

PO2 A Low CARBON AND GREENER EUROPE EU INVESTMENT 2021-2027



Ramūnas Dilba
Ministry of Energy

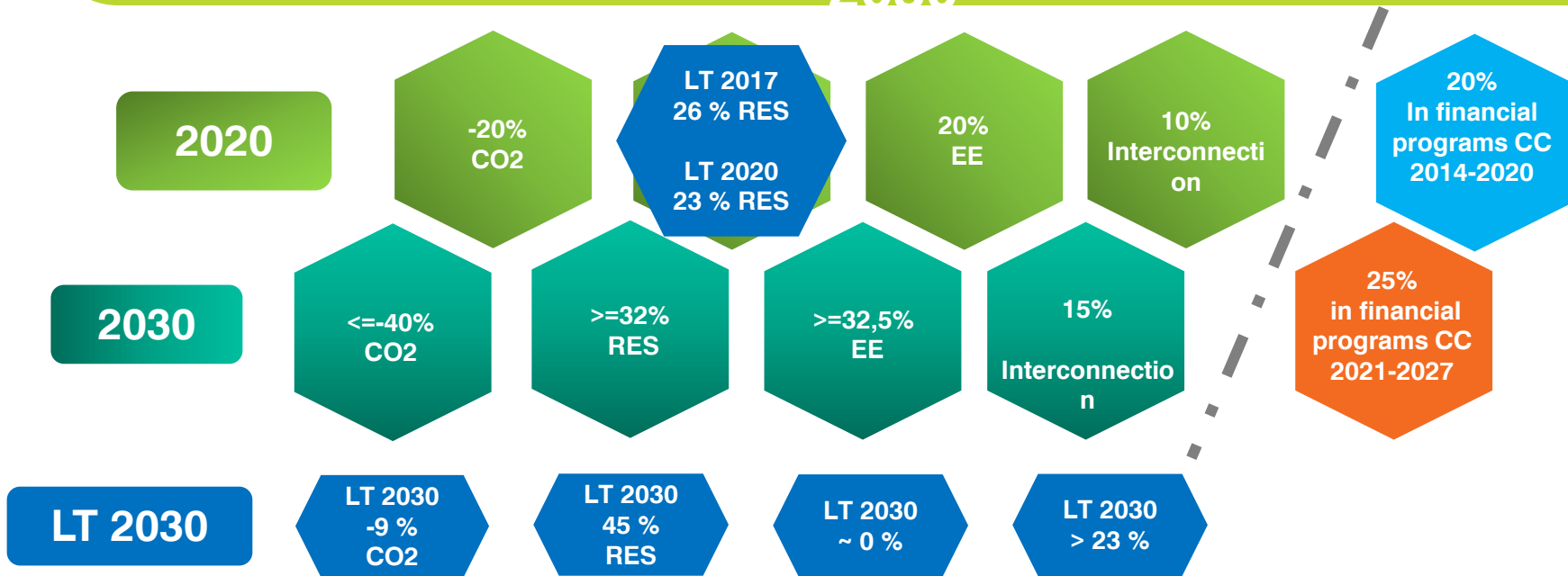


Essential highlights of the UK in the national report Lithuania 2019.

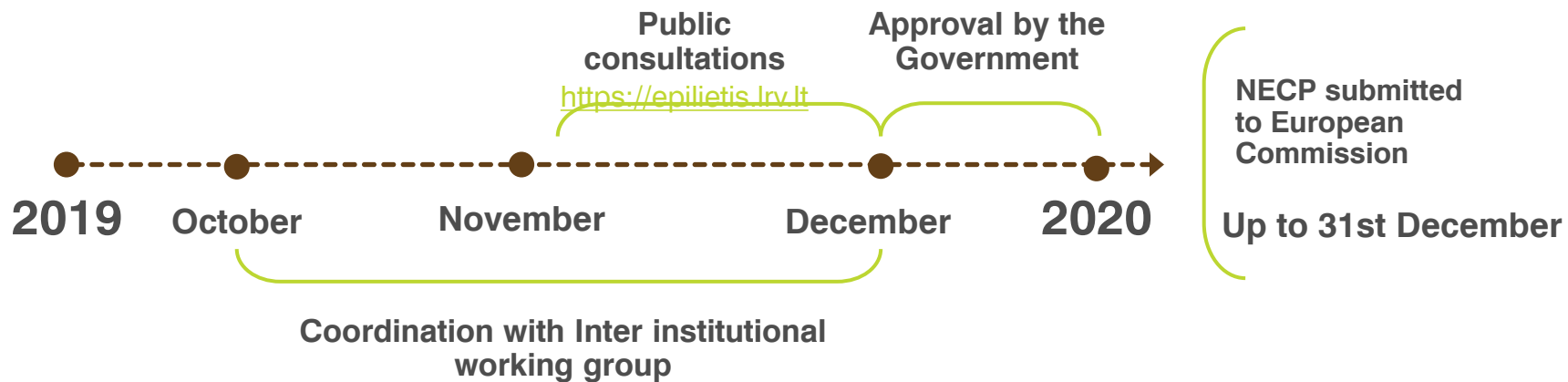
- Low efficiency resources (LT - 0.8 EUR/kg vs EU average - 2.0 EUR/kg)
- Behind the EU average in the field of eco-innovations
- **Low RES share in the transport sector**
- To fully exploit the potential of production capacities of the DH sector and to increase the share of RES in heat energy production, **investment into heat storage equipment is needed.**
- To ensure 70% of local electricity generation by 2030, **investment into wind and solar energy generation capacities is needed.**
- To integrate growing quantities of RES into the network, **investment should be done into smart energy systems** (transmission, distribution and storage infrastructure) **and increase of balancing capacities**



EU Energy Union and Climate Change goals 2020 and 2030



National Energy and Climate Plan

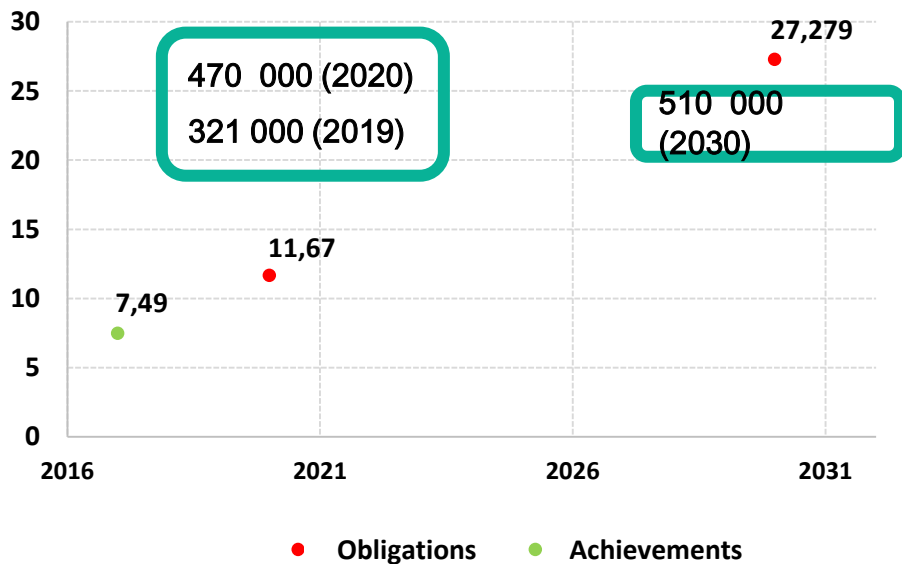


SO 2.1 ENERGY EFFICIENCY

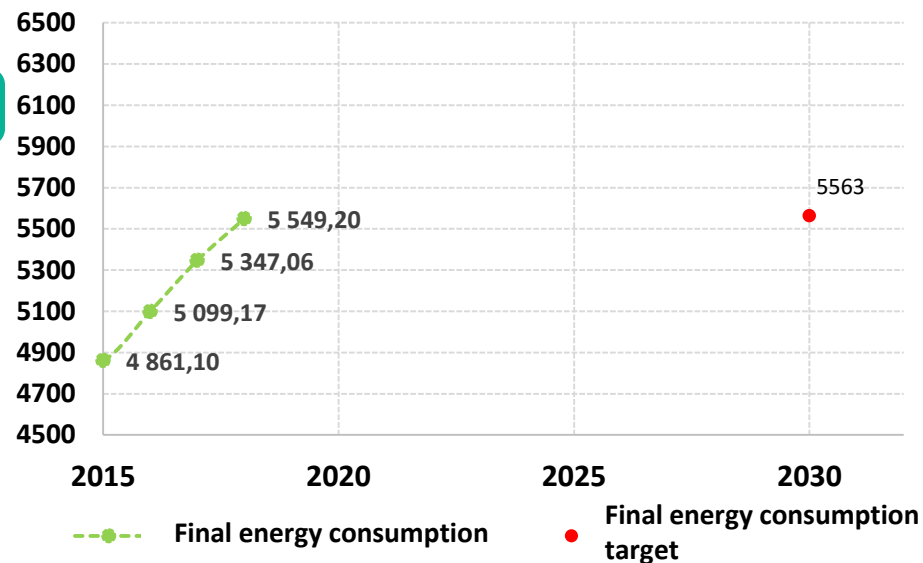


Energy efficiency targets for 2030

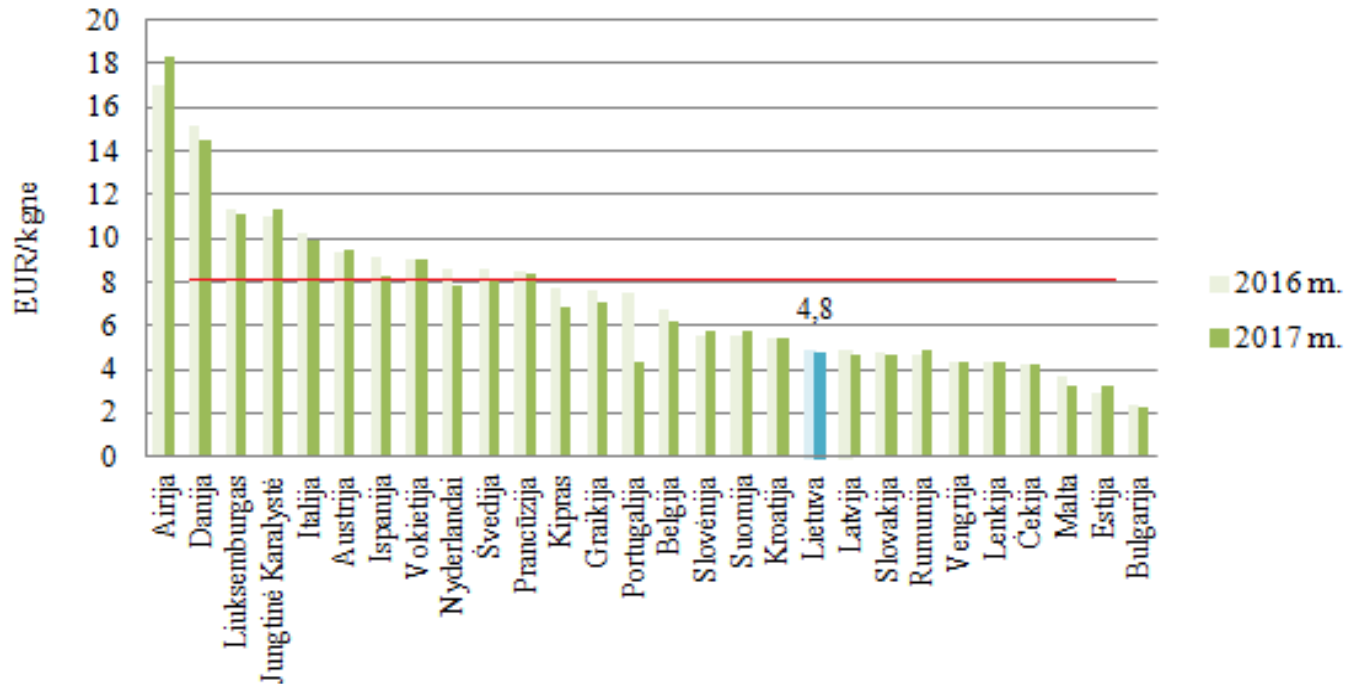
Energy savings obligation for Lithuania 2020 ir 2030, TWh



Actual final energy consumption and target for 2030, ktoe



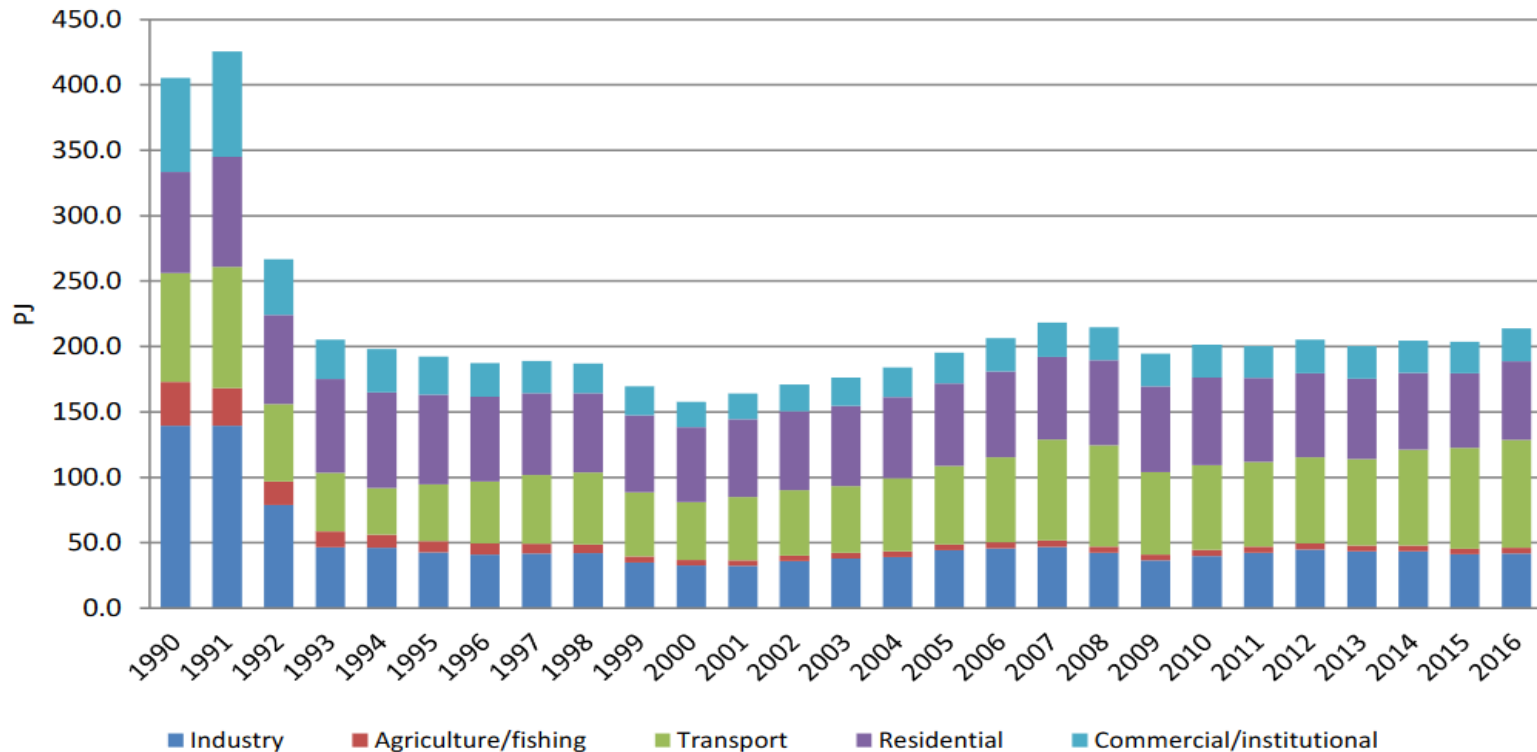
Energy productivity in EU Member States 2016 m.



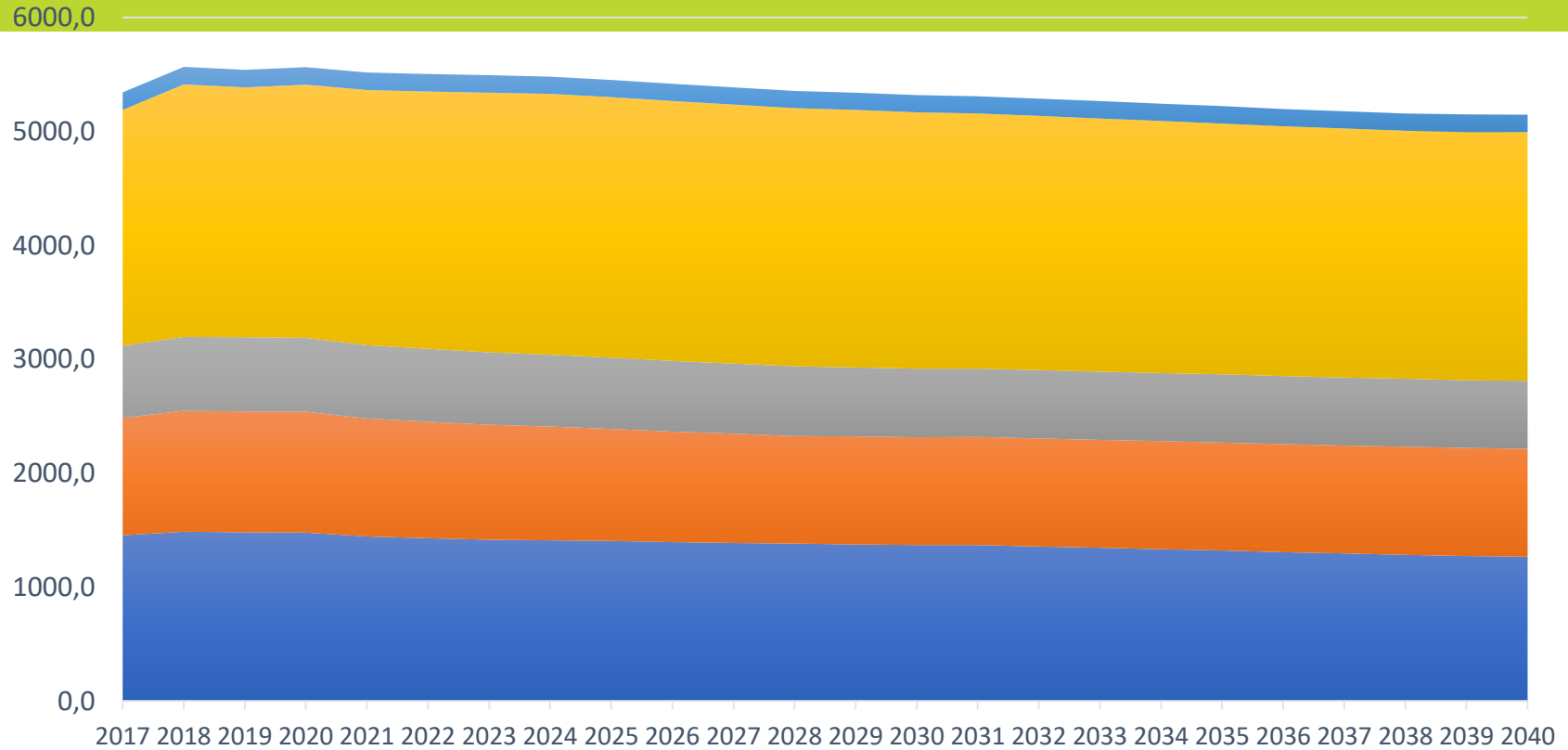
Šaltinis: EUROSTAT



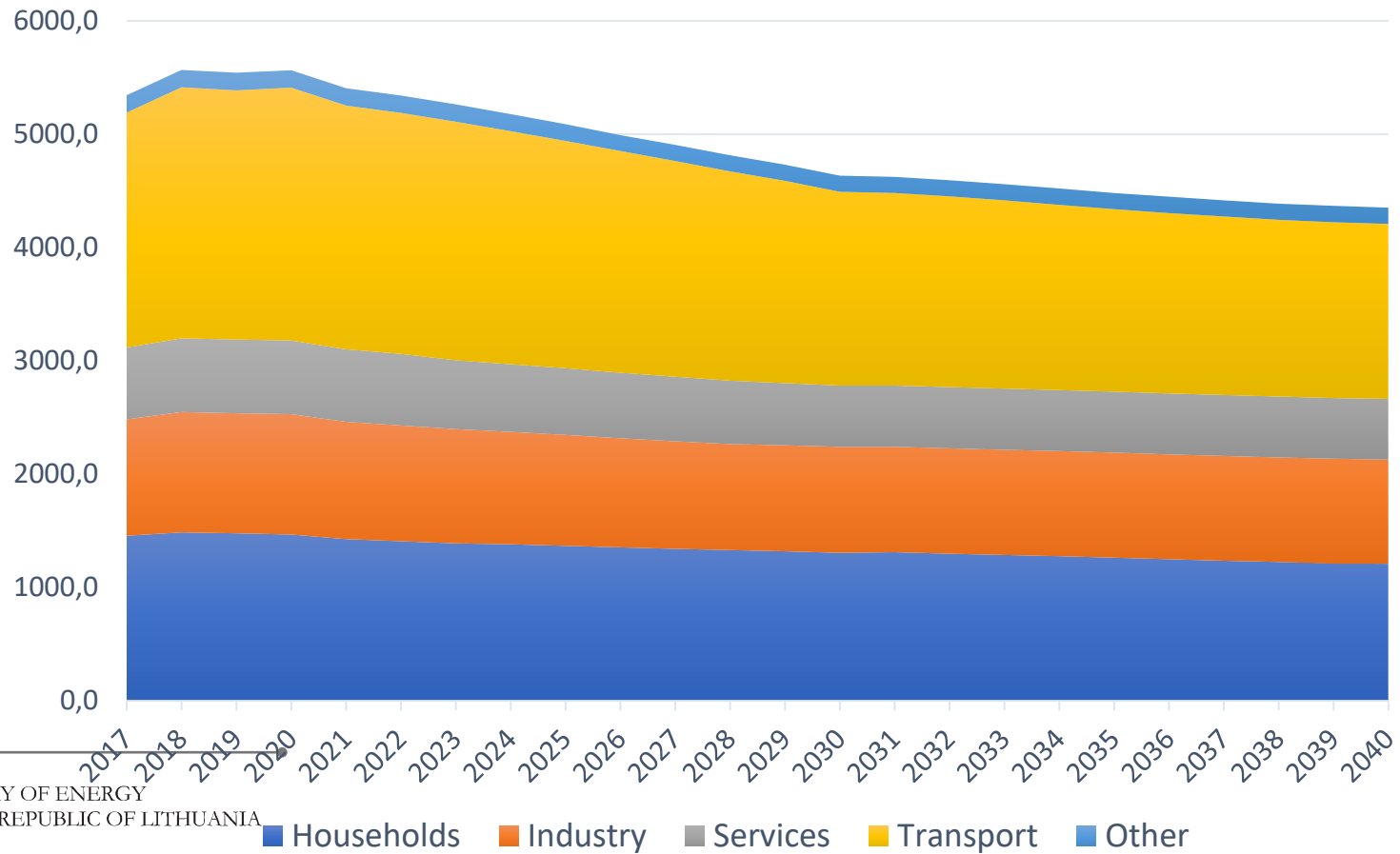
Final energy consumption in Lithuania



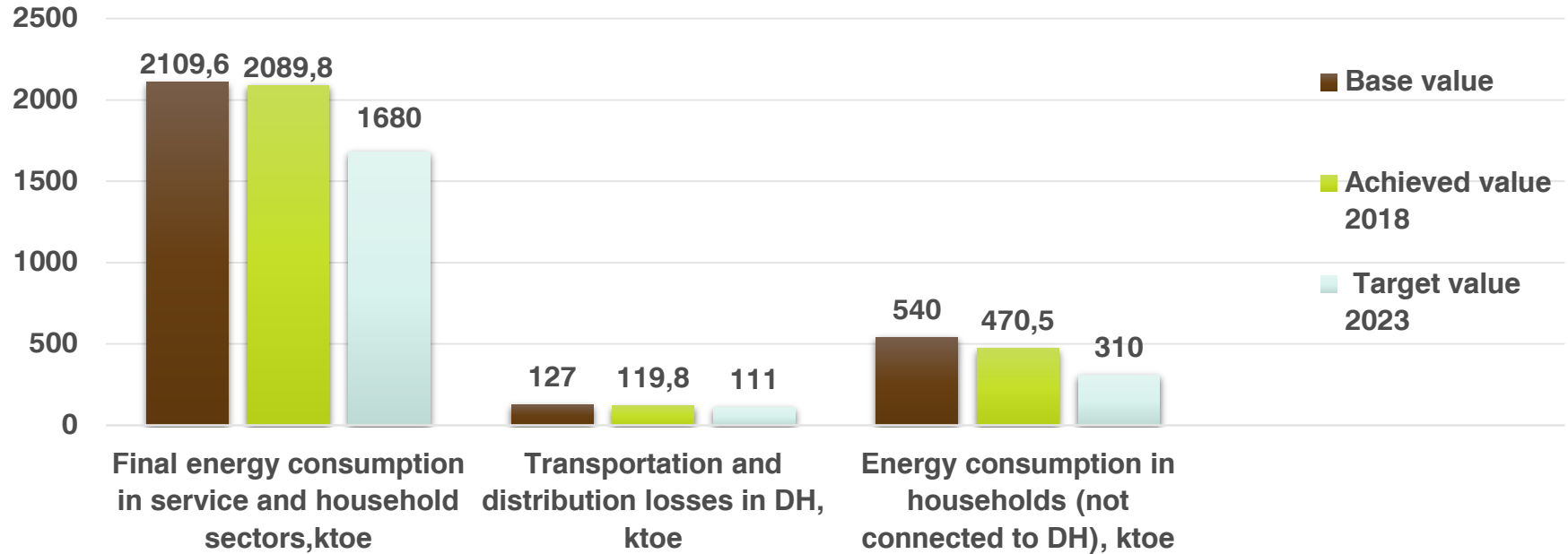
Final energy consumption (WEM) Ktoe



Final energy consumption (WAM) Ktoe



Main indicators in EE sector (2014-2020)



How efficient energy consumption goals are pursued



Renovation of
multi-apartment
buildings

35 % (ESF)

Renovation of public
buildings

7 % (ESF)

Saving 11.67 TWh (goal) in 2014-2020

Excise duties and taxes
on fuels
27.4 %

Saving 7.5 TWh (fact) in 2014-2017

Agreements on energy
consumers' education
and consulting **0.6 %**

Energy saving agreements
with energy companies
15.6 %

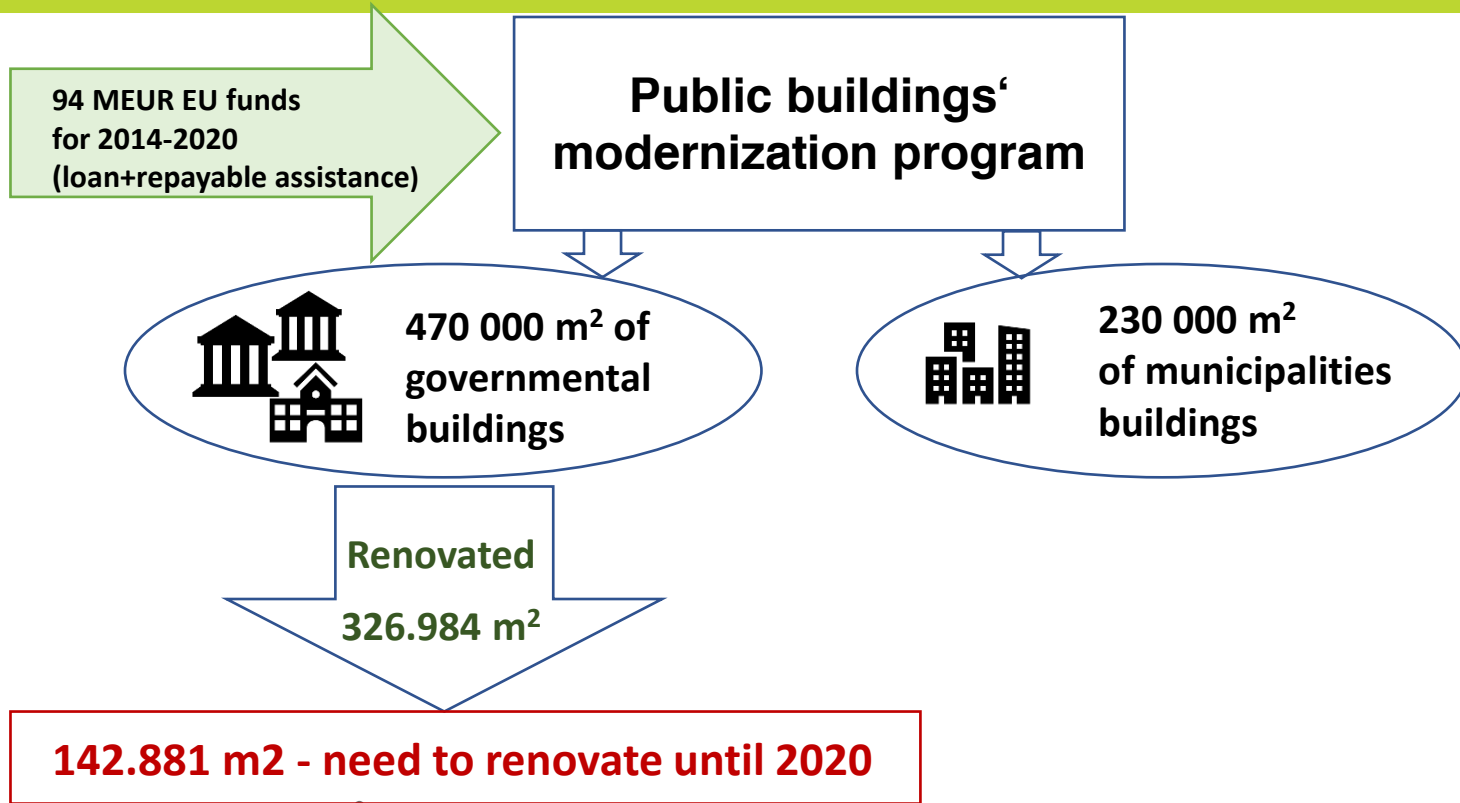
Measures implemented
within CC and LEIF
programmes
14.4 %

PSO for industry

Replacement of
boilers in households
(ESF)



Modernization of Public Buildings



NATIONAL DEVELOPMENT PLAN (TARGET NO. 6) (PROJECT) RESPONSIBLE INSTITUTION (MINISTRY OF ENVIRONMENT)

Ensure air quality and sustainability of natural resources, diminish impact to climate change and resilience to its impact

Objective:

Increase energy efficiency and RES promotion in multiapartment and public buildings

Indicator:

Impact indicator	Measure	Base line (2018)	Interim indicator 2025 m.	Final indicator 2030 m.
Energy savings in households	GWh	0 (2020)	7 774,52	10 366,02



NATIONAL DEVELOPMENT PLAN (TARGET NO. 6) (PROJECT)

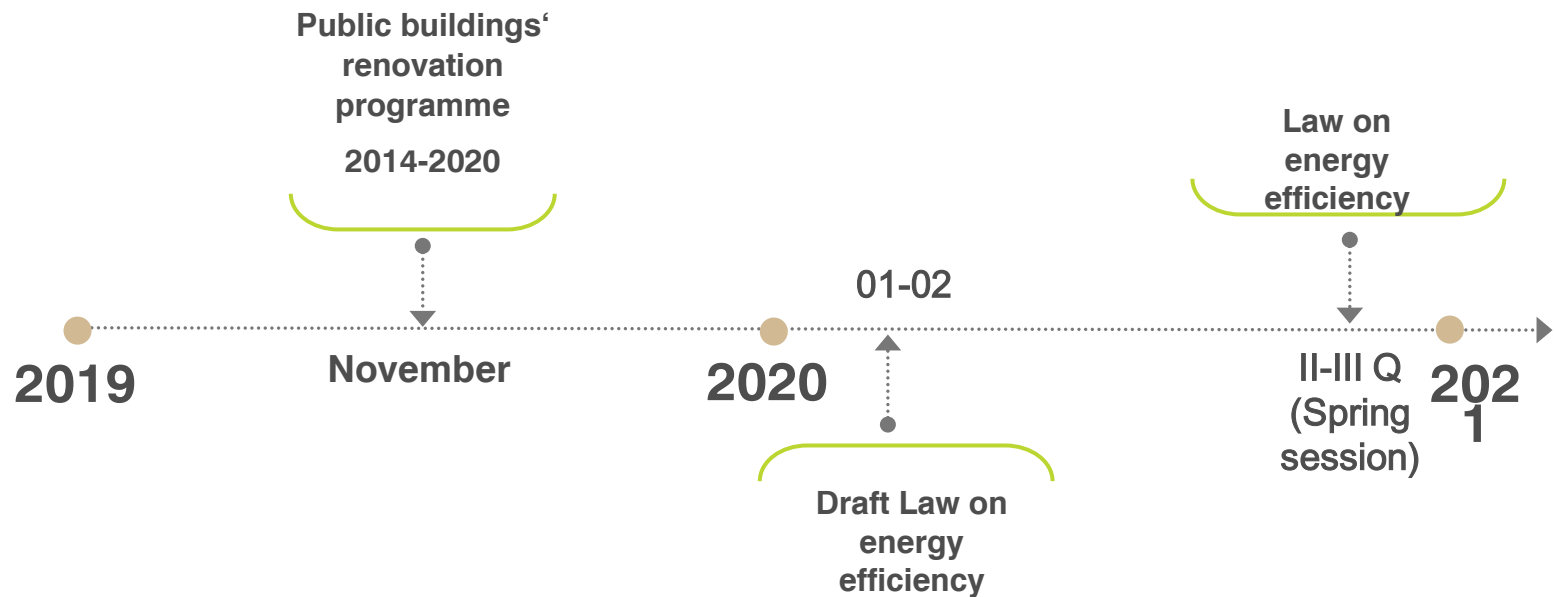
OBLIGATIONS FOR OTHER SECTORS

Ensure air quality and sustainability of natural resources, diminish impact to climate change and resilience to its impact

Impact indicator	Measure	Base line (2018)	Interim indicator 2025 m.	Final indicator 2030 m.
Energy savings in households	GWh	0 (2020)	7 774,52	10 366,02
Energy savings in transport	GWh	0 (2020)	8 183,7	10 911,6
Energy savings in industry	GWh	0 (2020)	4 091,85	5 455,8
Energy savings in agriculture	GWh	0 (2020)	409,19	545,58
TOTAL				27 279



LEGAL FRAMEWORK



Achieving energy efficiency targets 2030

Bigger efficiency requirements for new buildings

Improving efficiency of district heating network by adjusting them for operation in low-temperature regime

Increase of EE in enterprises in other than industry sector **50 GWh/y**

Modernization of Individual houses, replacement of their heat boilers with RES technology or connection them to DH **13,5+400 GWh/y**



Bigger efficiency requirements for new public buildings

Modernization of multi apartment buildings **100 GWh/y**

Agreements with energy companies on energy savings **100 GWh/y**

Agreements with energy suppliers on education and consultations of consumers **300 GWh/y**

Preliminary investment needs – 1587 MEUR

**2021-2030 savings
27,23 TWh**

Modernisation of heating points, heating and hot water preparation systems **10 GWh/y**

PSO for industry **100 GWh/y**

Modernization of public buildings **20GWh/y**



Modernization of Public Buildings: Target for 2030

400 MEUR EU funds
for 2021-2027

Long term Buildings'
Strategy/Public
Buildings' Modernization
Program

EE Directive
(2018)



- renovated 470 000+ 510 000 m² of gov. buildings' area
- achieved at least C class
- Annually saved 20 GWh

Objective 1. Promoting the use of energy efficiency improving measures



Inefficient use of resources

Energy inefficient transport sector

Low efficient industry

Primary and final energy intensity in 2030 is 1.5 times lower than in 2017

Improving EE in households not connected to DH (*replacement of heat pumps with more efficient RES technologies or connection to DH*)

Improving EE in buildings (*renovation of public buildings, modernisation of heating points and/or heating and hot water preparation systems*)

Improving EE in public infrastructure (*modernisation of street lighting, reduction of energy intensity in transport*).

Improving EE in companies (according to energy audit reports)

Use of residual heat energy from industry, service sector or cooling in DH sector.

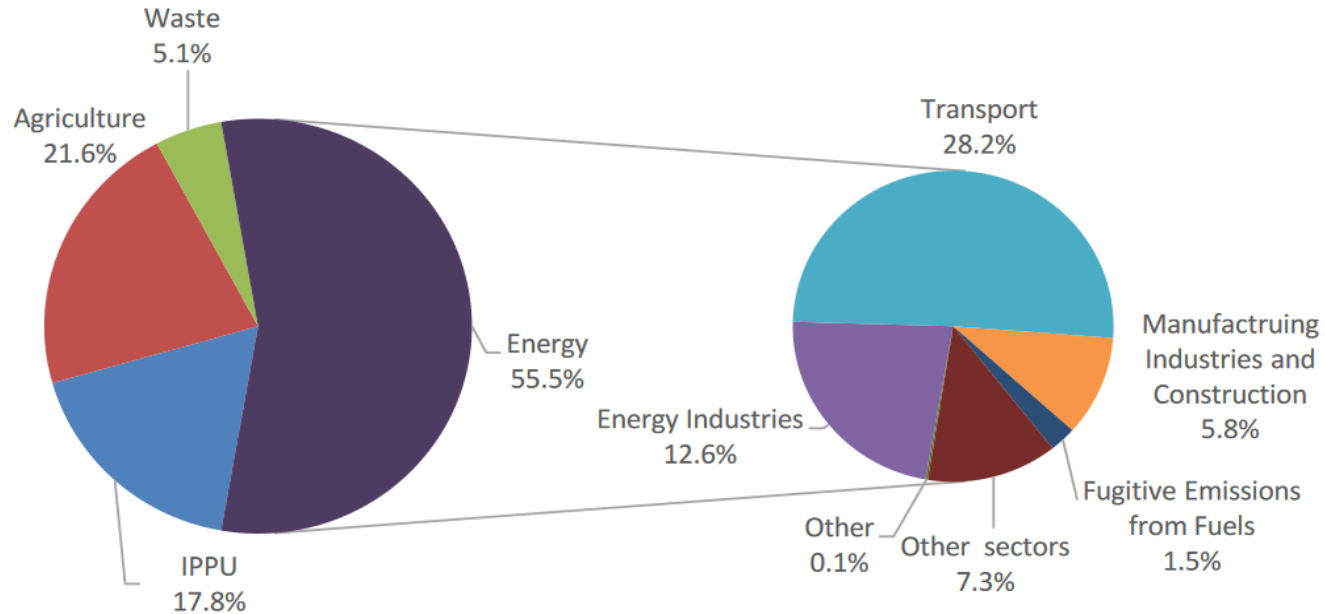
Smart energy metering and managing systems

Improving efficiency of district heating network by adjusting them for operation in low-temperature regime

Biomass boiler plants' modernisation or replacement with RES cogeneration and improving EE.



Structure of Lithuanian GHG emissions (CO₂eq.) by sectors (excl. LULUCF) in 2017



Relative GHG emission reduction targets for 2030 EU non-ETS sectors, %

Non-ETS sector	Average of annual change (from 2016-2018 average to 2030), %	Target compared to 2005, %	Target compared to 2016-2018 average, %
Transport	-3,6	-9,0	-31,0 !!!
Agriculture	-1,3	-9,0	-12,6
Industry	-3,9	-9,0	-32,8 !!!
Waste	-0,9	-40,0	-9,0
Energy	-0,9	-15,0	-9,0
In all:	-2,3	-13,5	-21,1



Enabling condition

Strategic policy framework to support energy efficiency renovation of residential and non-residential buildings

Project of a Program of renovation of buildings by December 2020

1. A national long term renovation strategy to support renovation of the national stock of residential and non-residential buildings is adopted, in line with the requirements of the Directive 2010/31/ EU on energy performance of buildings, which:
 - a. Entails indicative milestones for 2030, 2040 and targets for 2050
 - b. Provides an indicative outline of budgetary resources to support the implementation of the strategic.
 - c. Defines effective mechanisms for promoting investments in building renovation
2. Energy efficiency improvement measures to achieve required energy savings



- **Target:**
 - **Reducing energy consumption in residual buildings 40% by 2030**
- **Measures:**
 - **Renovation of residential buildings**
 - **Renovation of public buildings**
 - **Renovation of non-residential buildings?**
 - **Promotion, supervision and technical support of renovation of public buildings and multi-apartment buildings (TA)**
- **Financial instruments:**
 - **Guaranties combined with subsidies/grants**



Indicators

	Indicators	Measurement unit	Achieved 2014-2018	Projected target value 2014-2023(22)	Target 2021 (23)-2030
1.	Number of renovated multi-apartment houses	houses	2093	3748 (2200 2014-2020 ERDF)	4000 (500 a year)
2.	Number of households with improved energy consumption classification	households	59 452	113 570	120 000 (15 000 a year)
3.	Number of renovated public buildings	buildings	0	25	320 (40 a year)
4.	Annual decrease of primary energy consumption	TWh/year	1,9	5,4	4,3
	<i>In residential buildings</i>		1,6	4,6	3,6 (0,1 a year) (5,5 2021-2030)
	<i>in public buildings</i>		0,3	0,8?	0,7 (0,02 a year)
5.	Total annual reduction of greenhouse gas emissions	kt CO ₂ equivalent	128,7	205,0	224 (28 a year)
	ERDF investments	million €		331 FI 48,8 TA 7,8 prom	360 FI 708 subsidies



Investment gap

€ 1.600 million for multi-apartment houses (€400 000/house)
(€ 320 million for guaranty 1:5)

€ 160 million for public buildings (€500 000/building)
(€ 40 million for guaranty 1:4)

€ ? for non-residential buildings
€ 528 million for 30 % subsidies

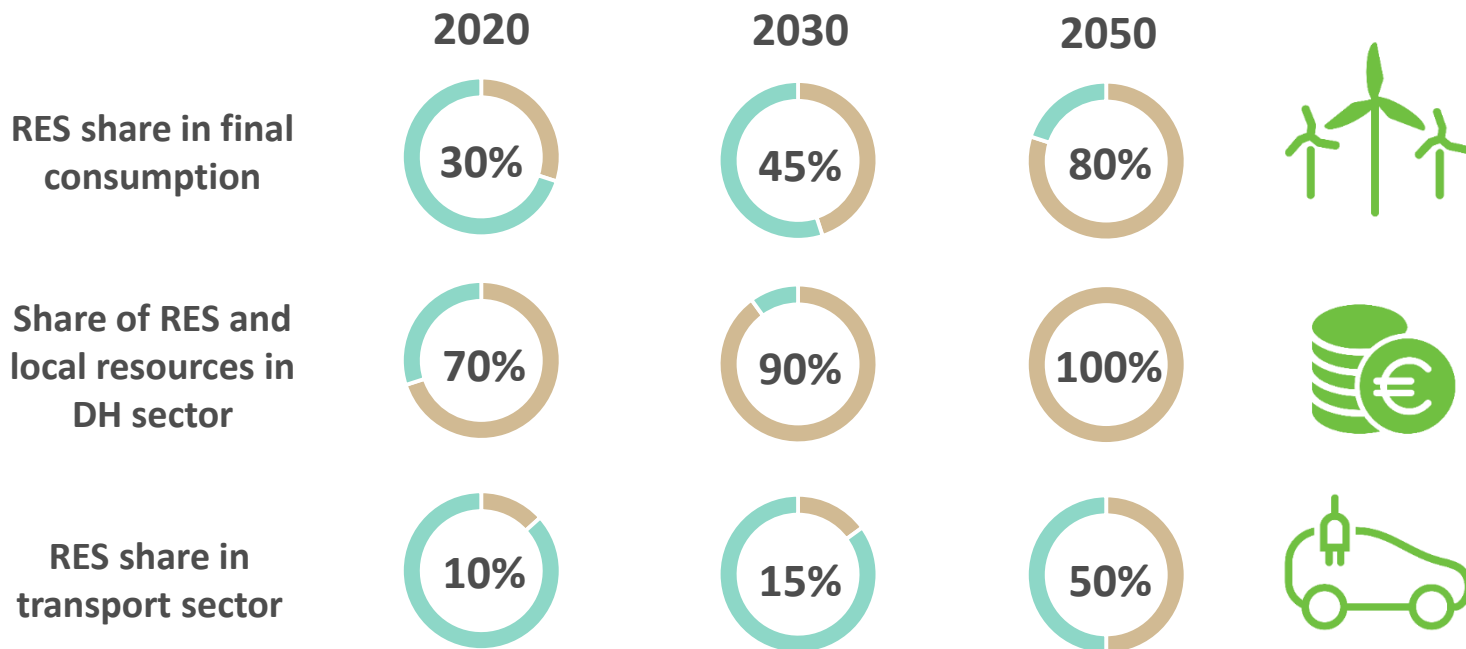
€ 180 million for TA subsidies (€40 000/building + €7,2 million for promotion measures)



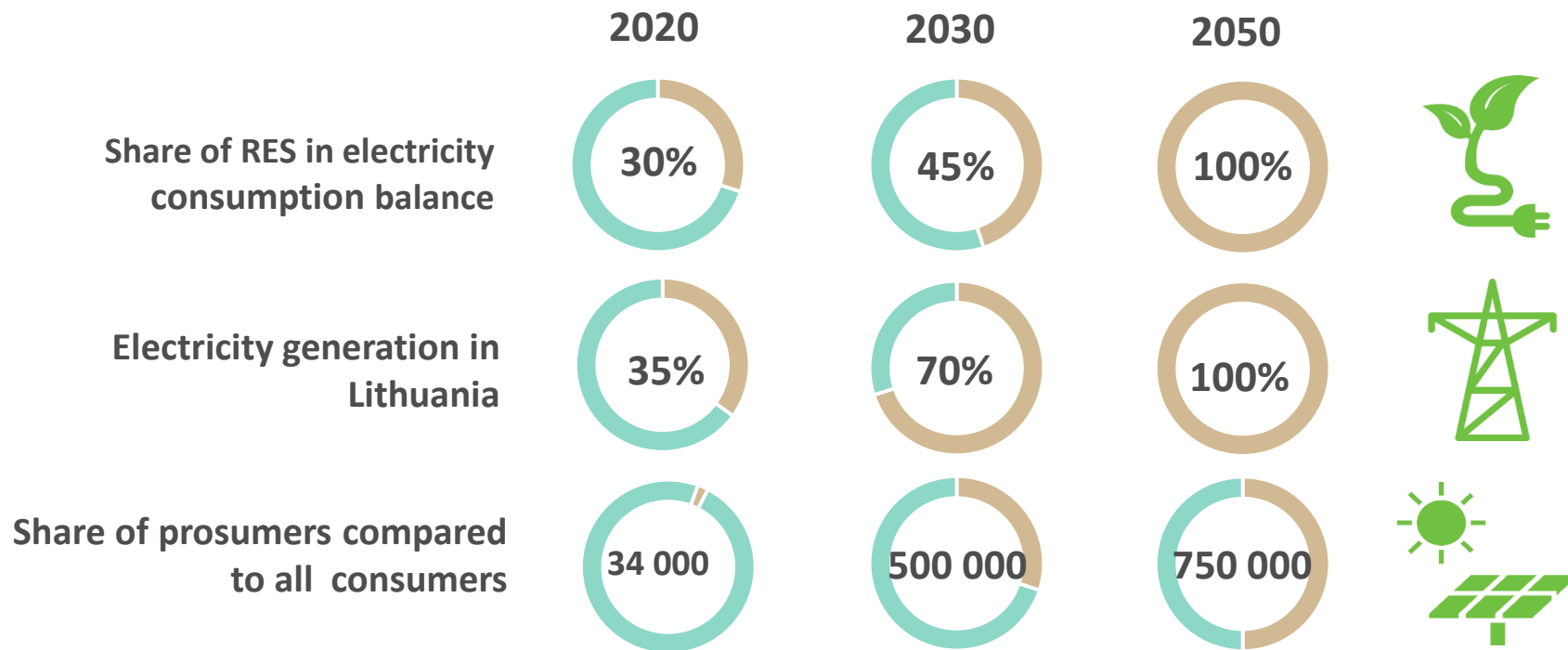
SO 2.2 TRANSITION TO RENEWABLE ENERGY



Long term goals in Lithuanian energy sector (I)

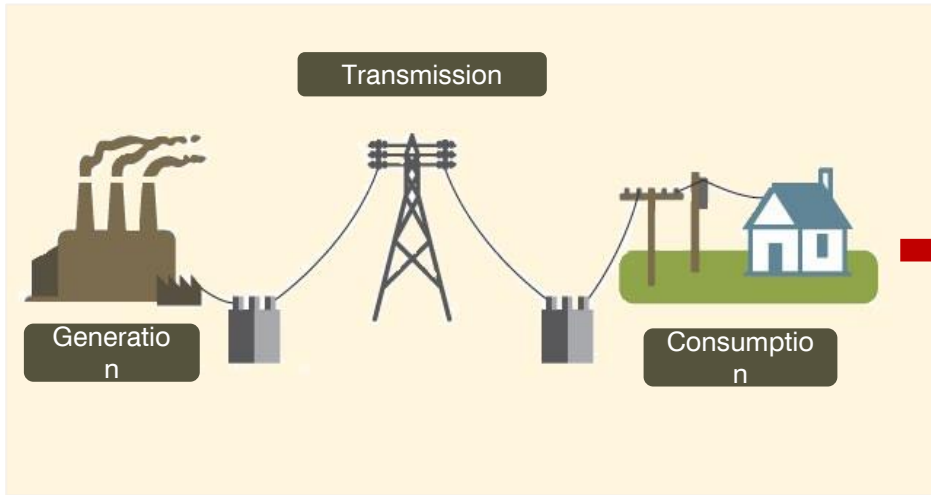


Long term goals in Lithuanian energy sector (II)

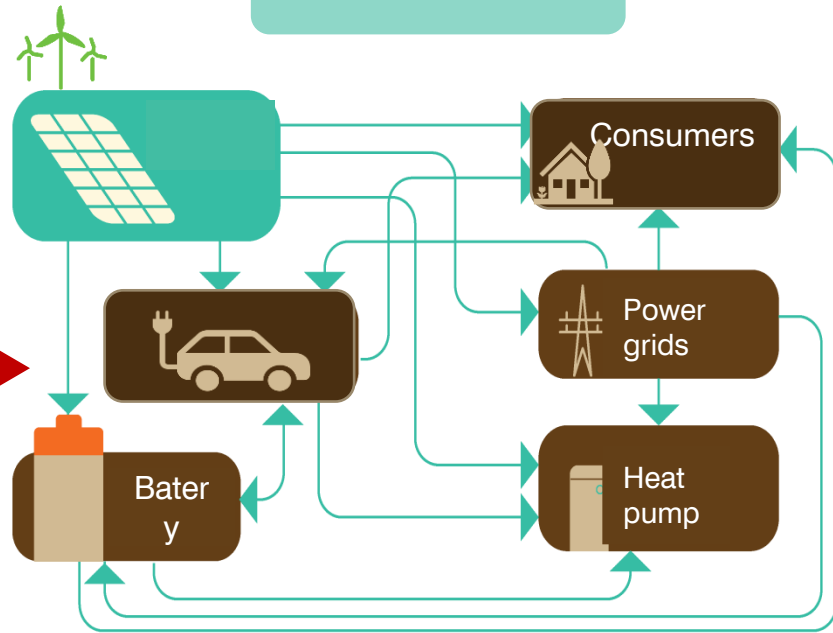


Energy transformation is inevitable

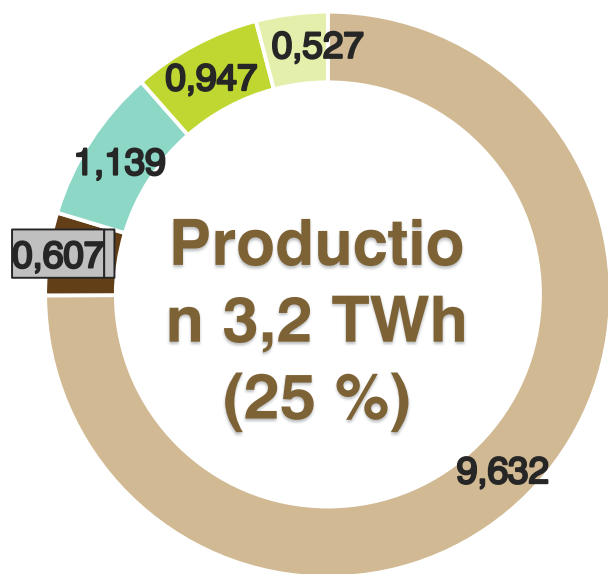
Centralized



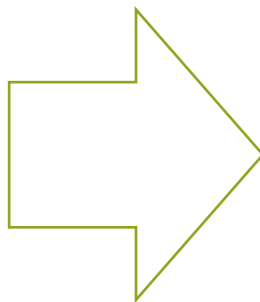
Decentralized



Electricity generation vs demand



**Production
n 3,2 TWh
(25 %)**

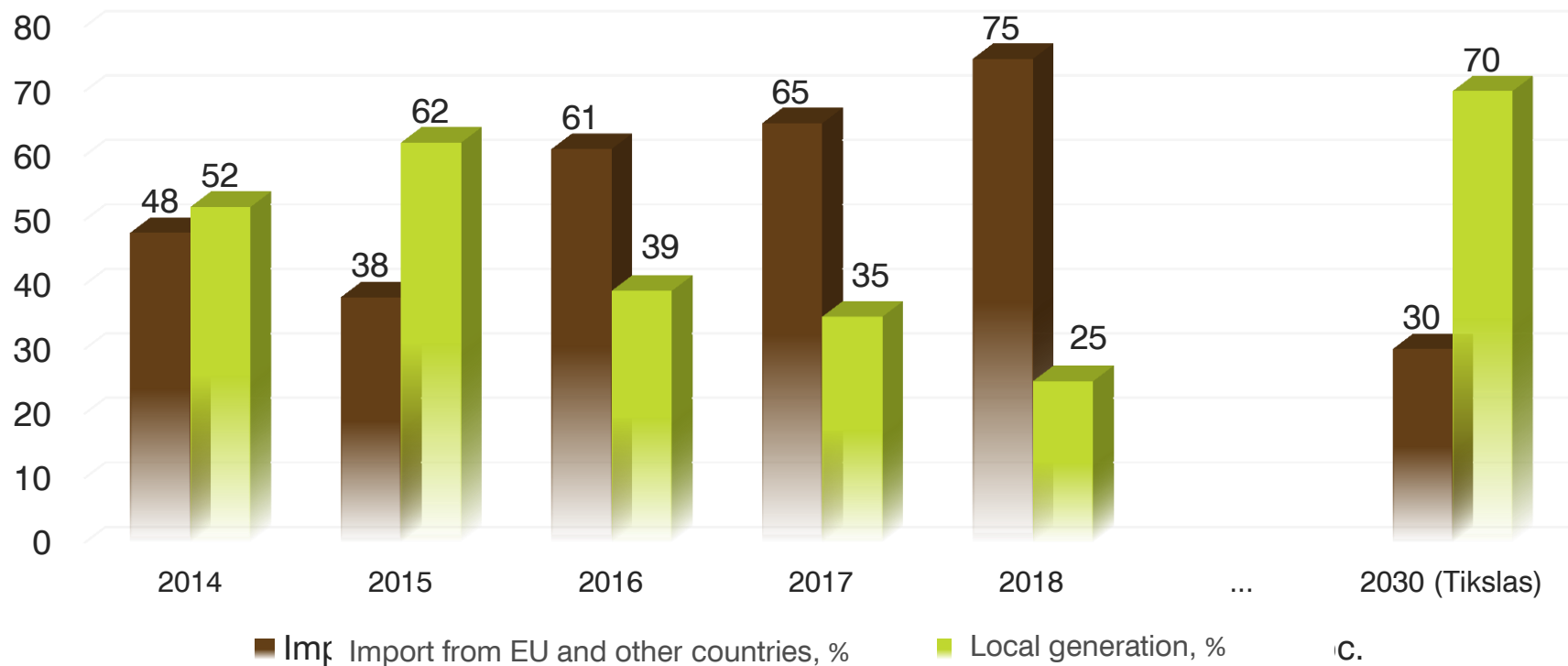


**Demand in
2018¹ -
12,85 TWh**

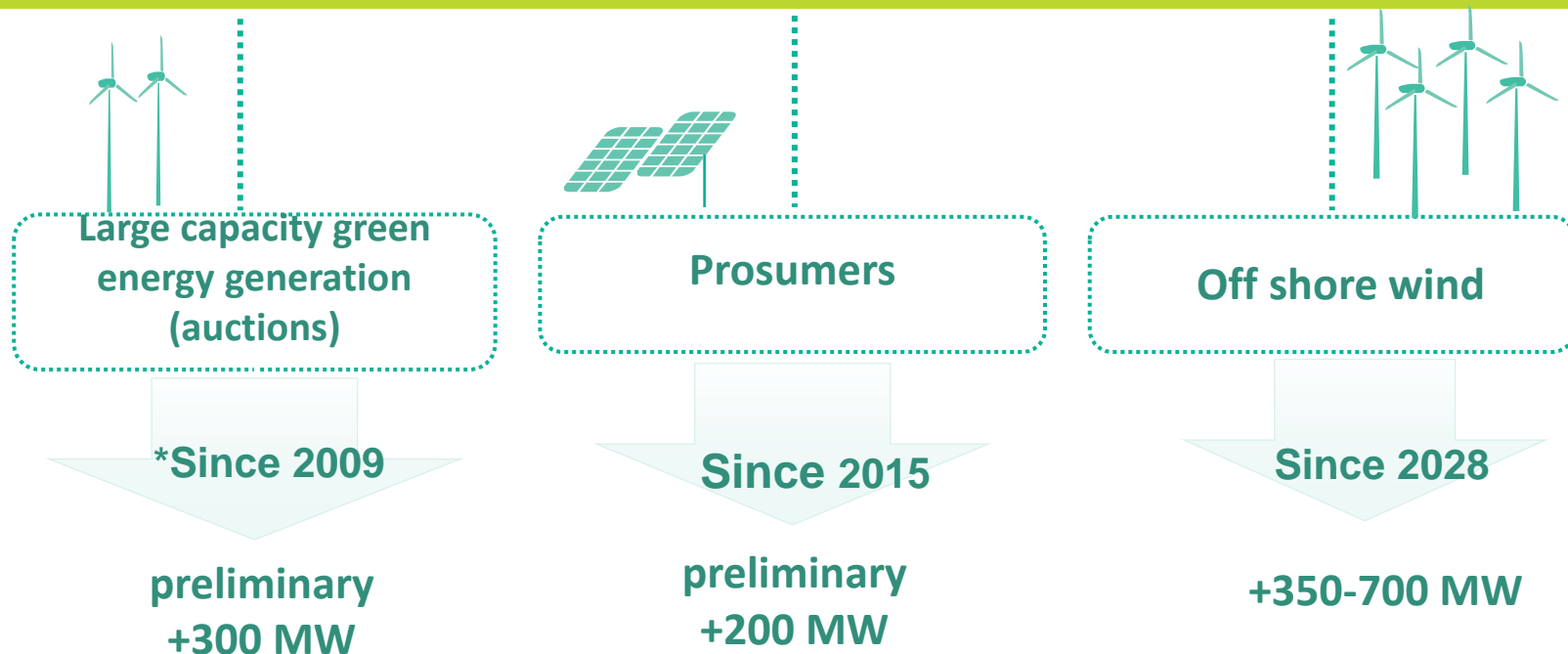
■ Import ■ Thermal PP ■ Wind power plant ■ Hydro power plant including Kruonis HPS ■ Other RES



Import vs electricity generation in Lithuania

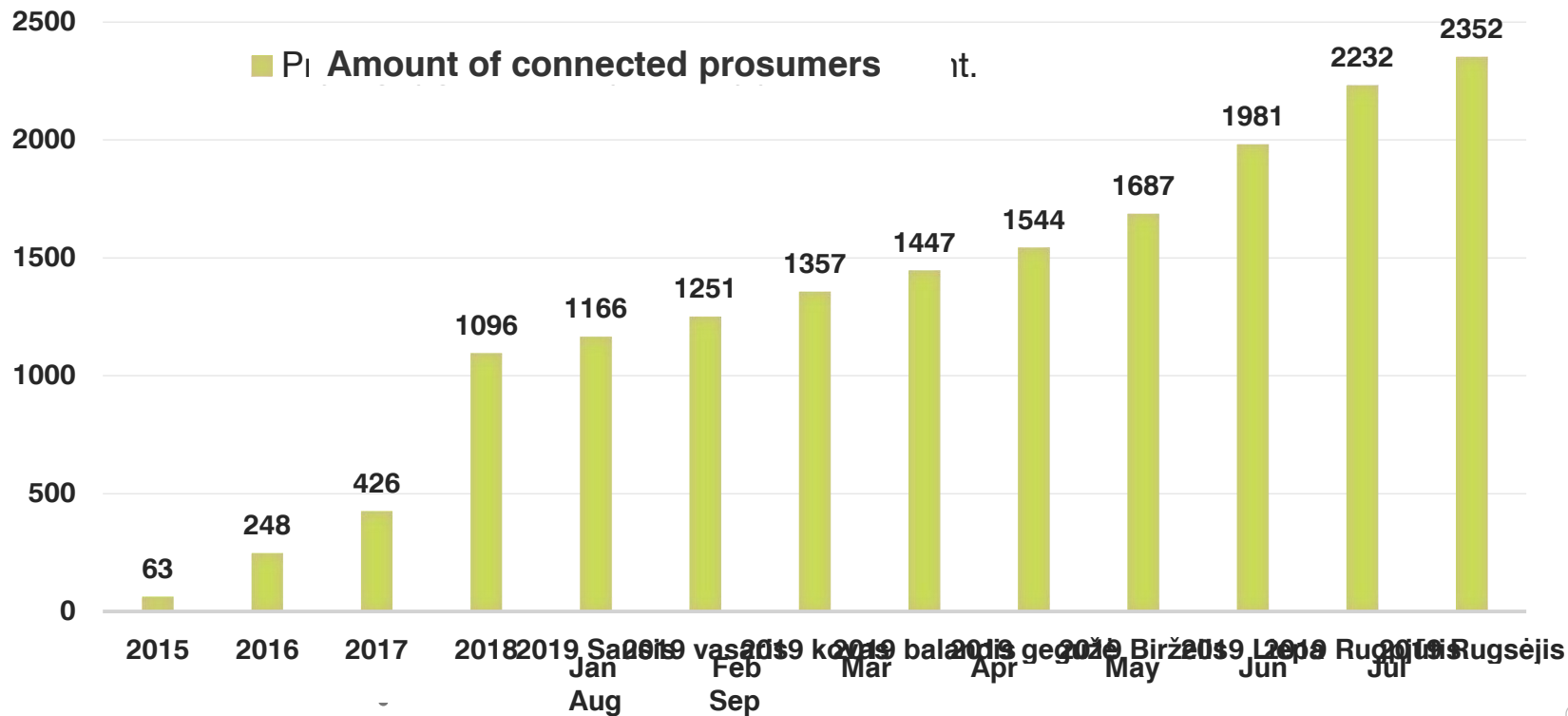


How we are going to produce electricity?

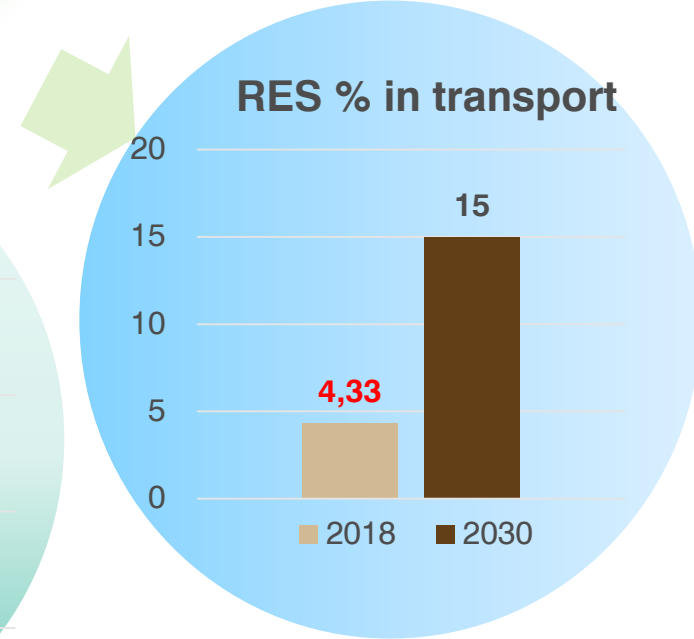
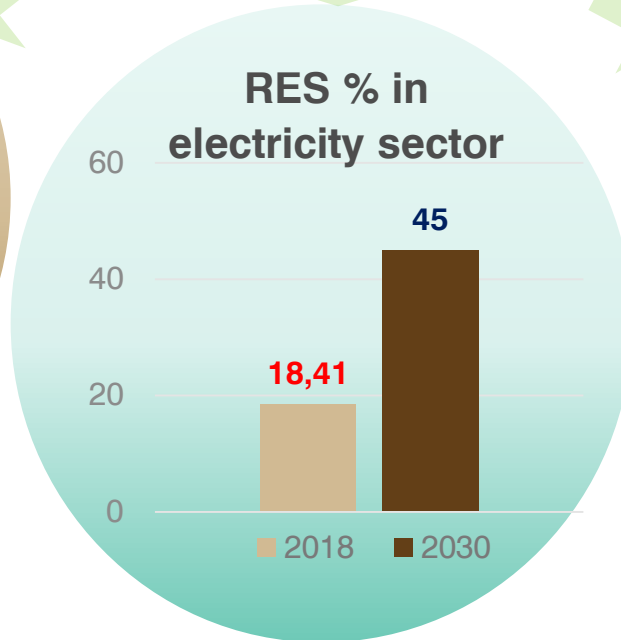
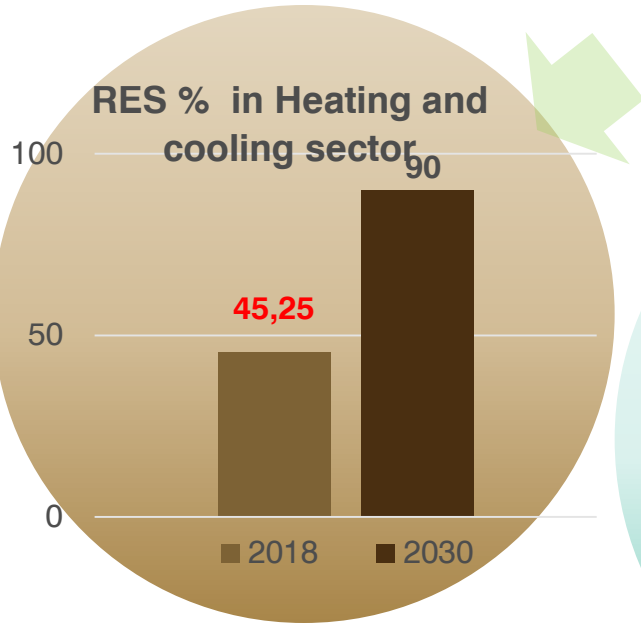
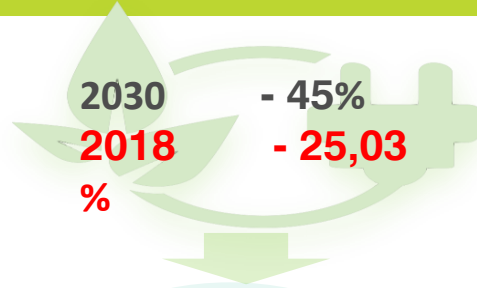


EFFECT – 30% decrease of electricity import

Producing consumers: fast growth



Share of RES in final energy consumption



Objective 2. Promoting use of renewable energy



**Non-competitive
local energy market**

**Adverse impact on
climate change**

Lack of innovations

**2030
RER share
in the final
consumption
on balance
– 45 %**

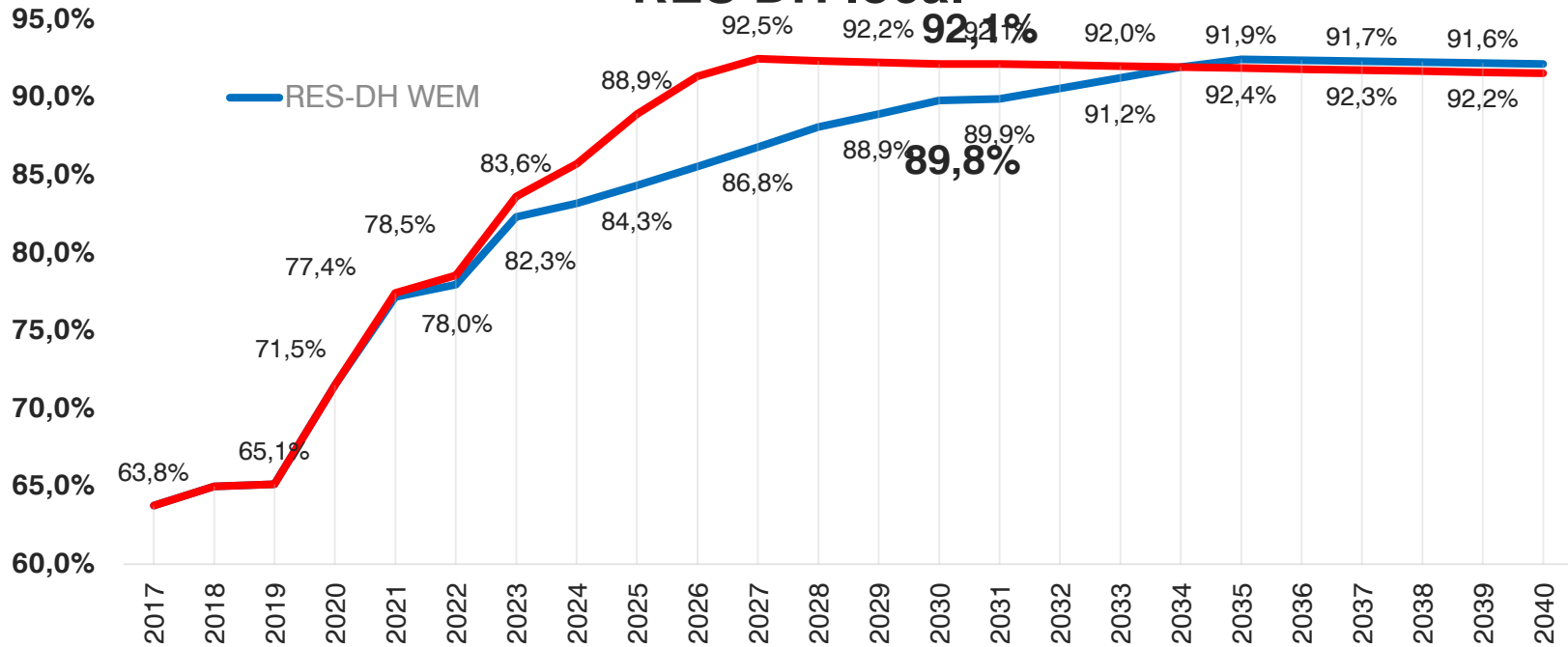
Solutions for installing and storing energy generation from RES

Alternative fuel production and infrastructure for its consumption in transport sector

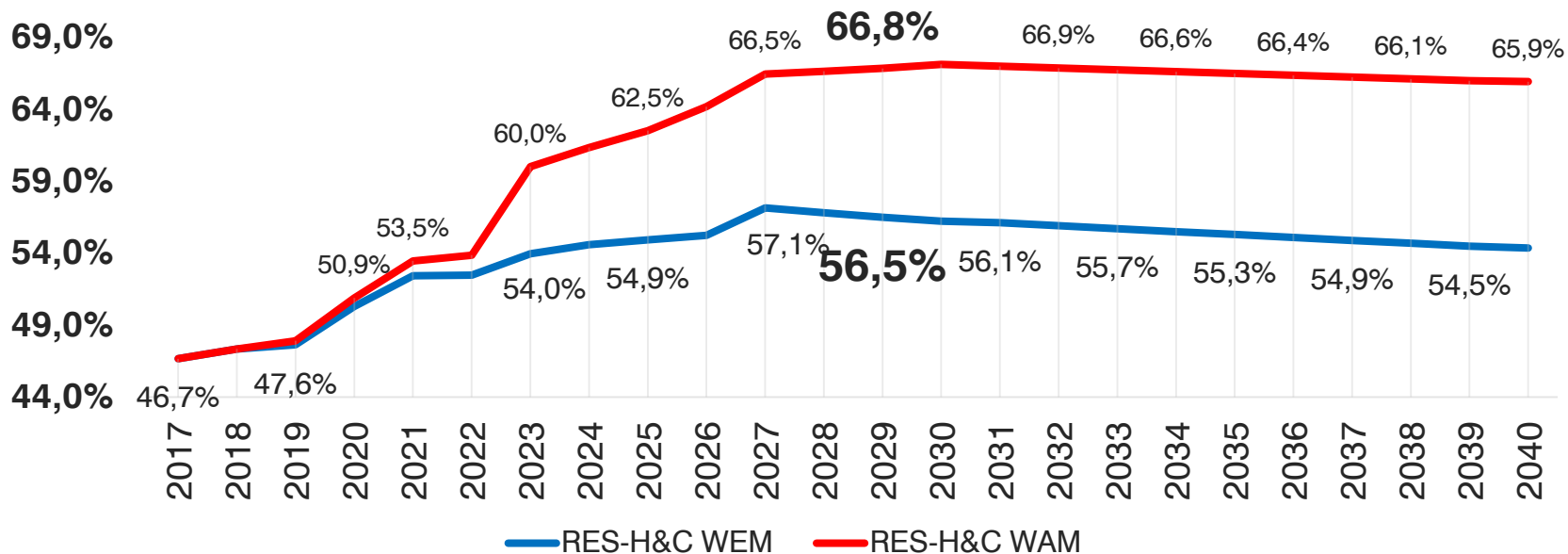
Use of RES and heating energy storages in DH sector



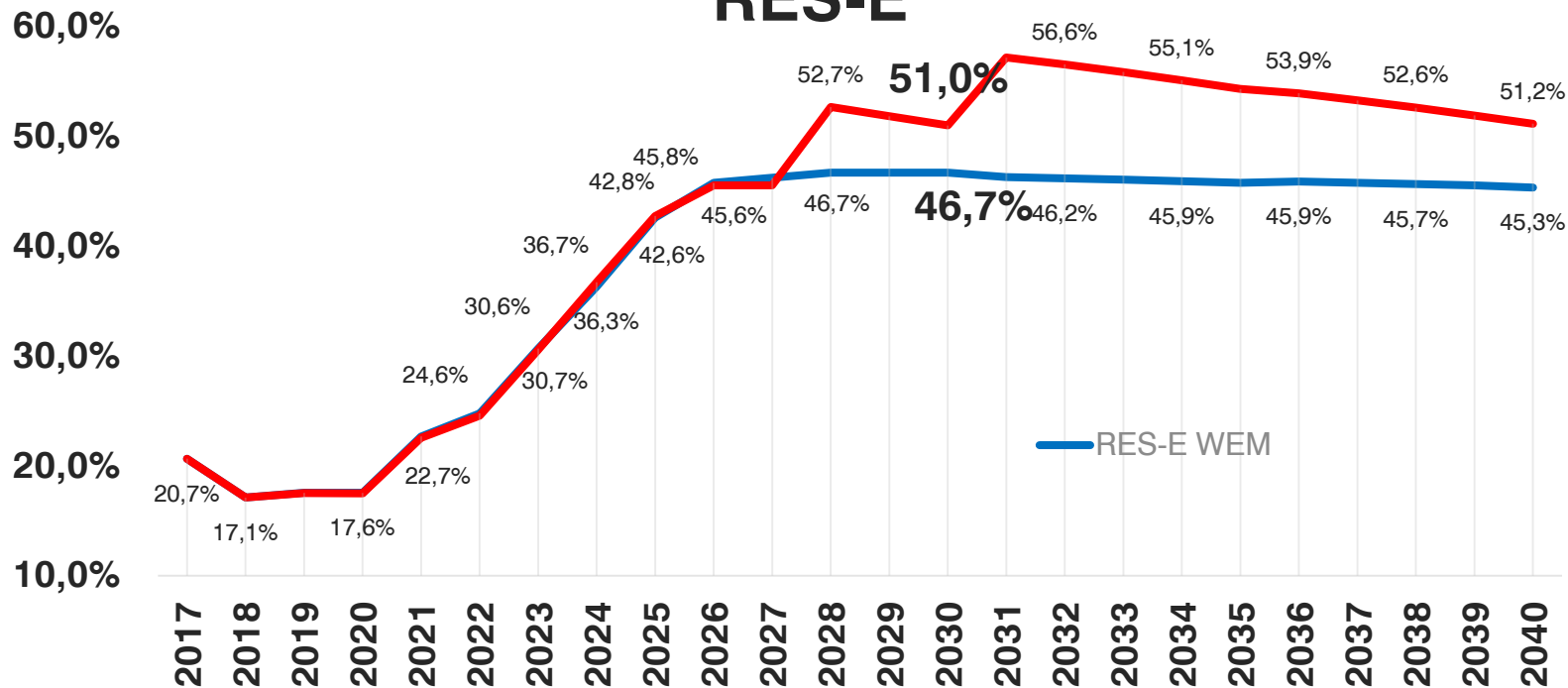
RES DH local



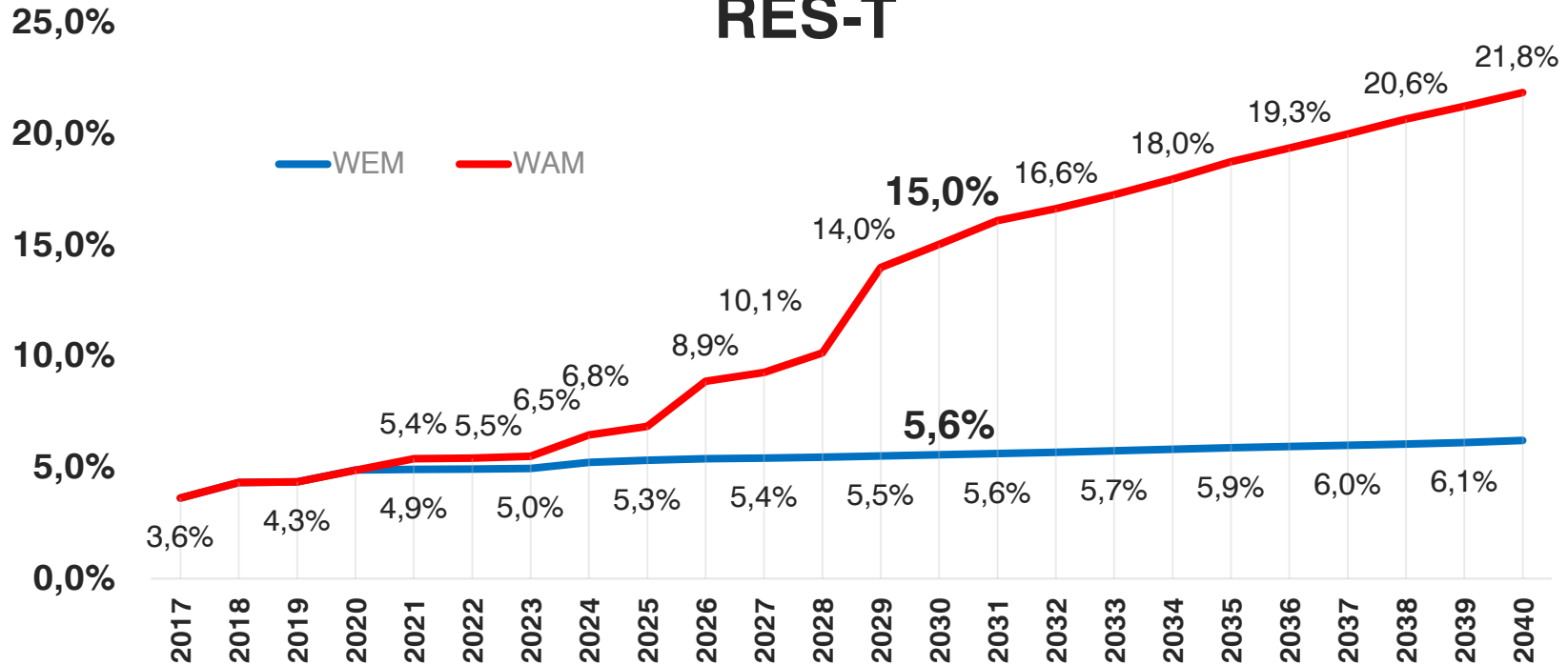
RES H&C



RES-E



RES-T



INVESTMENT NEEDS: PRELIMINARY ESTIMATES

**1106
MEUR**



RES - E

252 MEUR



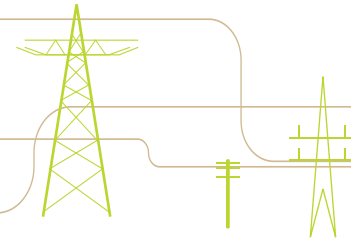
**RES -
Heating**

345 MEUR

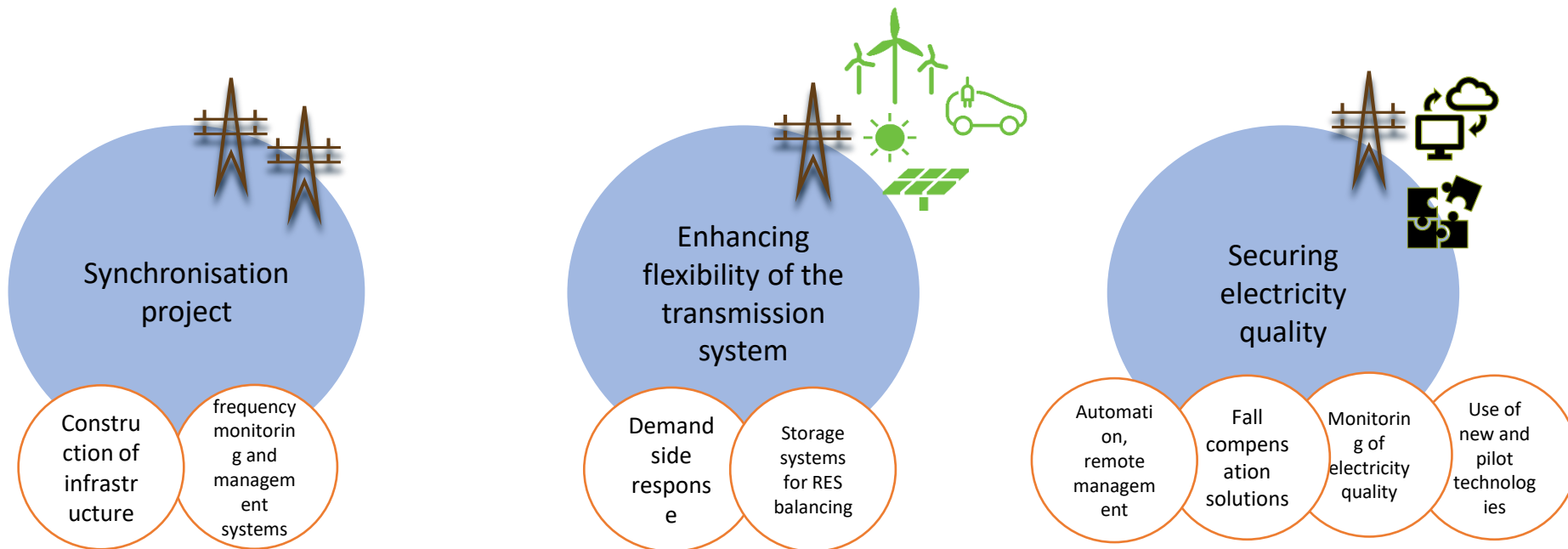


**RES -
Transport**

SO 2.3 SMART ENERGY SYSTEMS, GRIDS AND STORAGE AT LOCAL LEVEL

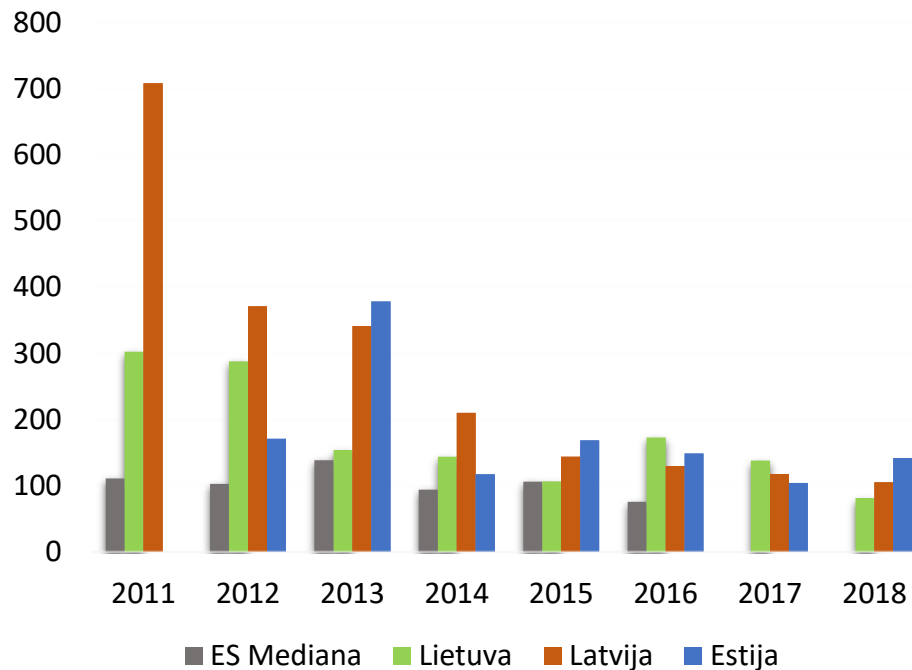


Enhancing security of supply in electricity transmission network

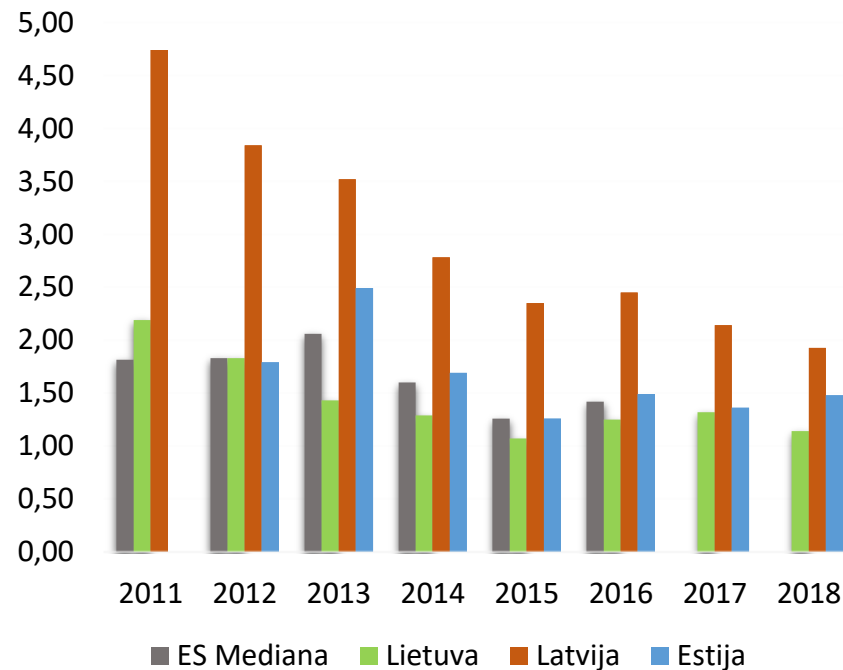


Grids reliability in EU Member States

SAIDI including FM



SAIFI including FM



Objective 3. Creating advanced electricity systems and networks, and energy storage solutions



Increase of local
energy generation

Enhancing security
of supply

**By 2030
electricity
generated in
Lithuania
- 70 %**

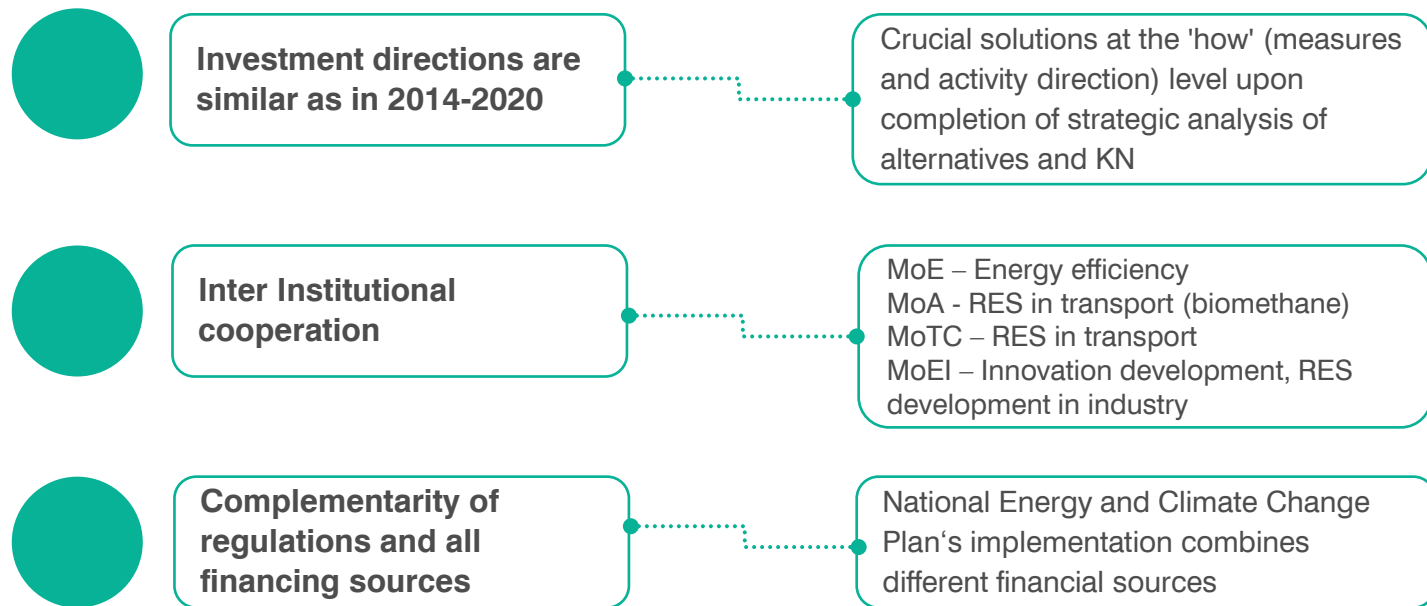
Solutions enhancing security of supply of the smart distribution and transmission network and improving quality of supply

Integration of RES and energy storage solutions/systems into the distribution and transmission networks

Development of advanced electricity transmission infrastructure for sea or land wind integration



SUMMARY



THANK YOU FOR YOUR ATTENTION

