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State of energy communities in Estonia

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Energy and climate policy targets



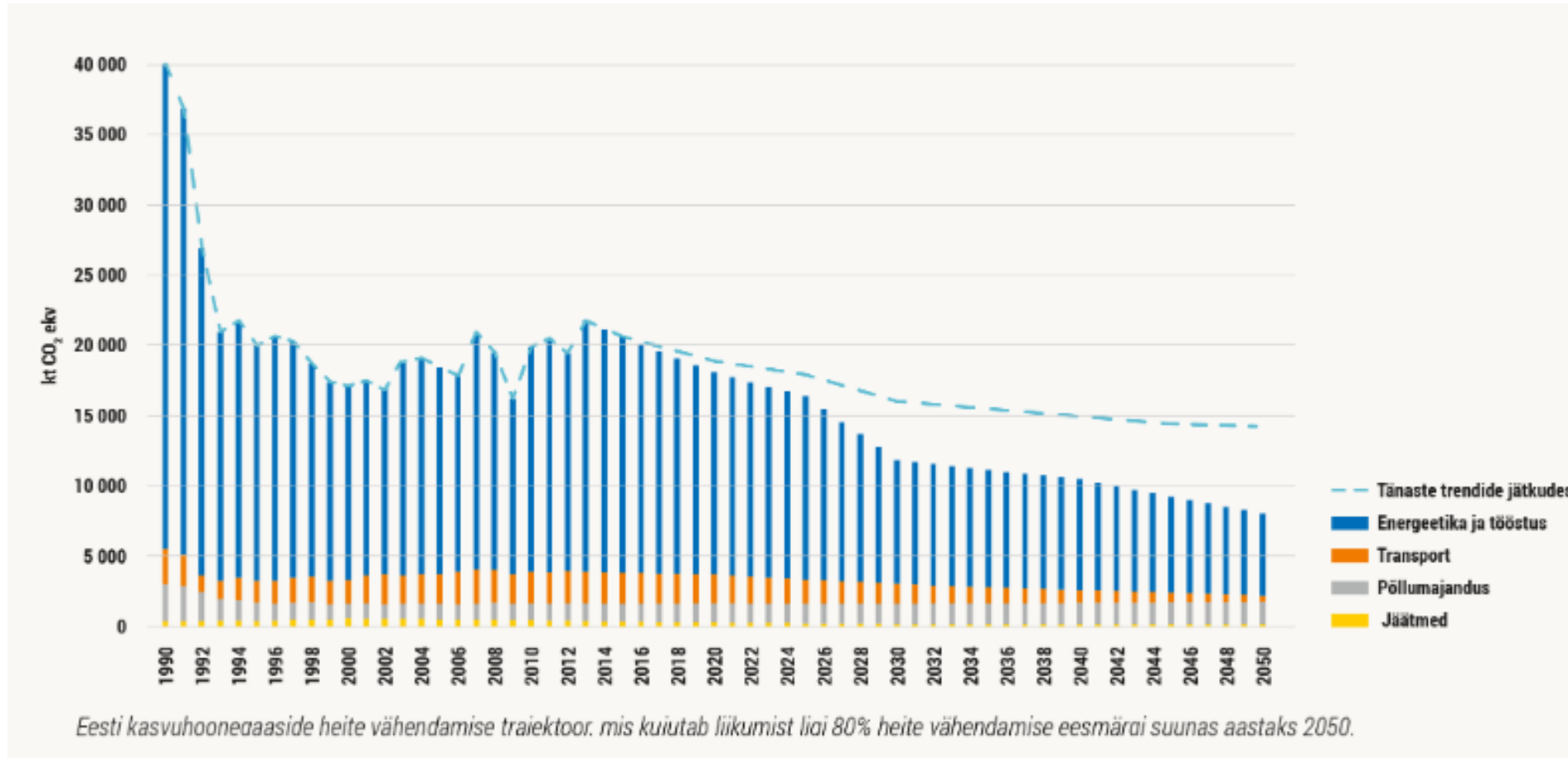
- **1990-2030 -40 % in economy-wide greenhouse gas emissions (Estonia -70%), climate neutral Europe by 2050 (Estonia -80%)**
- 2005-2030 Carbon Emission Trading System (ETS) sectors - 43% and non-ETS sectors -30% (Estonia -13%)
- 2007-2030 improvement in energy efficiency of at least 32,5 %
- a share of renewable energy consumed in the Union of at least 27 % (Estonia 42%)
- electricity interconnection of at least 15 % (Estonia >63%)

- European Green Deal and Climate Act
- ESTONIA:
- Low Carbon Strategy 2050
- **National Development Plan for Energy Sector until 2030 (energy cooperatives scenario for housing renovation and heating)**
- **National Energy and Climate Plan until 2030**
- **Long term Strategy for Building Renovation**
- **District heating development plans of local governments**
- **SECAP in Tallinn and Tartu**

Estonia Low Carbon Strategy



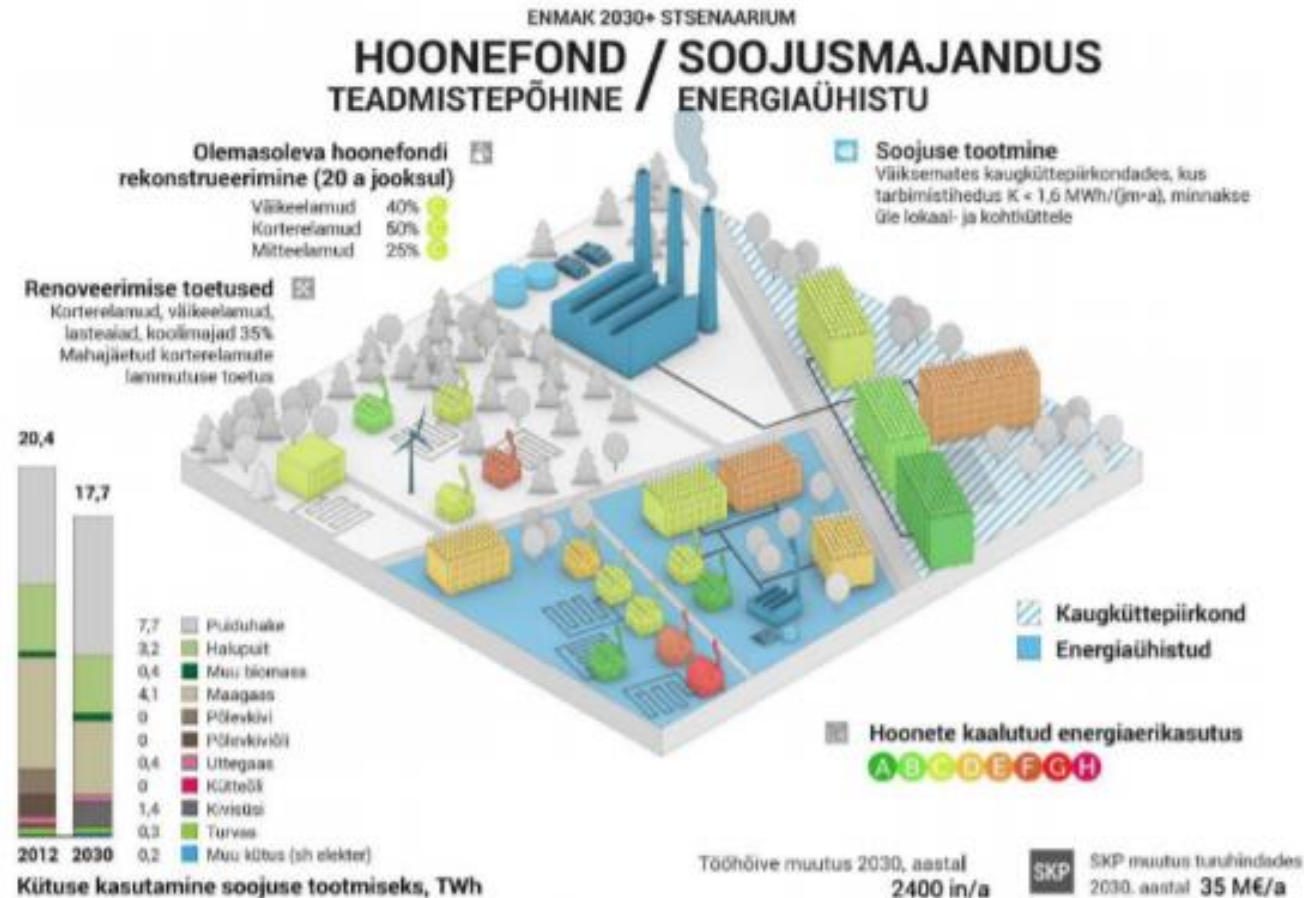
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Energy cooperatives scenario of Estonia



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NECP in ESTONIA (REKK 2030)



- “Estonian national energy and climate plan 2030” (*NECP 2030*) has been drawn up to perform the requirement laid down in **Regulation (EU) 2018/1999 on the Governance of the energy Union and Climate Action**, which prescribes submission of national energy and climate plan to the European Commission in every ten years.
- **Broader objective of NECP 2030 is to provide Estonian people, enterprises and other Member States with as accurate information as possible regarding the measures Estonia intends to deploy to achieve the energy and climate policy targets agreed in the European Union.**



I

(Legislative acts)

REGULATIONS

REGULATION (EU) 2018/1999 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 11 December 2018

on the Governance of the Energy Union and Climate Action, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

5 dimensions:

energy security**internal energy market****energy efficiency****decarbonisation****research, innovation and competitiveness**

71 measures in 7 sectors covered in Estonia



NECP is based on Estonia Low Carbon Strategy and existing development plans in following sectors:

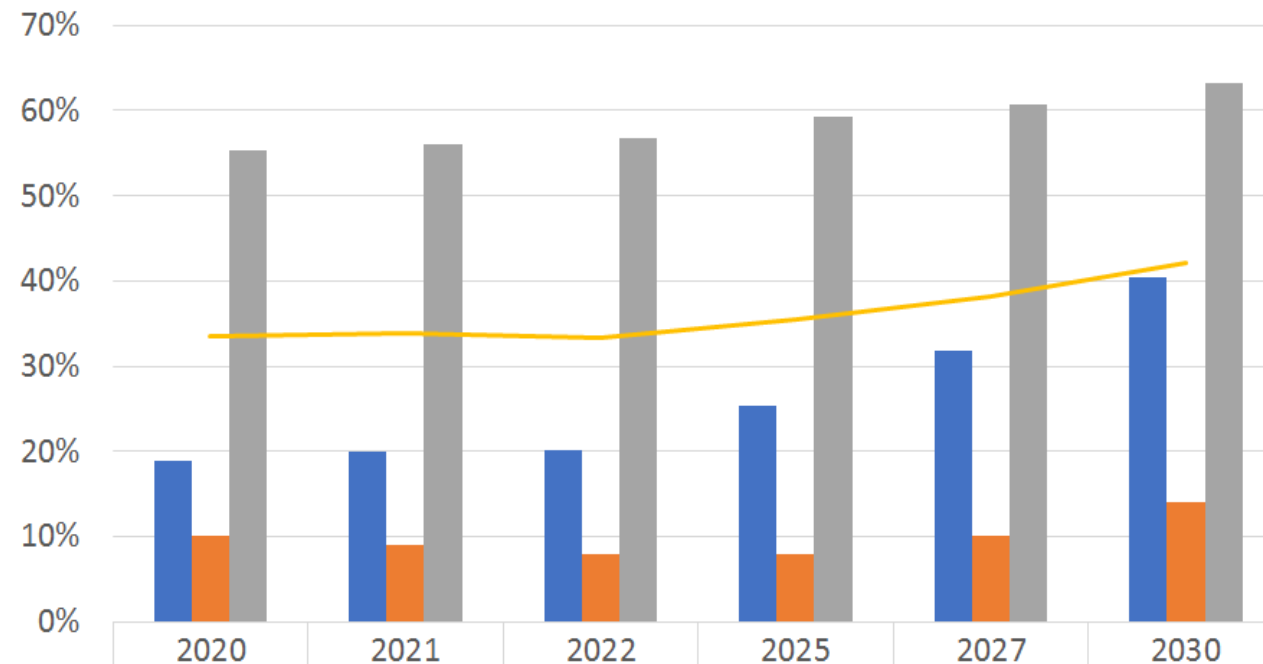
- **Energy sector**
- **Building stock**
- **Transportation**
- **Agriculture**
- **Waste management**
- **Forest management**
- **Industrial processes**

Renewables objectives



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Taastuvenergia trajektoori kujunemiskõver 2020-2030



Taastuvelektri osakaal	19%	20%	20%	25%	32%	40%
Taastuvenergia osakaal tanspordis	10%	9%	8%	8%	10%	14%
Taastuvenergia osakaal soojamajanduses	55%	56%	57%	59%	61%	63%
Taastuvenergia osakaal lõpptarbimisest kokku	34%	34%	33%	36%	38%	42%

Renewables



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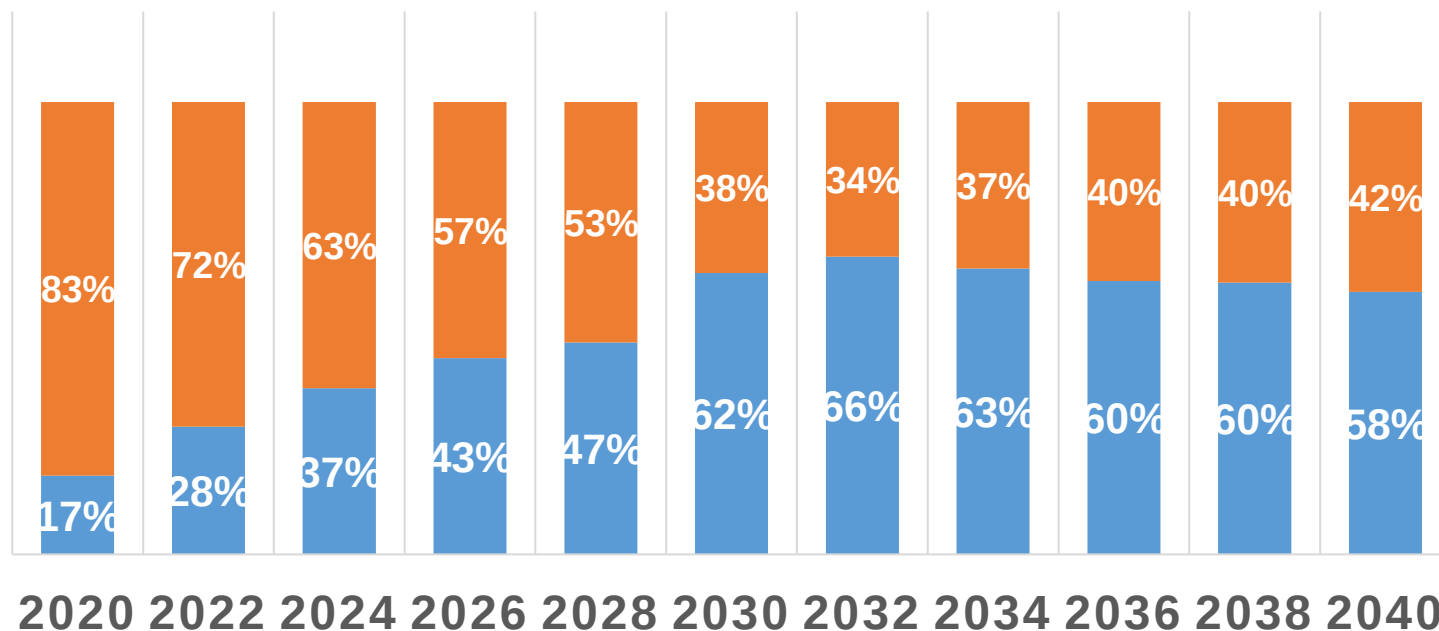
Increase by sectors (GWh)	2017	2030	Increase by
Renewable electricity	1 763	4325	2 562
Renewables in transportation	34	690	655
Renewables in heat and cooling	9 062	11 000	1938
Renewable energy in total	11 034	16015	4 981

Dispatchable vs intermittent capacity



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- Juhitavad (biogaas, jäätmed, gaas, põlevkivi, puit)
- Juhitamatud (päike ja tuul)



Source: Balmorel model

Citizen energy communities

Directive on common rules for the internal market for electricity EU/2019/944 Art 16 - *Citizen energy communities*

- provide environmental, economic or social community benefits rather than to generate financial profits
- generation, including from renewable sources, distribution, supply, consumption, aggregation, energy storage, energy efficiency services or charging services for electric vehicles or provide other energy services to its members or shareholders
- are financially responsible for the imbalances they cause in the electricity system

➤ ***Electricity Market Act amendment in process, in force January 2021***

Renewable energy communities

- Directive on the promotion of the use of energy from renewable sources EU/2018/2001 Art 22 - *Renewable energy communities*
 - produce, consume, store and sell renewable energy, including through renewables power purchase agreements
 - share, within the renewable energy community, renewable energy that is produced by the production units owned by that renewable energy community
 - access all suitable energy markets both directly or through aggregation in a non-discriminatory manner
- **Energy Sector Organisation Act amendment in process (June 2021)**

Energy cooperatives – again!

<https://www.rescoop.eu/community-energy-map>

- 1939 there were 24 electricity cooperatives with 700 members in Estonia which led to creation of Estonian National Power Committee with aim to power all country and to build high voltages transmission system
- During soviet time local energy systems of consumers (for example electricity network in cottage and industrial areas as well as heating cooperatives in apartment houses)
- 2020 one closed distribution system in Paldiski industrial park, 10 000 apartment associations

Energy community pilot study in Estonia

- 2015 project on “**Best practices, business models and incentives for launching small-scale electricity and heat cooperatives**” http://basrec.net/wp-content/uploads/2014/10/EDF_EnerCoop_BASREC_report_final.pdf
- experiences with energy cooperatives of Baltic Sea Region Energy Cooperation (BASREC) countries
- The need - unsustainable solutions of heat supply and dissatisfaction with the security of electricity supply in Estonian rural settlements (villages with less than 300 inhabitants)
- **10 communities in Estonia were tested**

Potential of energy communities in Estonia

- **heating** - in the network areas of district heating with high price for heat and low consumption density; **apartment buildings and social buildings with local central heating, stove and fireplace heating** (8.3% of final consumption in heating from all buildings, 474 GWh/y)
- **electricity** - **installation of solar panels in apartment buildings and social buildings to cover self-consumption** of the buildings (3 % of annual electricity need of the buildings, 0.62% of final consumption in electricity from all buildings, 30 GWh/y)
- Even in small islands and on the coast, the buildings are mostly not located to the places open to the winds, in order to use wind by the means of small wind turbines for the self-consumption of the buildings

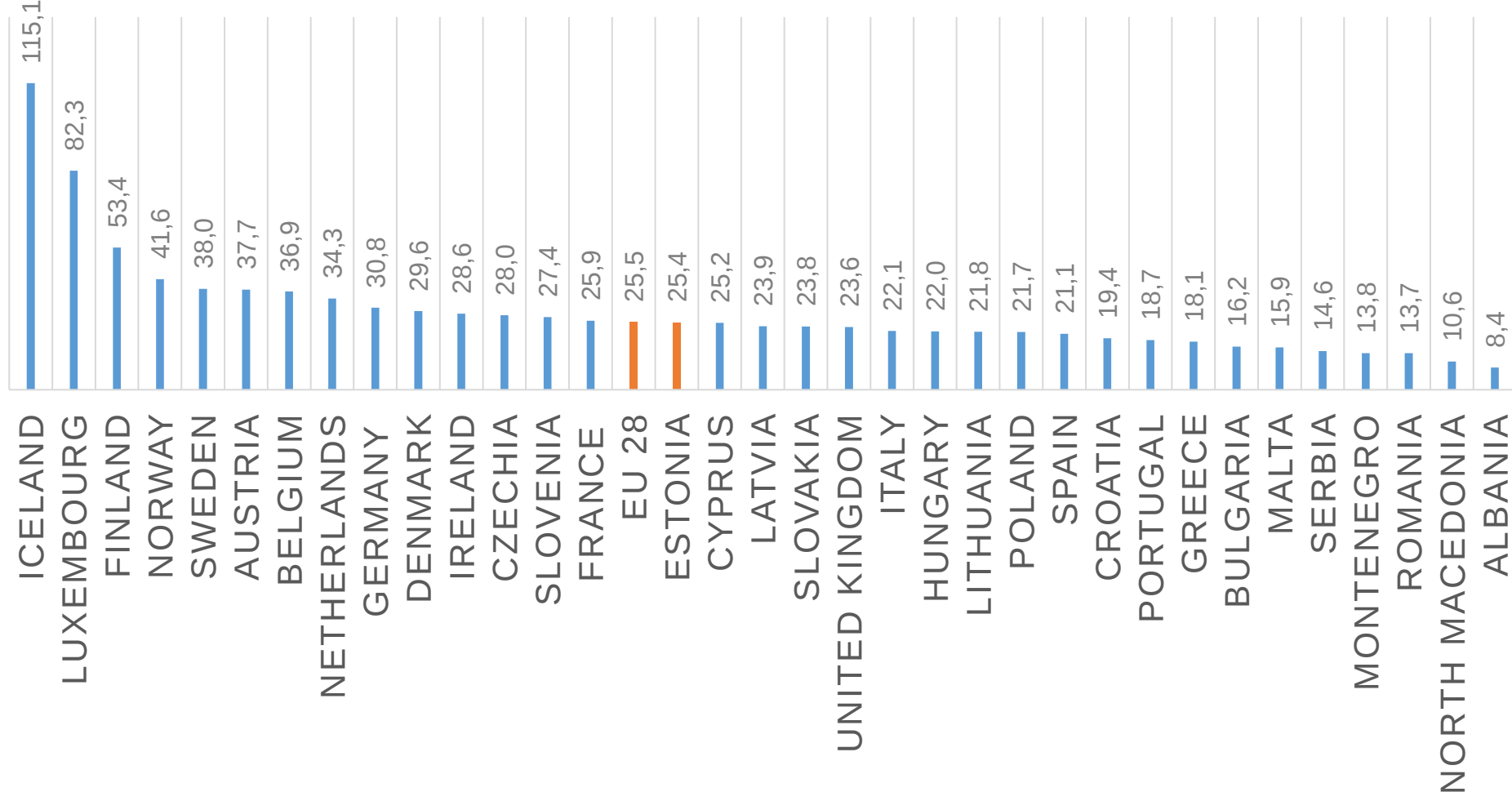
Positive social and economic impact

- Smaller energy price due to fuel efficiency and no network fee
- Higher price of real estate
- Less PM_{2,5} emission and related health effects on high density areas with wood fuel burning
- Jobs related to building reconstruction and energy solution works
- State budget income

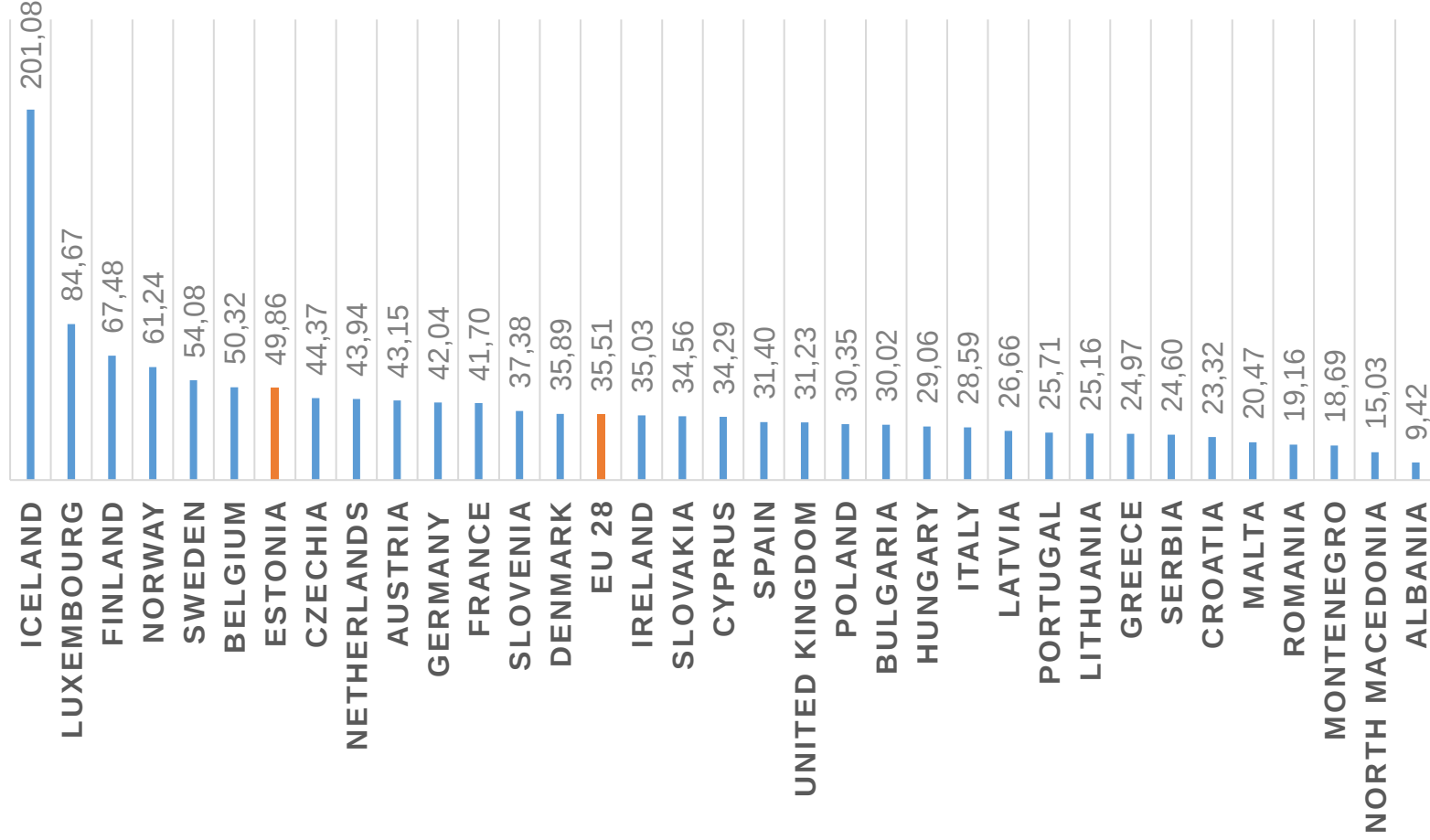
Preconditions for energy communities

- **income** (2018 Estonia median equivalized net income = 10 524 euro/139 euro/MWh = 75,7 MWh, Luxembourg 289,7 MWh and Finland 176,6 MWh of electricity)
- **price of electricity** (the higher price the higher is number of energy cooperatives/communities in MS)
- **reconstruction of buildings** (4% of apartment houses from before 2000 are renovated in Estonia)
- **production for own consumption** (no network fee)
- **availability of new technologies** – storage, aggregators services for consumption management
- **Available information, understanding and will**

Final energy consumption MWh/inh



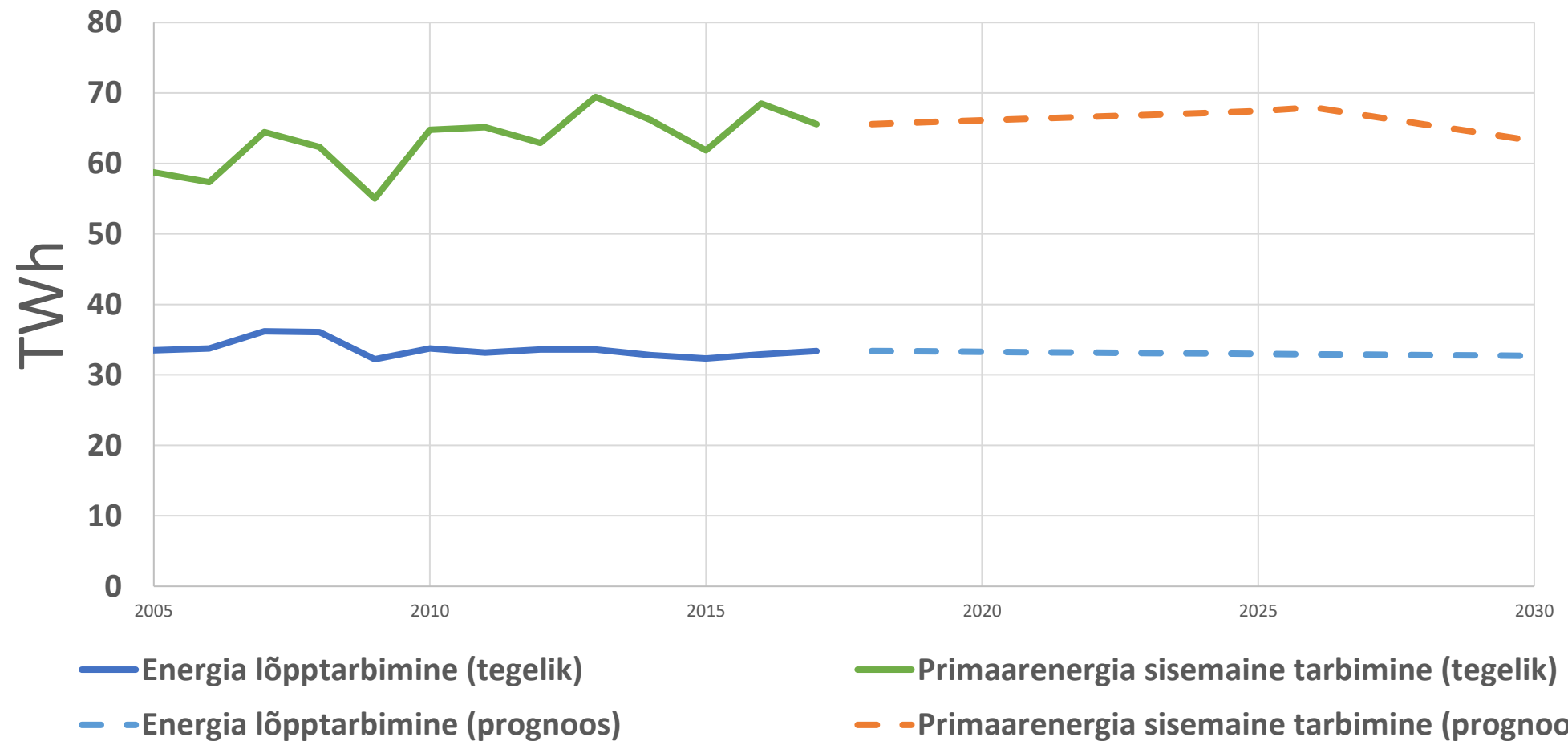
Primary energy consumption MWh/inh



Prognosis of energy consumption



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Thank you!

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