security that such investments deliver". Oliver Rapf, Executive Director, EPRI [1].

The Estonian energy roadmap ENMAK 2030¹ is being developed in line with the objectives described in the Green Paper "A 2030 Framework for climate and energy policies"². Developing a national roadmap requires scientific evidence, and on the basis of this evidence, different scenarios may be envisaged. With this in mind, a statistical study involving integrated and energy and

investment analyses of Estonian building stock, including apartment buildings, was carried out [3]. For each building type, three to four different renovation packages were studied to identify cost optimal solutions [3]. However, the study focused only on energy efficiency/energy savings and investment intensity and did not consider the economic impacts of these renovation measures/packages.

Buildings account for a large share of the energy consumed nationally and produce 30% of the EU's CO₂ emissions [4]. In 2010, 20% reduction in both CO₂ emissions and energy consumption by 2020 was set as a target for all EU member states [5], the aim being to maintain energy consumption at a 2010 level. According to the above mentioned study [3], in 2010, Estonian building stock account for up to 50% of total national final energy consumption, significantly above an average 37.5% across all EU countries [3]. Estonian final energy use amounted to 33.0 TW h/a, total primary energy use, 45.5 TW h/a (buildings for 55%), and non-renewable primary energy use, 35.3 TW h/a (buildings accounting for 47%) [3]. The Estonian building stock has clearly played a major role in energy use, exceeding consumption by industries such as transportation and manufacturing. If national measures are not adopted, overall energy consumption of buildings may even increase, due to the relatively low replacement rate of existing buildings (0.3% per year)

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Estonia, KredEx – A Deep Renovation model for Europe

Estonia has achieved great results in deep renovation, thanks to the KredEx renovation grant system. Backed by the EU since its 2010 kick-off, KredEX features strict technical requirements, focusing on high-level energy efficiency and indoor climate conditions.

Igiliikur?

- Soojuse kokkuhoid 60-70%
- Elektris väike tõus või vähenemine sõltuvalt päikesepaneelidest

