



# Guidelines for new Lithuanian energy strategy

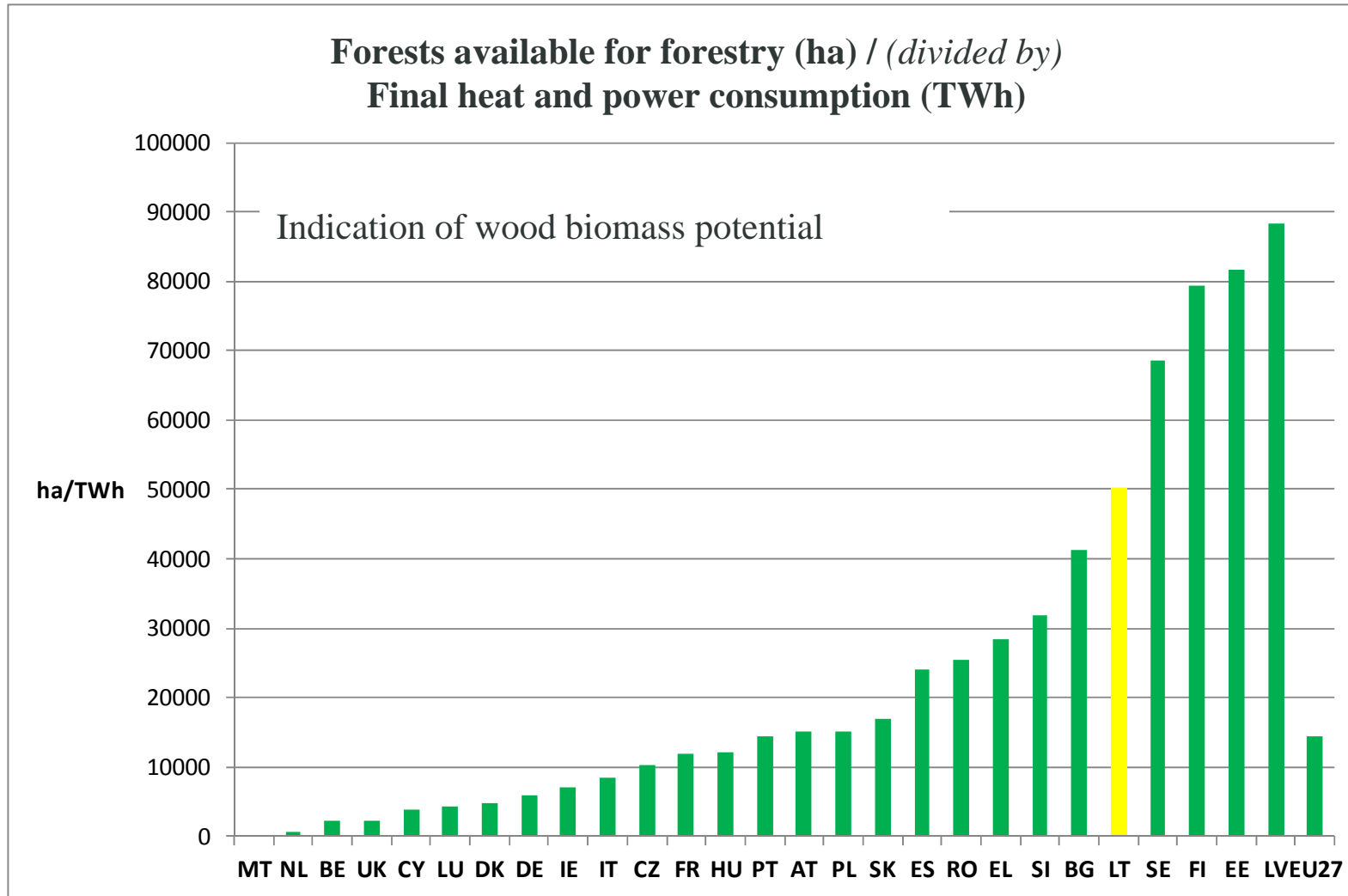
**Martynas Nagevičius**

**President of Lithuanian renewable energy confederation**

**[martynas@nagevicius.lt](mailto:martynas@nagevicius.lt) +370 650 37654**



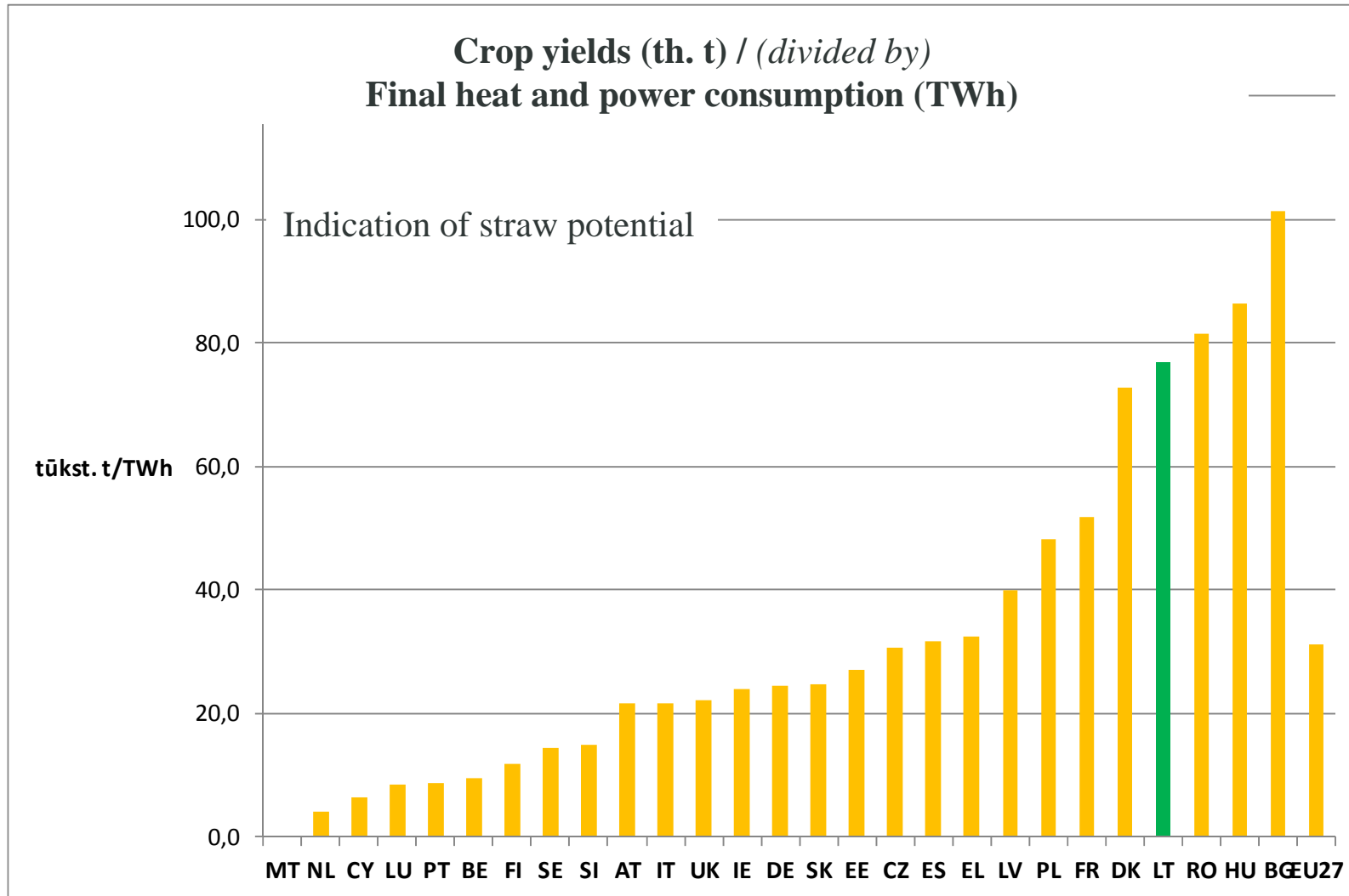
# Lithuania - large biomass resources available (I)



EUROSTAT 2010



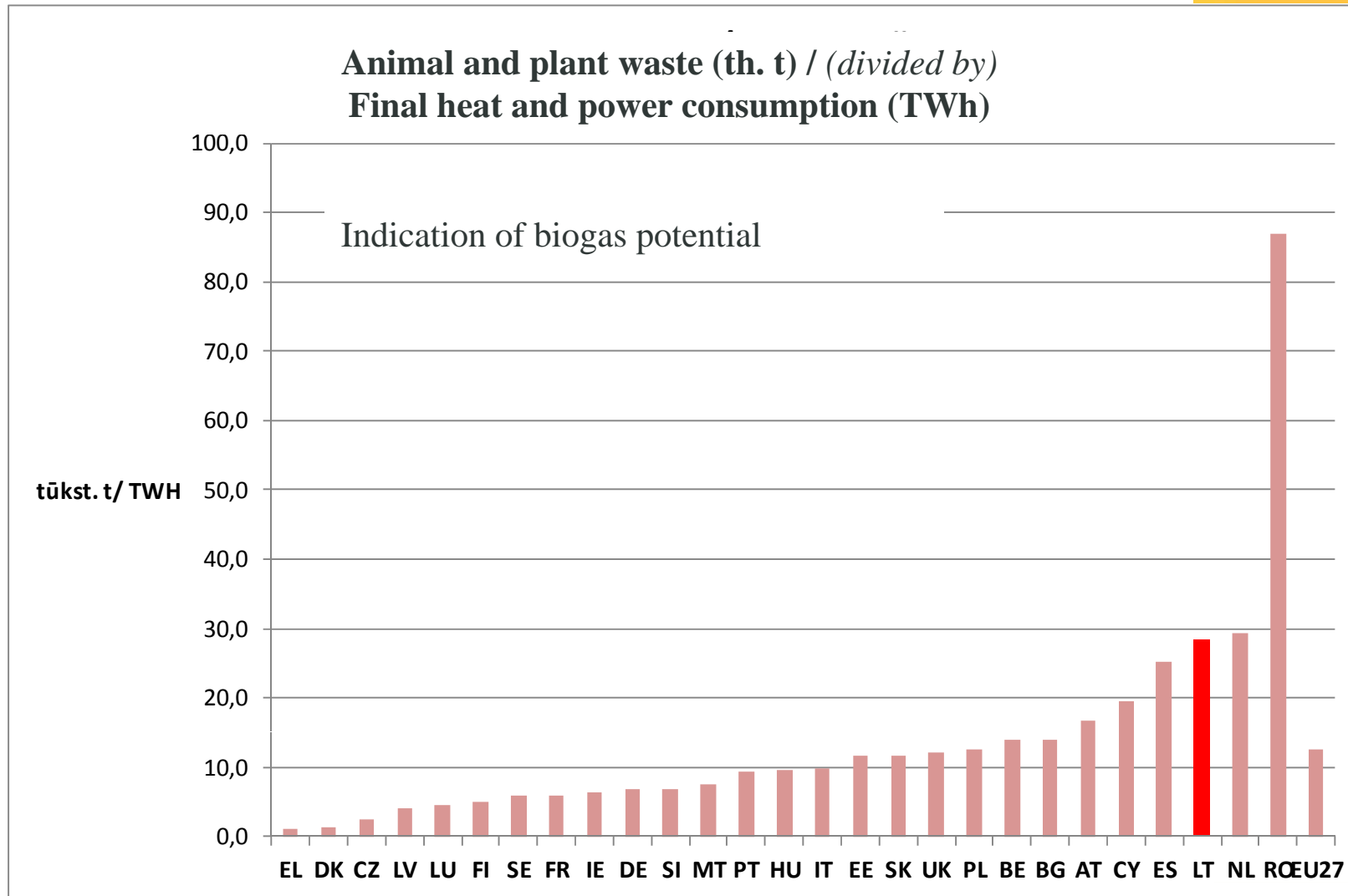
# Lithuania - large biomass resources available (II)



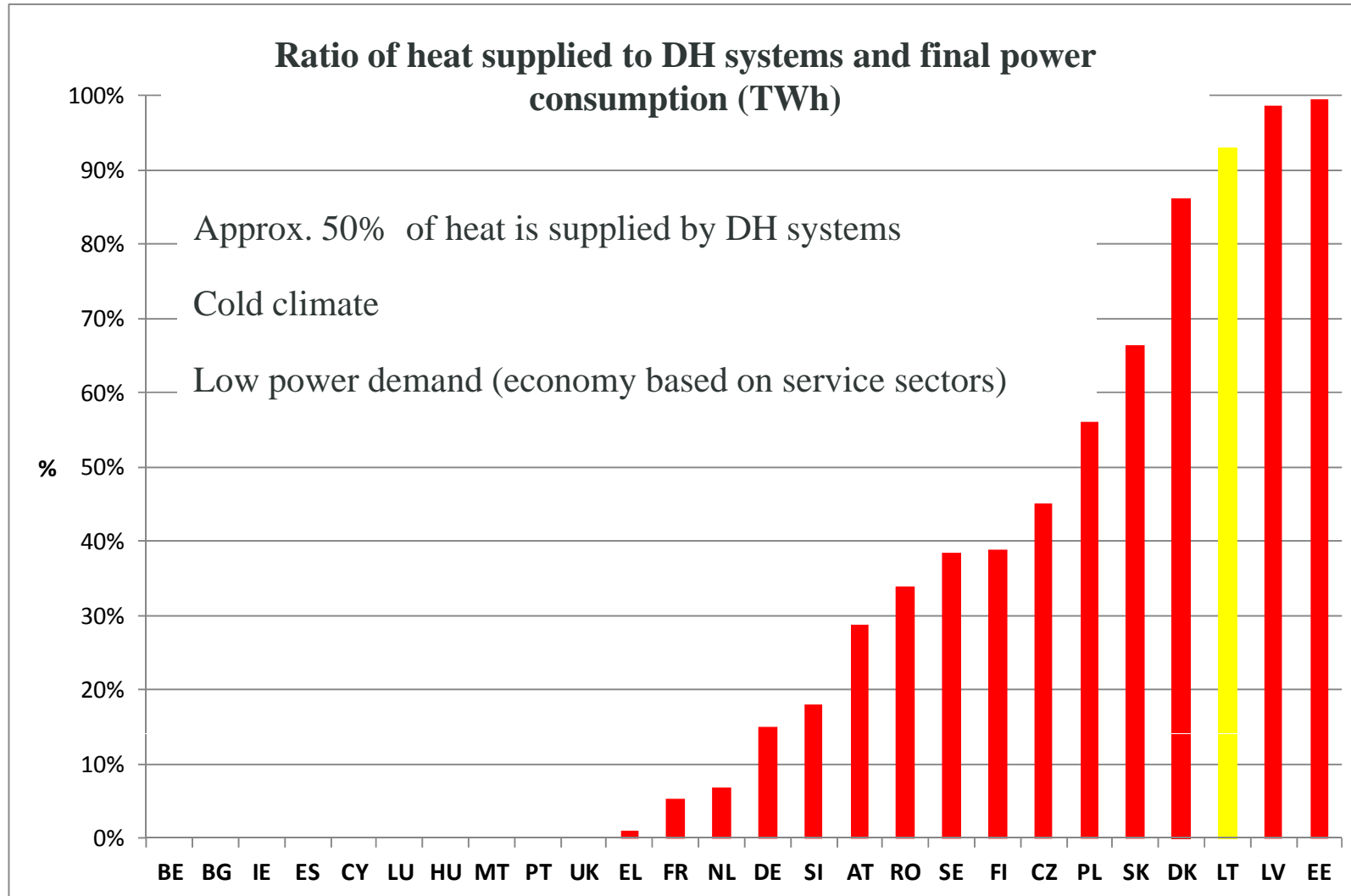
EUROSTAT 2010



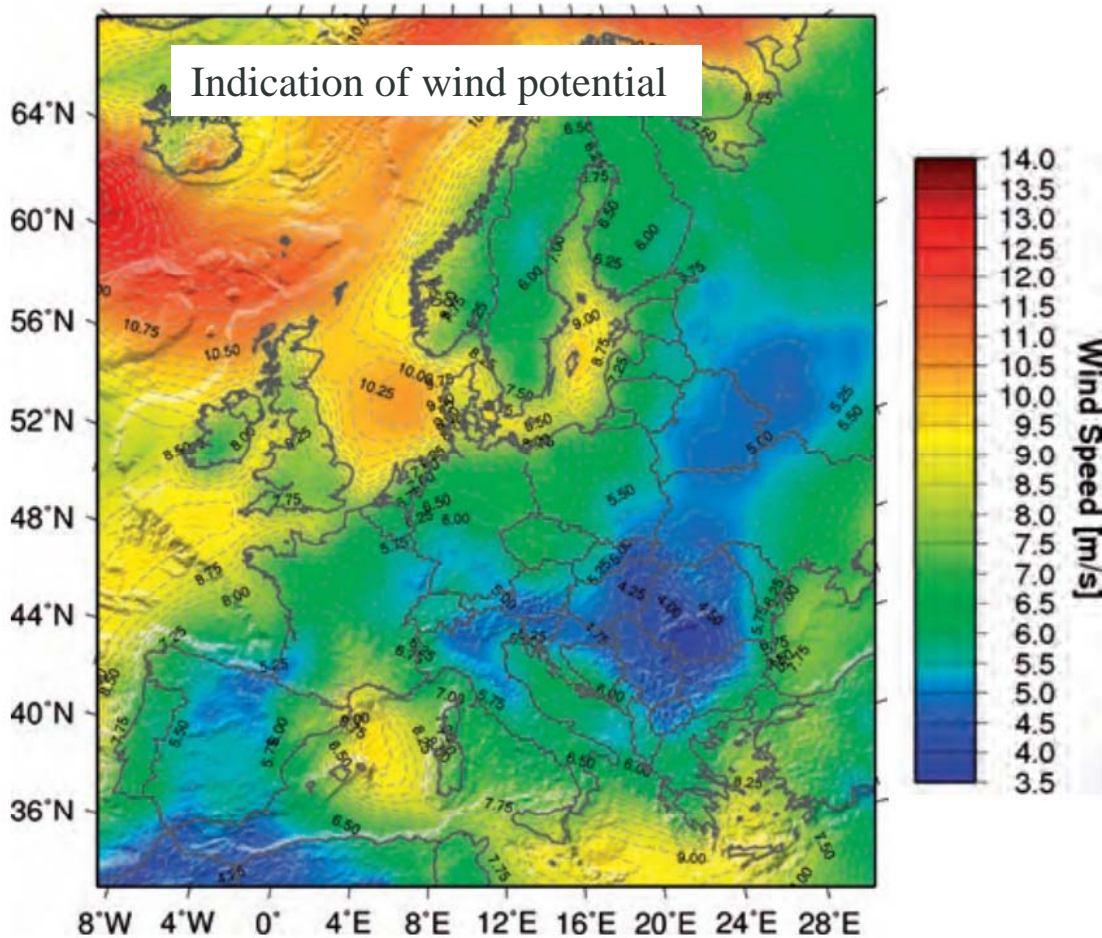
# Lithuania - large biomass resources available (III)



# Lithuania - favorable ratio (for cogeneration) of centralized heat and power



# Lithuania – windy country



<http://www.anemos.de/5/files/anemos-handout-eu.pdf>

	Area with average wind speed at 50 m high > 5.8 m/s [ th. km2] National Renewable Energy Laboratory (US)	Gross power consumption in 2009 metais [TWh]	[km2 / TWh]
DE	26.0	580.2	45
LT	1.9	12.4	156
LV	4.3	7.2	561
EE	19.2	8.9	2169
<b>LT+ LV+ EE</b>	<b>25.4</b>	<b>28.5</b>	<b>892</b>

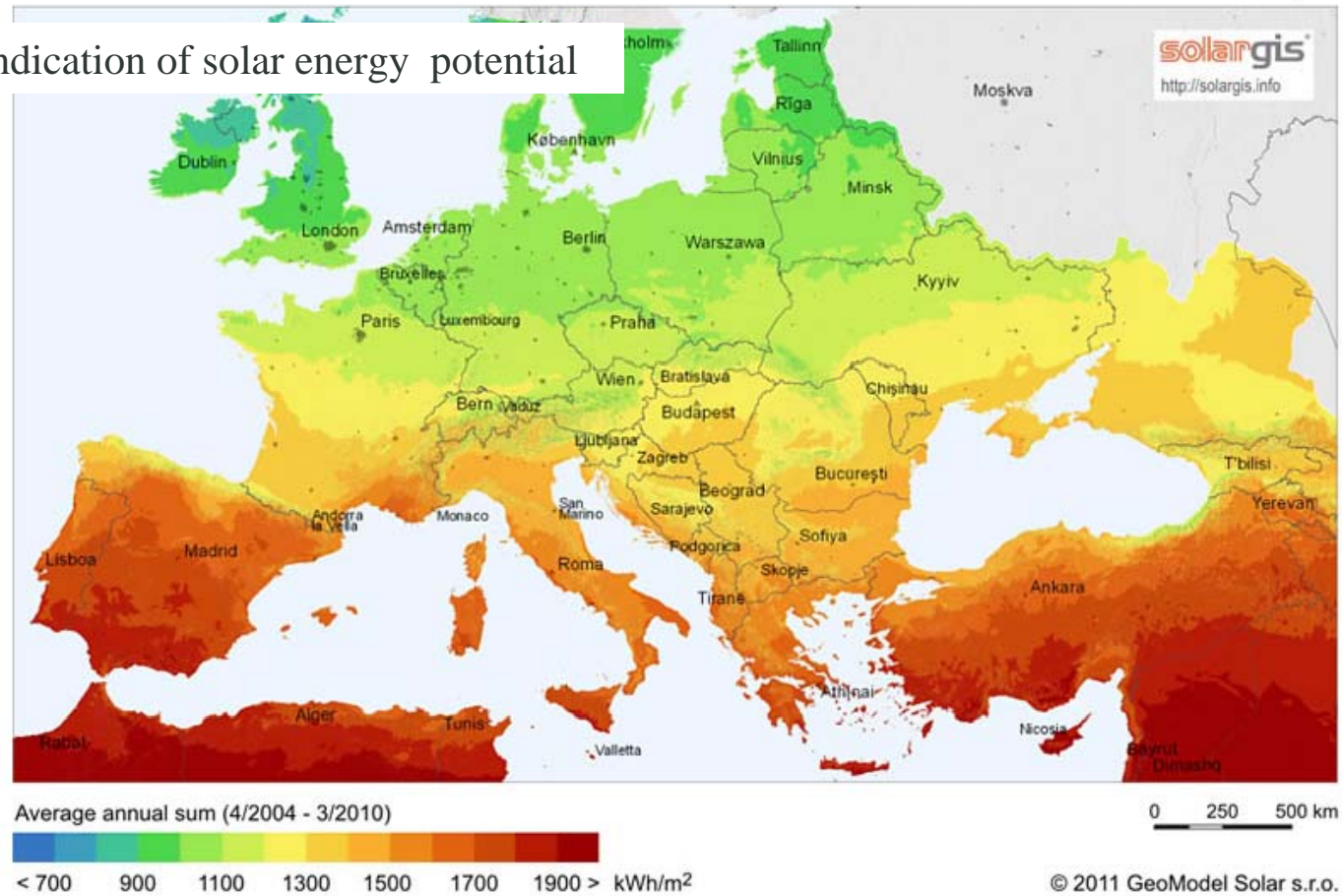
# Lithuania – sunny country



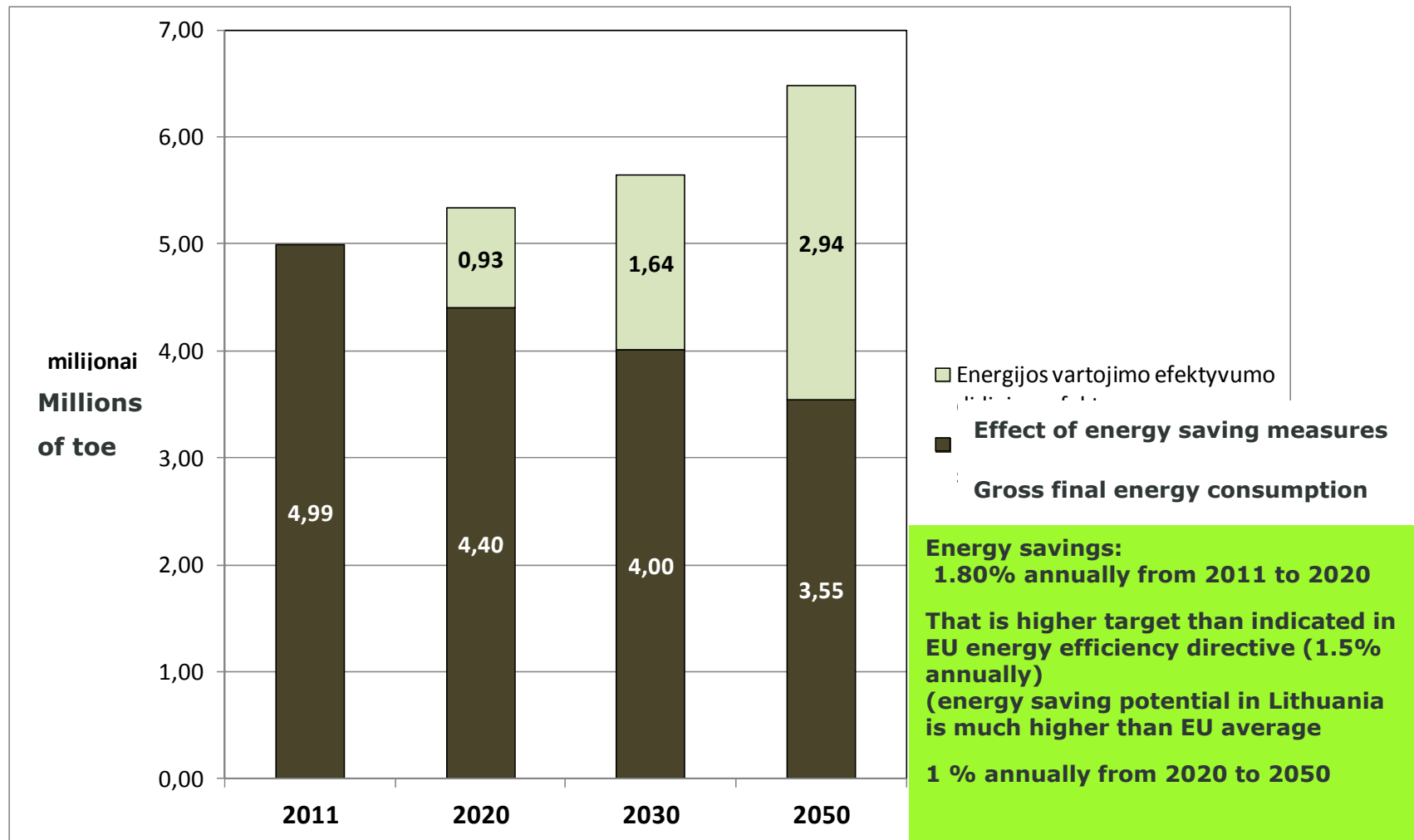
Global horizontal irradiation

Europe

Indication of solar energy potential

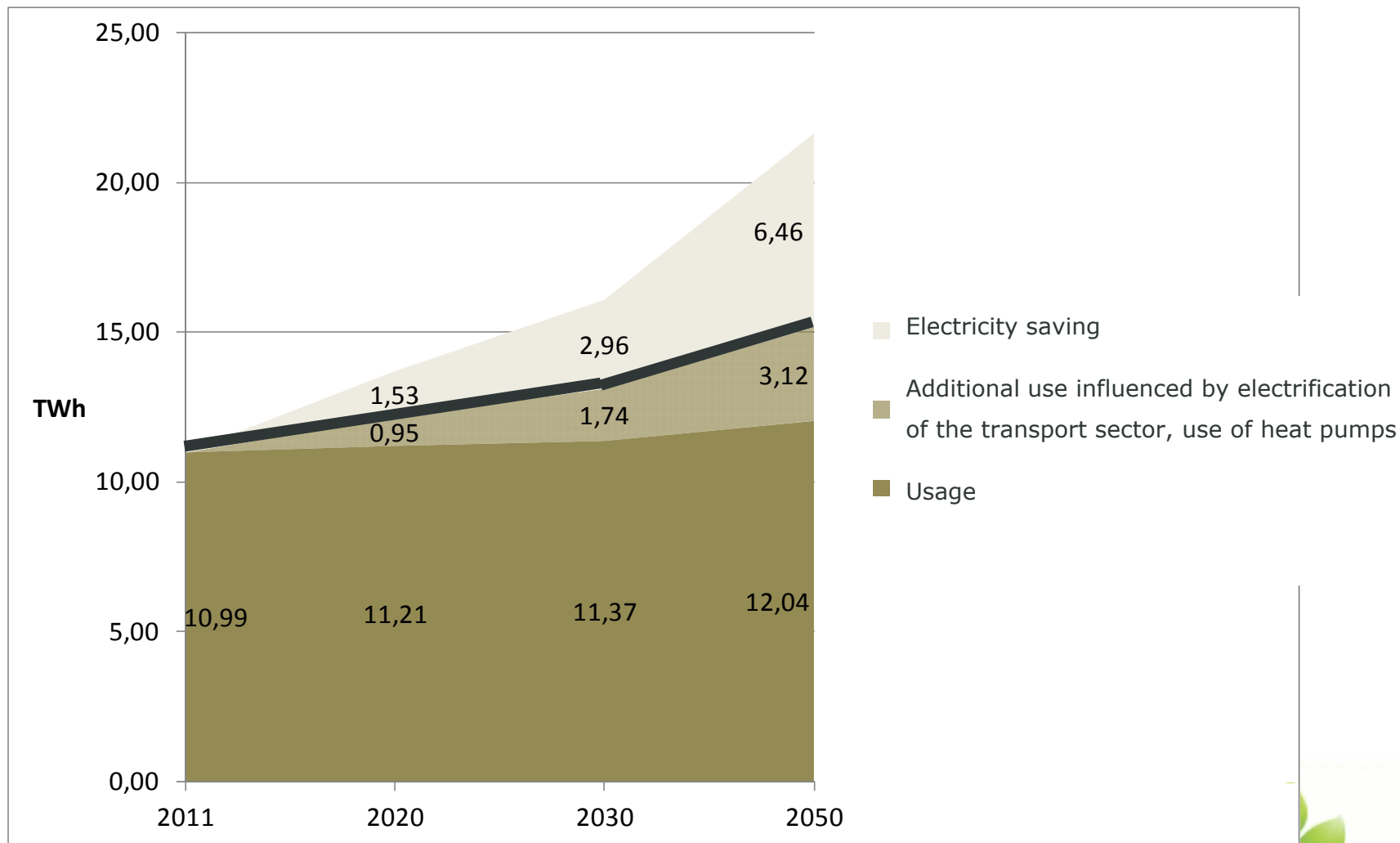


# Existing and forecasted gross final energy demand





# Forecast of power demand (I)



## Biomass cogeneration potential in Lithuania (conservative scenario)



District heating system*	Max. heat demand (2011) [MWh]	Capacity of potential CHP plant [MWh]	Power/Heat production rate of potential CHP plant	Power generation capacity of potential CHP plant [MWp]
Vilnius	1000,5	400	0.75	360*
Kaunas	520,0	208	0.38	78
Klaipėda	334,3	134	0.38	50
Panevėžys	199,2	80	0.38	30
Šiauliai	179,5	72	0.38	27
Alytus	133,5	53	0.38	20
Marijampolė	93,4	37	0.38	14
Druskininkai	72,4	29	0.38	11
Mažeikiai	63,6	25	0.38	10
Utena	55,4	22	0.38	8
Jonava	45,6	18	0.38	7
Plungė	42,9	17	0.38	6
Tauragė	32,8	13	0.38	5
Šilutė	31,3	13	0.38	5
<b>Iš viso:</b>	<b>2804</b>	<b>1121</b>		<b>632</b>

\* DH systems with max. heat demand over 30 MWh and total annual heat consumption over 70 GWh only,

\*\* on condensation mode. 300 MWp on cogeneration mode

## Proposed investment into energy generation until 2020 metų (I)



Measure	Investment during 2012-2020	Effect
Development of biomass CHP	5 billion Lt	Capacity installed 630 MWp Total annual power net generation 2.6 TWh, Total annual heat net generation 5.1 TWh. Biomass annual usage 0.63 billion toe
Development of wind power plants	3.9 billion ai Lt	Capacity additionally installed 800 MWp. Additional power generation 1.7 TWh
Development of biogas power plants	1.2 billion Lt	Capacity additionally installed 85 MWp. Additional power generation 0.6 TWh
Development of hydropower plants	0.05 billion Lt	Capacity additionally installed 14 MWp. Additional power generation 0.05 TWh
Development of PV plants	0.04 billion Lt	Capacity additionally installed 10 MWp. Additional power generation 0.009 TWh

## Investicijos į atsinaujinančios energetikos ir efektyvios kogeneracijos plėtrą iki 2020 metų (II)



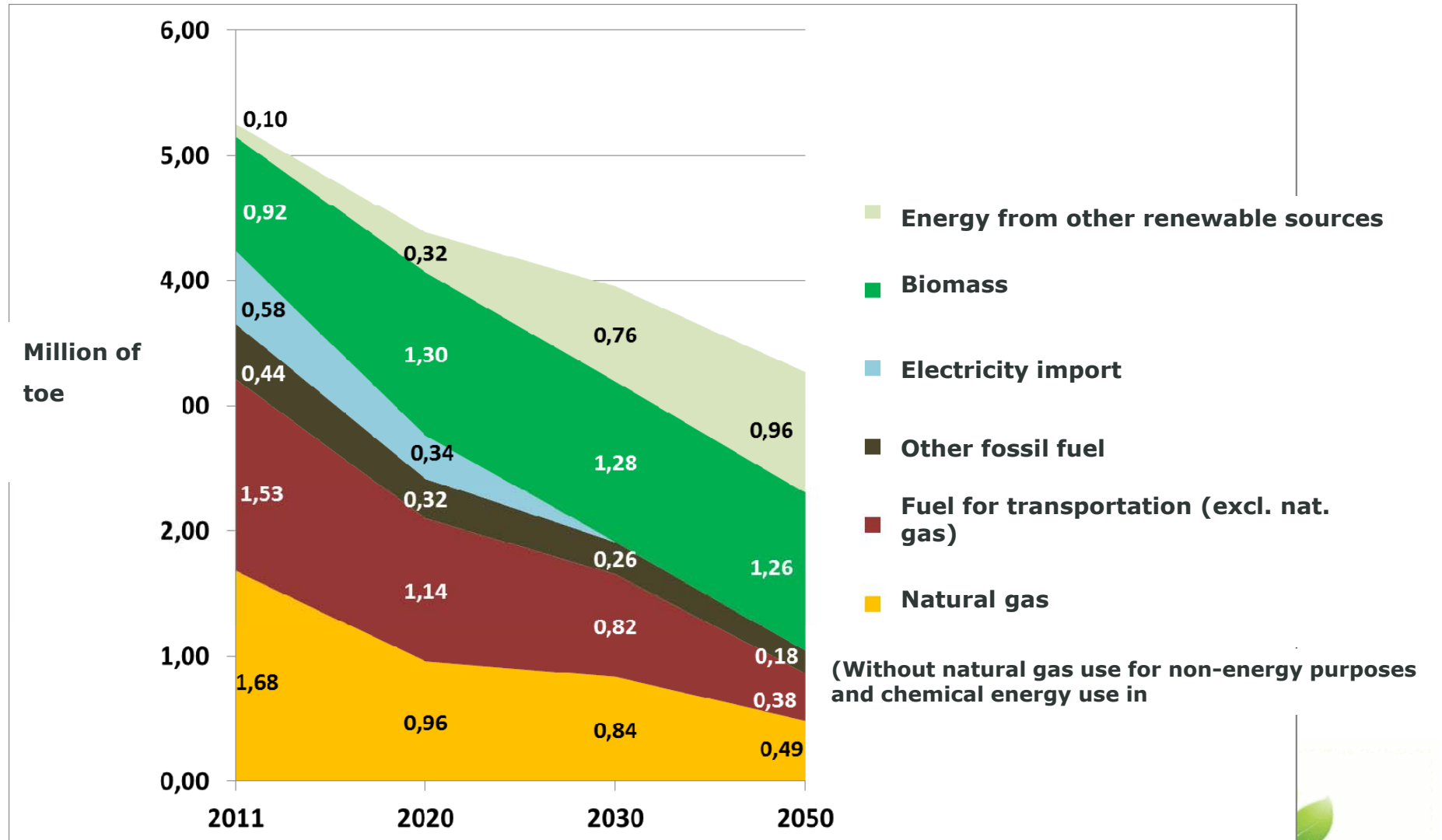
Priemonė	Investicijos 2012-2020 metais	Efektas
Biomass boiler housed in DH sector	0.3 billion Lt	Heat production capacity additionally installed 220 MW
Individual biomass boilers	0.25 billion Lt	Heat production capacity additionally installed 500 MW
Heat pumps	0.25 billion Lt	10 000 systems with heat pumps installed Annual heat production 0.15 TWh, Annual power consumption 0.04 TWh
Solar collectors for heating purposes	0.4 billion Lt	Solar collectors on 50 000 roofs Annual energy savings 0.1 TWh
Natural gas efficient CHP plants	0.4 billion Lt	Power production capacity additionally installed 100 MWp Annual power production 0.55 TWh, annual heat production 0.80 TWh, annual natural gas consumption 140 th. toe
<b>Total:</b>	<b>11,8 billion Lt</b>	

# Investment into renewable energy during 2021-2050



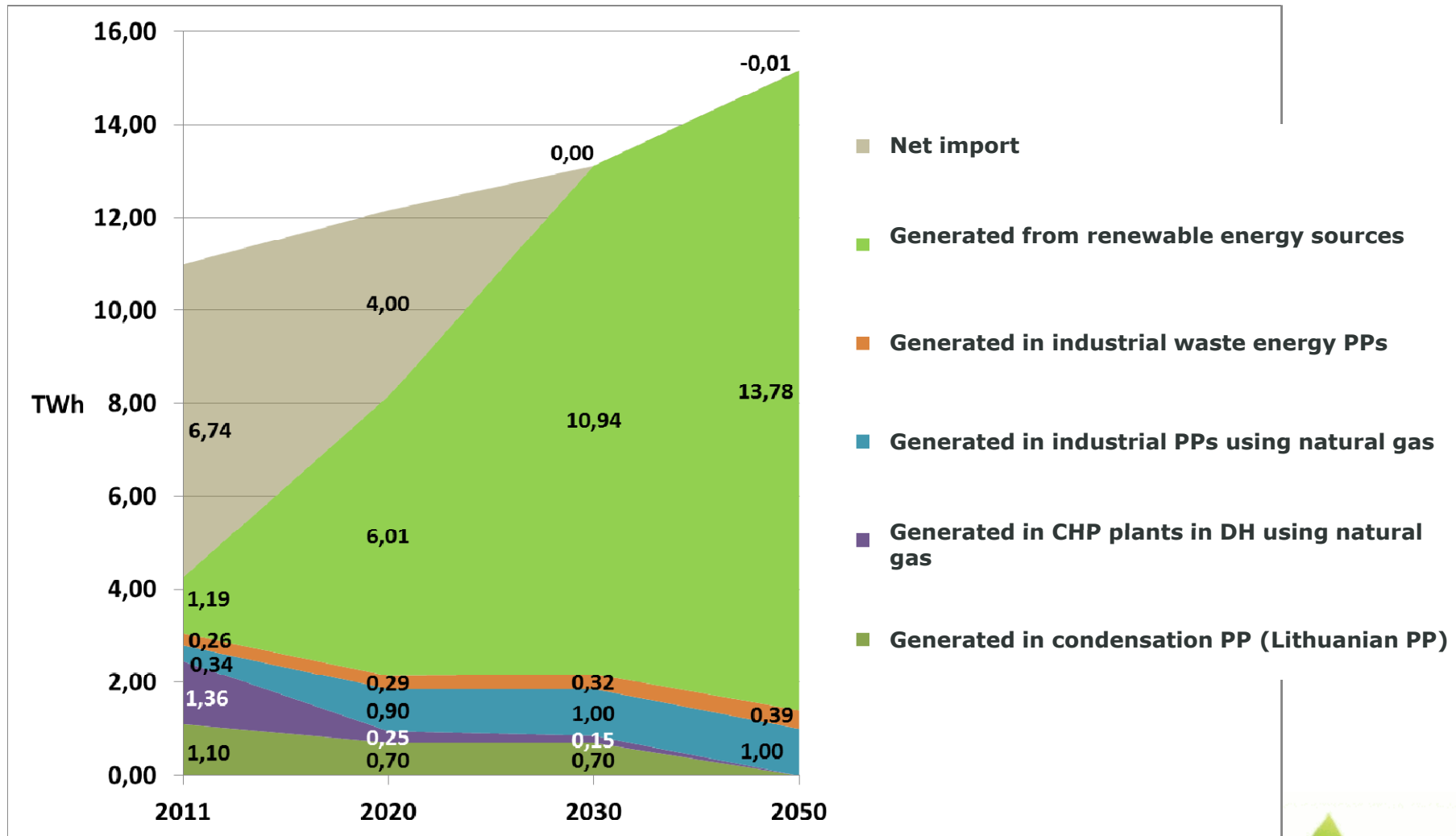
- Biomass power plants  
**630** MW (2020) → **800** MW (2050)
- Biogas power plants  
**100** MW (2020) → **200** MW (2050)
- On-shore wind power plants  
**1000** MW (2020) → **1500** MW (2030) → **2000** MW (2050)
- Off-shore wind power plants  
**0** MW (2020) → **1000** MW (2030)
- PV plants  
**10** MW (2020) → **200** MW (2030) → **1100** MW (2050)

# Forecast of energy resources

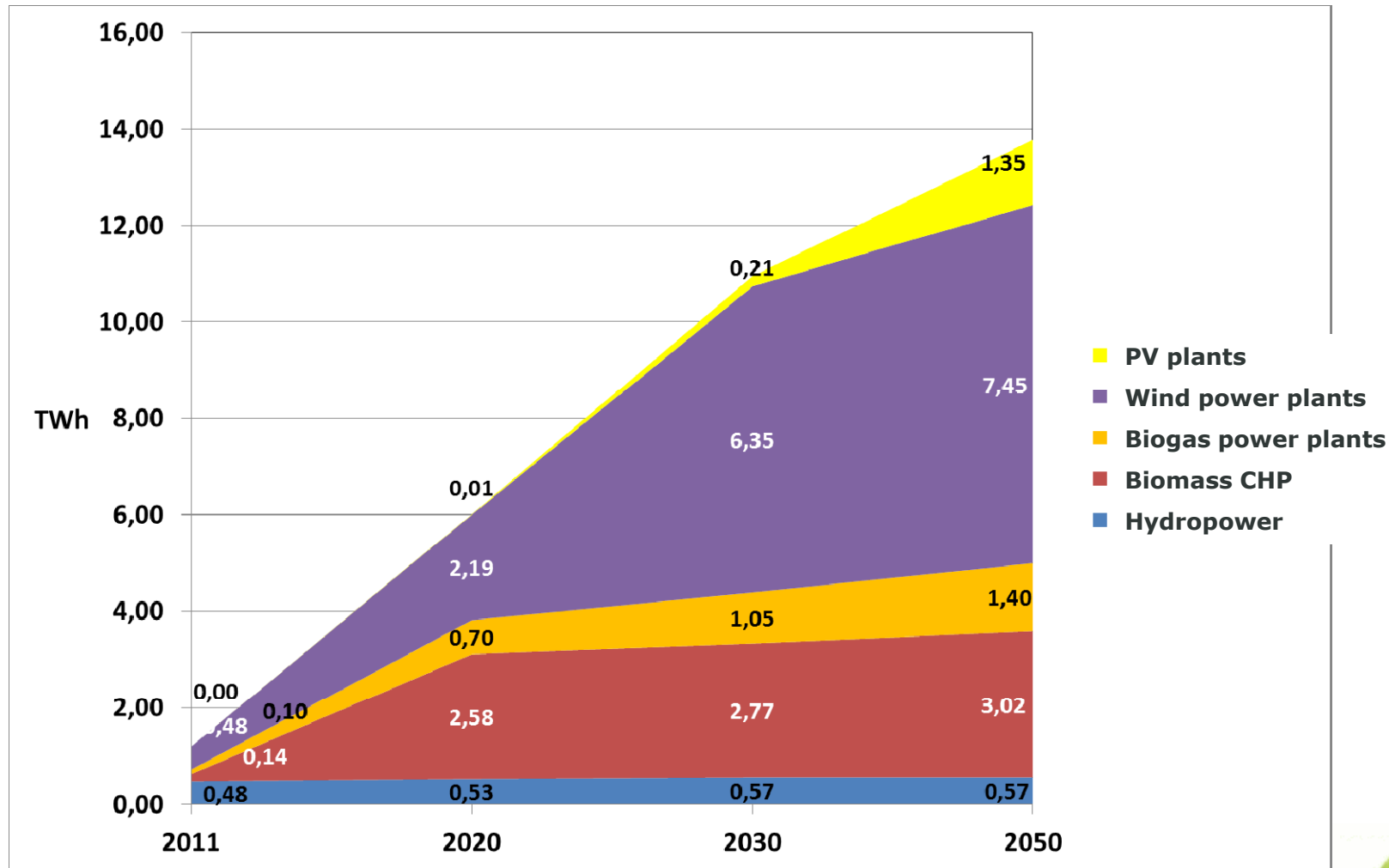


(Without natural gas use for non-energy purposes and chemical energy use in

# Forecast of power generation

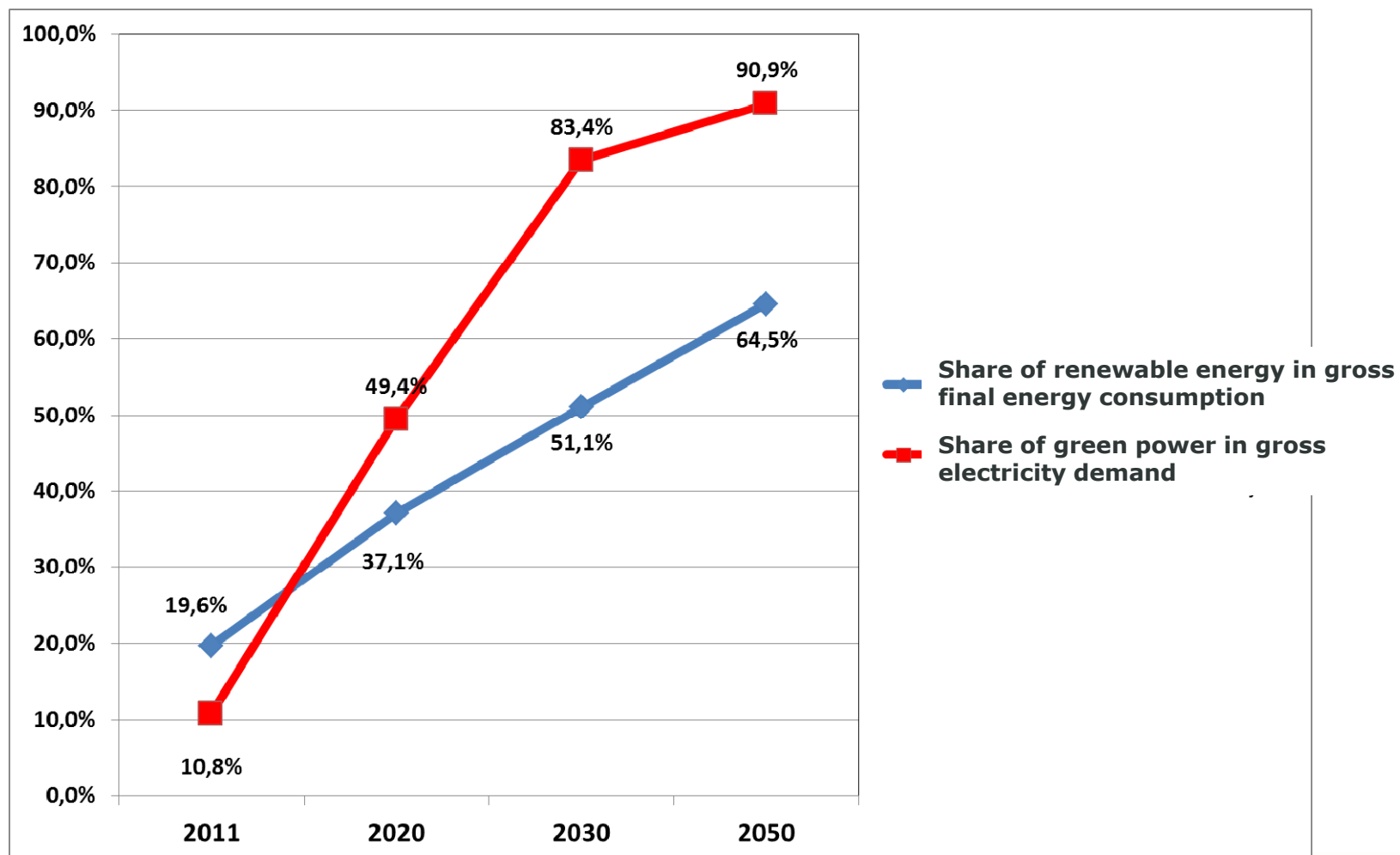


# Forecast of power generation using renewable energy

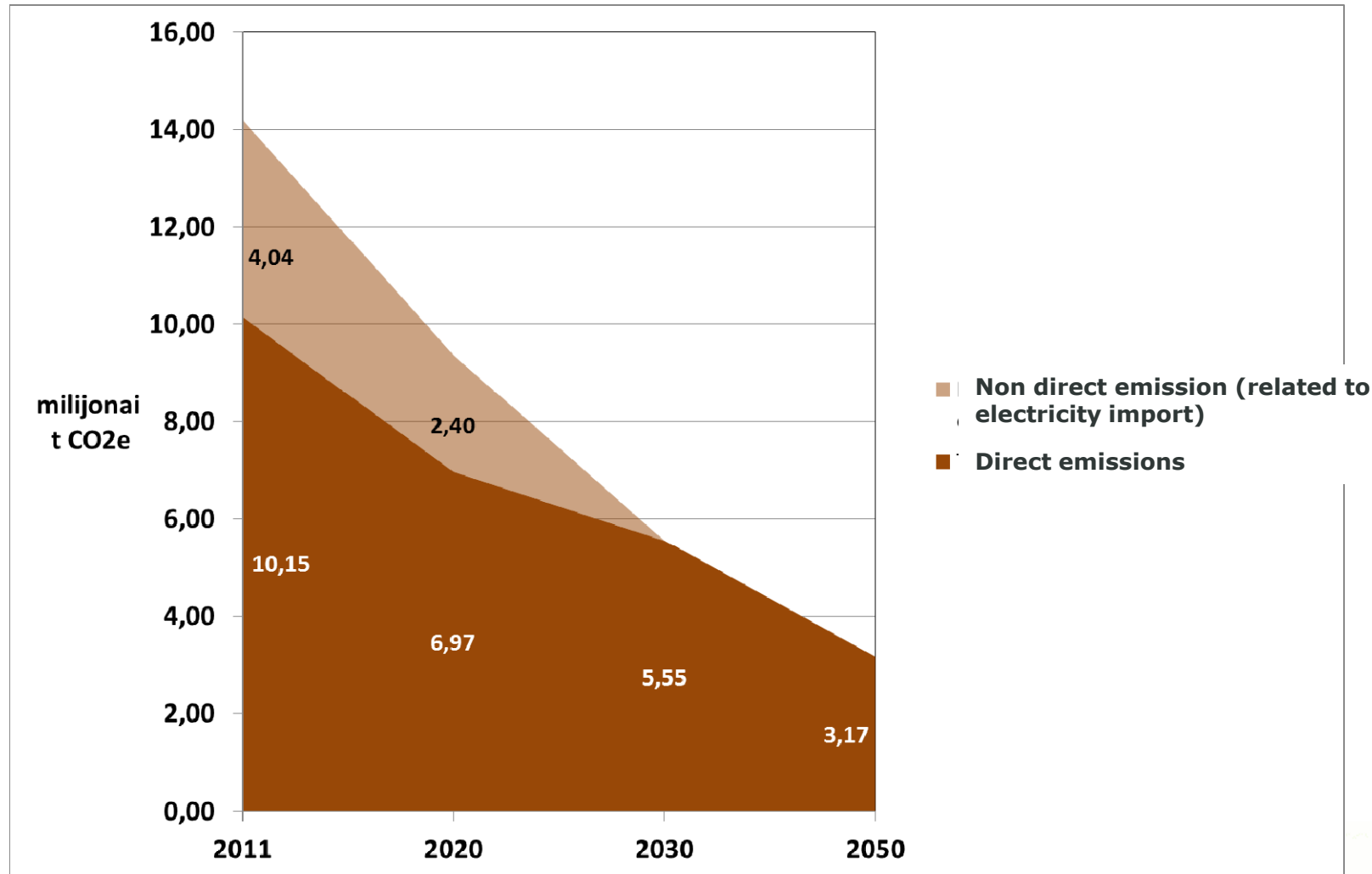




# Share of renewables in final energy consumption



# Forecast of greenhouse gas emission in Lithuanian energy sector





**Thank you for your attention!**

Martynas Nagevičius  
8 650 37654  
martynas@nagevicius.lt

