

Odyssee



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**TTU** 100

# Energy Efficiency and Policies in Tertiary Sector (Estonia)

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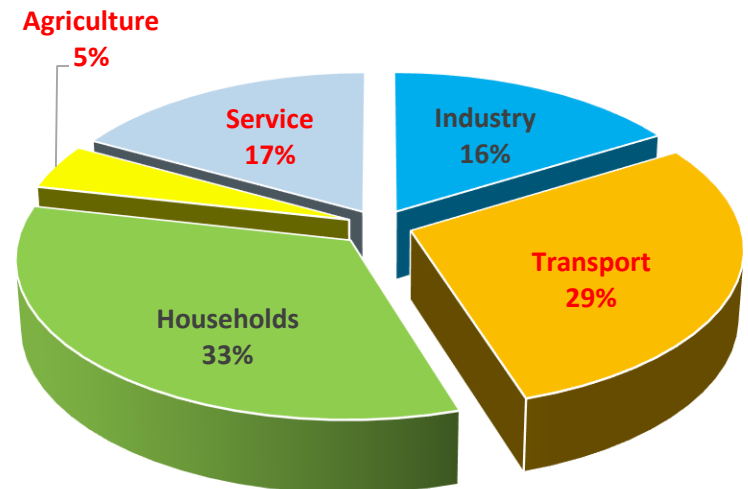
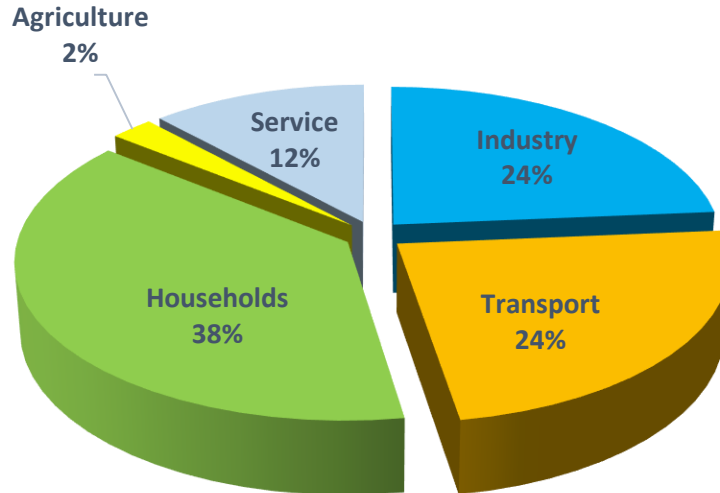


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# Final energy consumption by economic activity in Estonia

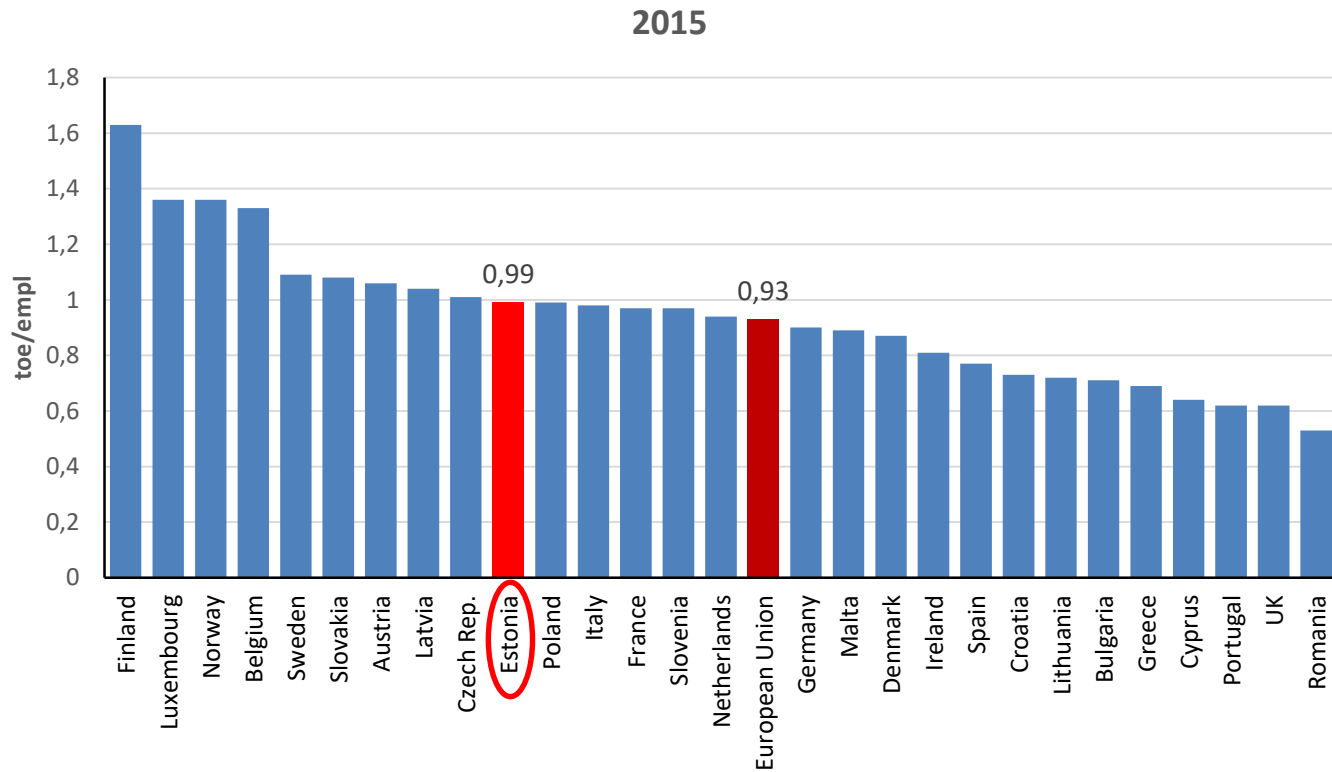
2000: 2,42 Mtoe

2016: 2,78 Mtoe



The share of service, transport and agriculture in final energy consumption has increased in 2016 compared to 2000, while the share of industry and residential has decreased.

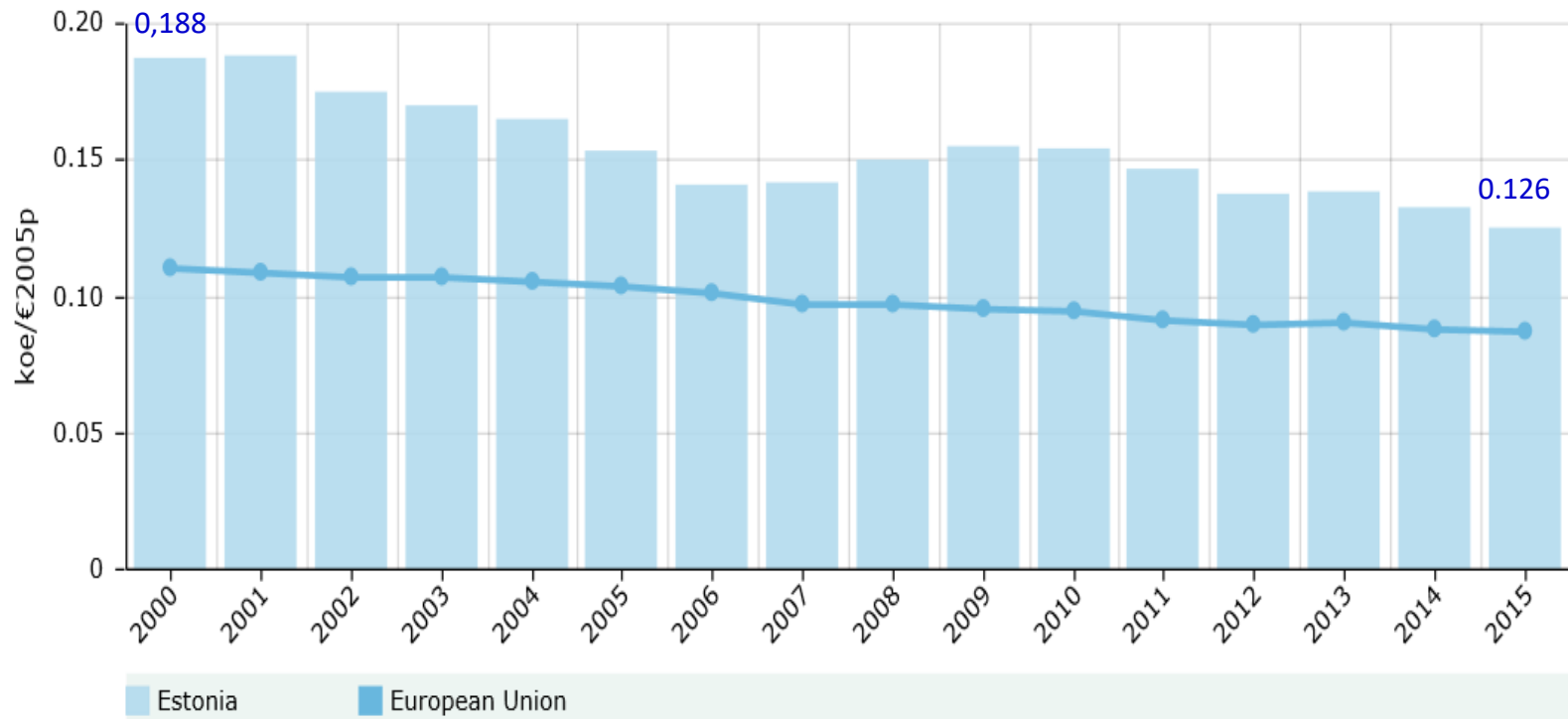
# Energy consumption per employee in services (with climatic corrections)



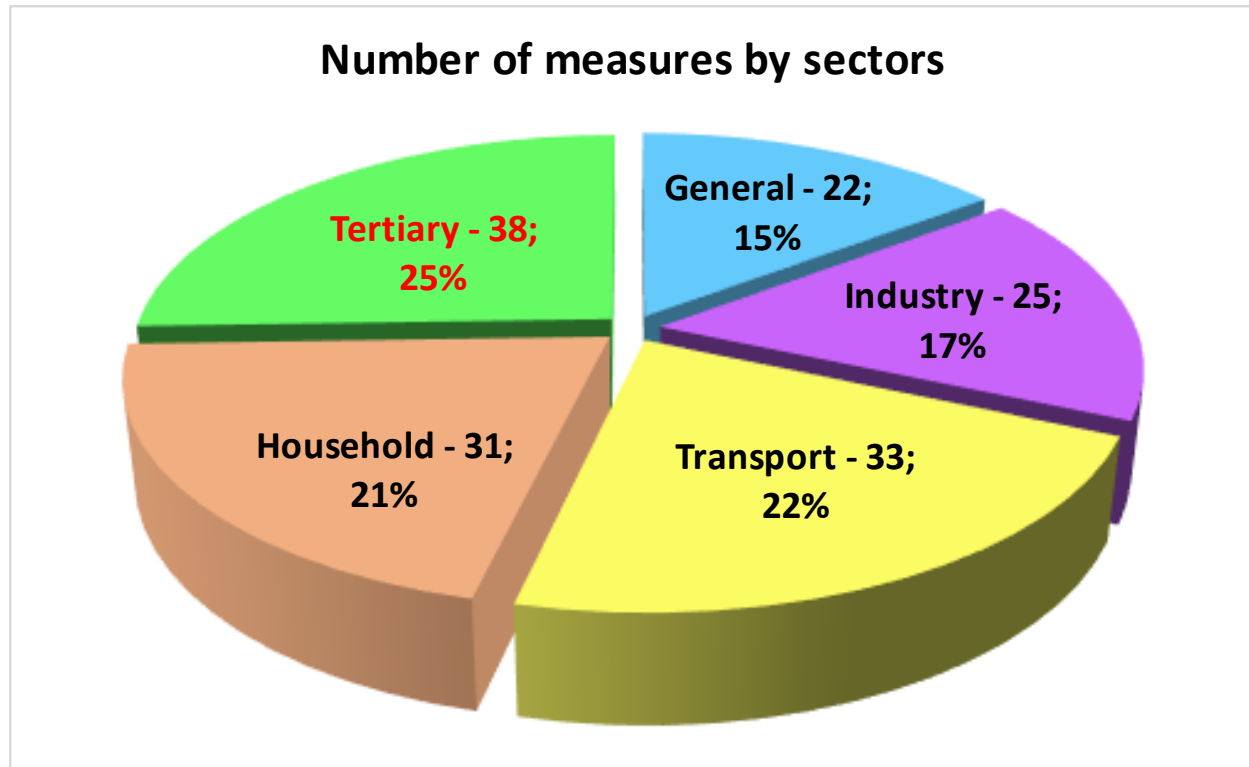
# Final energy intensity of the service sector

ESTONIA

In 2015, the energy intensity of the service sector in Estonia was 30% higher than the EU average



## Number of measures by sector in Estonia



Estonia has contributed with 149 measures to the MURE database

## **Successful measures in the service sector**

1. A project for reconstruction of public sector buildings (2010-2013) – type: financial.
2. Modernisation of street lighting (2012 – 2015) – type: financial

# **TTU>100** ***A project for renovation of public sector buildings (2010 – 2013)***

The project was carried out from 2010 to 2013 in 543 buildings of public sector (covering all 15 counties of Estonia), including:

- 224 schools and kindergartens;
- 147 governmental buildings;
- 71 cultural buildings;
- 50 social houses;
- 25 health care establishments;
- 26 other buildings in public sector.

## **TTU>100** *A project for renovation of public sector buildings (2010 – 2013) 2*

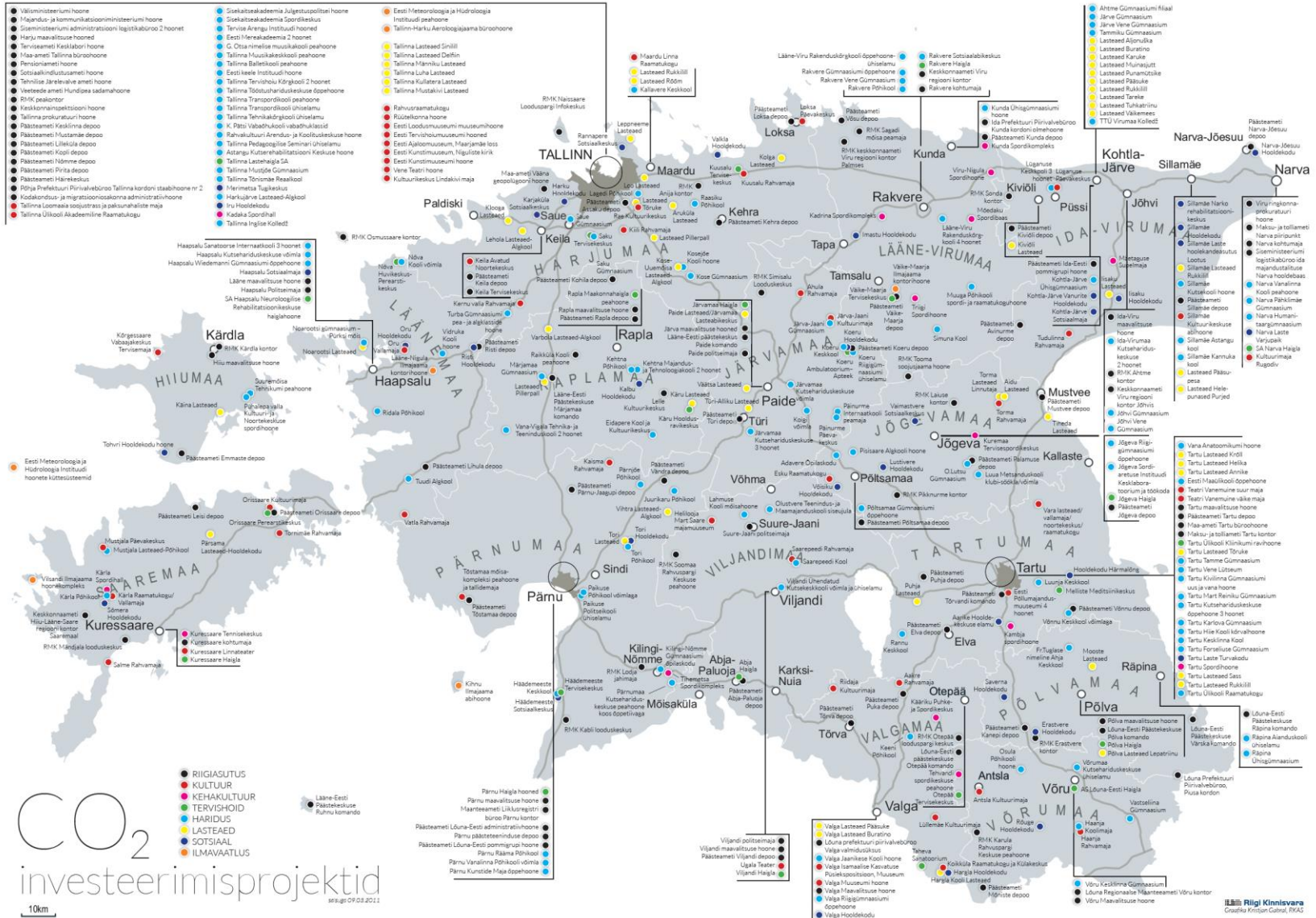
- The total cost of the full project was 165.65 M€.
- The cost of renovation per building ranged from 5.9 M€ (university library) to 1.5 thousand euros (a small forestry center).
- The average cost was estimated at 254 thousand euro per building.
- The responsibility for the projects of Green Investment System lies with the Ministry of Finance and the management was carried out by the State Real Estate Ltd, the company administering the state owned real estate.



## *Means and outputs*

- **Means** – The total cost of the project was 165.65 M€, financed from the Green Investment System applying revenues from Estonia's sale of GHG emission assigned amount units (AAU) as provided in the Kyoto Protocol.
- **Outputs** – 543 buildings in public sector were renovated. The buildings are located all over the territory of Estonia.

# The coverage of renovation projects all over the territory of Estonia



investeeringiprojektid  
 28.03.2021

## Data about energy savings

The annual energy saving was estimated to be 45 GWh (13.3%), in 2013 the actual saving was 59 GWh (212.4 TJ) (17.5%) of final energy. The annual emission reduction of CO<sub>2</sub> corresponding to energy saving of 59 GWh is 36.2 thousand tons of CO<sub>2</sub> eq.

	Energy	CO <sub>2</sub>
	GWh	kt CO <sub>2</sub> eqv.
2009	338	222.0
2013	279	185.8
Saving	59	36.2
Saving, %	17.5%	16.3%

Source of data: State Real Estate Ltd

## ***Modernisation of street lighting (2012 – 2015)***

In Estonia, approximately 40–45% of street lighting lamps are more than 20 years old.

During 2012–2015 the first project for replacement of old and ineffective street lighting was carried out in seven Estonian cities (Haapsalu, Jõhvi, Keila, Kuressaare, Paide, Valga and Võru).

The projects were managed by the Foundation of Environmental Investment Centre (*Keskkonna Investeeringute Keskus, KIK*).

## ***Modernisation of street lighting (2)***

- The financing support to street lighting renovation projects will be continued – during the period of 2014–2023 it is planned to use approximately 43 M€ from EU structural funds for supporting relevant projects in Estonia's cities.
- The support for municipalities (cities) will be given in two phases, at first for performing relevant audits and then, depending on audit results, for carrying out the projects.

## Means and outputs

- **Means** – The total cost of the project: 15 M€, financed from the Green Investment System applying revenue from Estonia's sale of GHG emission assigned amount units (AAU) as provided in the Kyoto Protocol.
- **Outputs** – 11741 street lighting lamps were replaced with modern LED lights. Also, the project included renovation of other street lighting infrastructure, e.g. replacing lamp posts and cable lines. The entire lighting control systems were replaced, allowing managing and controlling the lights of the city through an IT-based solution.

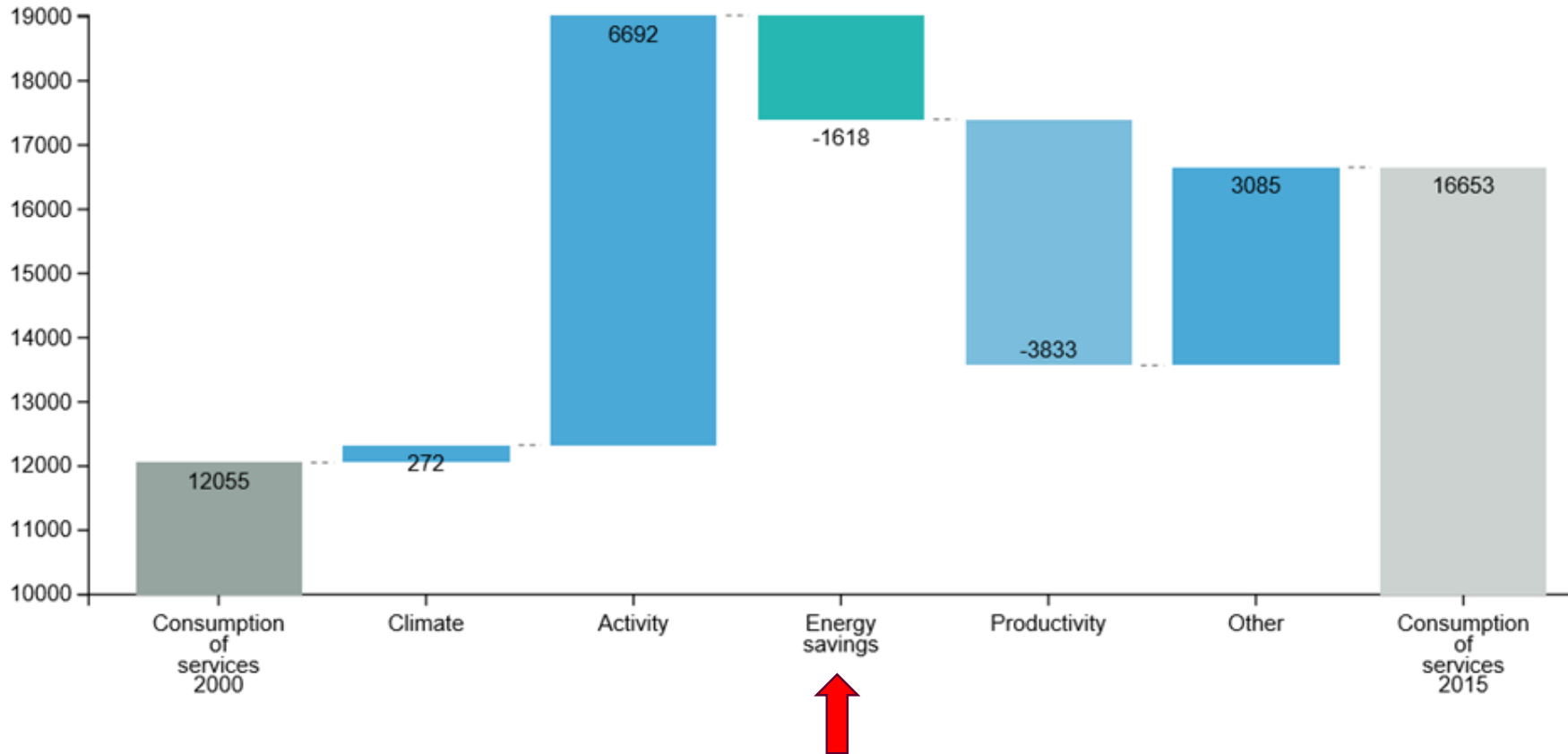
## Impact evaluation

- The annual energy saving for the first project was estimated at 5.5 GWh of final electrical energy and almost 6 kt/a less of CO<sub>2</sub> is emitted.
- For the period 2015–2020 the saving of 33.0 GWh of electricity can be predicted. The relative energy savings are estimated to reach 60–70%.

City	Lights replaced	Cables installed, km	Energy savings	
			Annual, MWh	2015-2020, GWh
Haapsalu	1911	56	1693	10.16
Jõhvi	1569	35	282	1.69
Keila	761	36	463	2.78
Kuressaare	2572	71	1127	6.76
Paide	1299	48	430	2.58
Valga	2156	53	938	5.63
Võru	1473	54	470	3.42
<b>TOTAL</b>	<b>11741</b>	<b>353</b>	<b>5504</b>	<b>33.02</b>

# The variation of the energy consumption of services (tertiary)

VARIATION SERVICES CONSUMPTION - ESTONIA - TJ (2000-2015)



Source: ODYSSEE



# **TTU>100 Estonian energy efficiency goals**

## **Competitiveness plan for Estonia 2020**

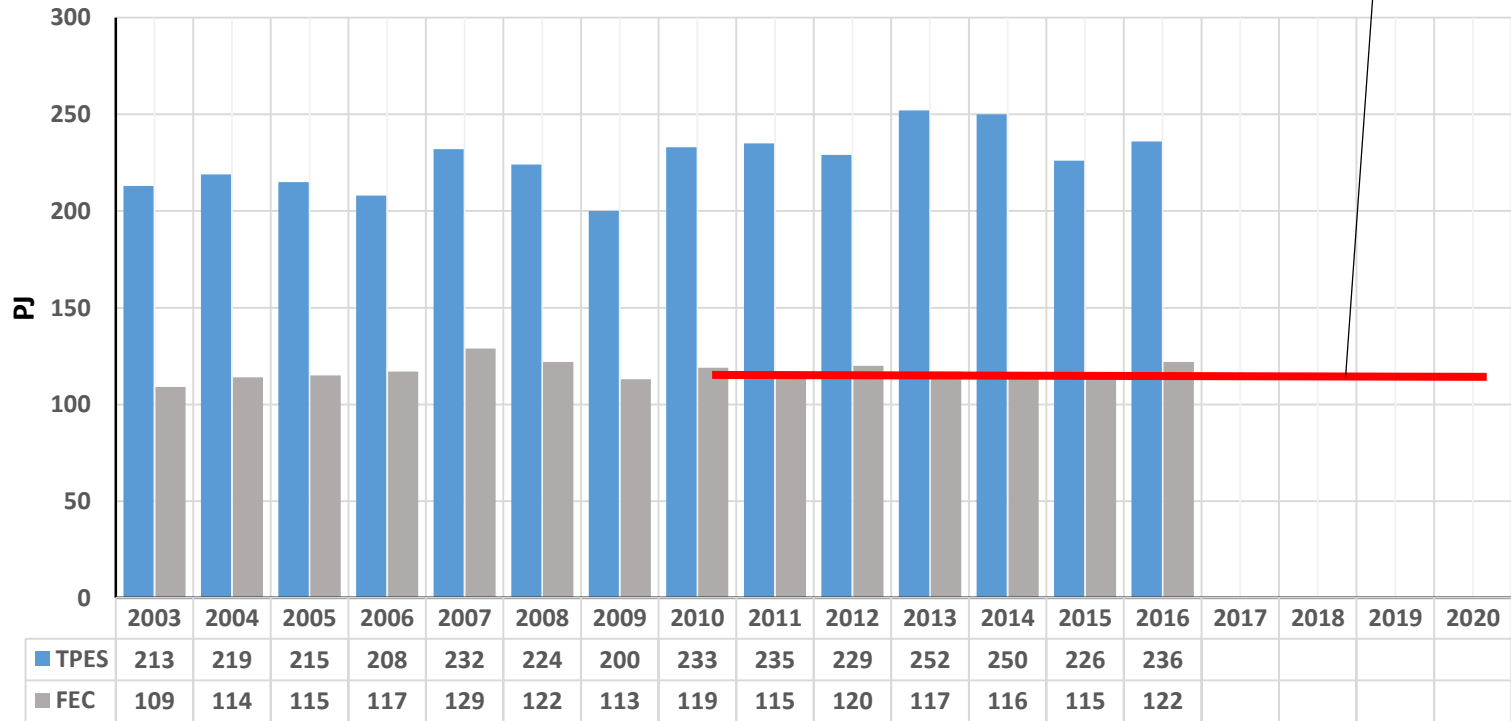
- Ensure that Estonia's final energy consumption in 2020 does not exceed the level of 2010 (2818 ktoe or 119 PJ).

## **EU Energy Efficiency Directive 2012/27/EU/2012**

- Primary energy consumption in 2020 not exceeding 6.5 Mtoe;
- With the energy saving measures implemented by the state to achieve total energy savings of 7101 GWh in the period 2014-2020;
- Renovate each year 3% of the floor area in central government buildings area.

# Estonia's energy efficiency target for 2020

Estonia's 2020 target: to ensure that final energy consumption does not exceed 2010 level (119 PJ)



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**Thank you!**

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