

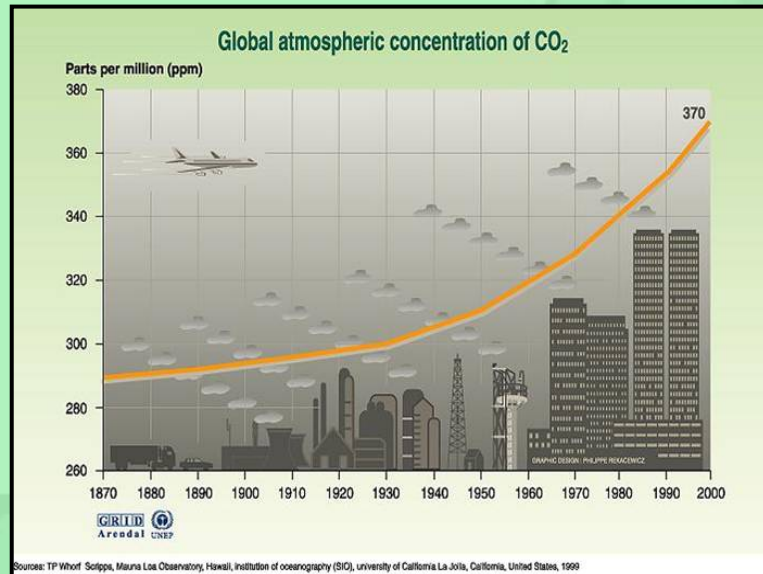
Biomass usage opportunities in Lithuanian energy sector

Namų priežiūros centras

Liudmila Bondareva

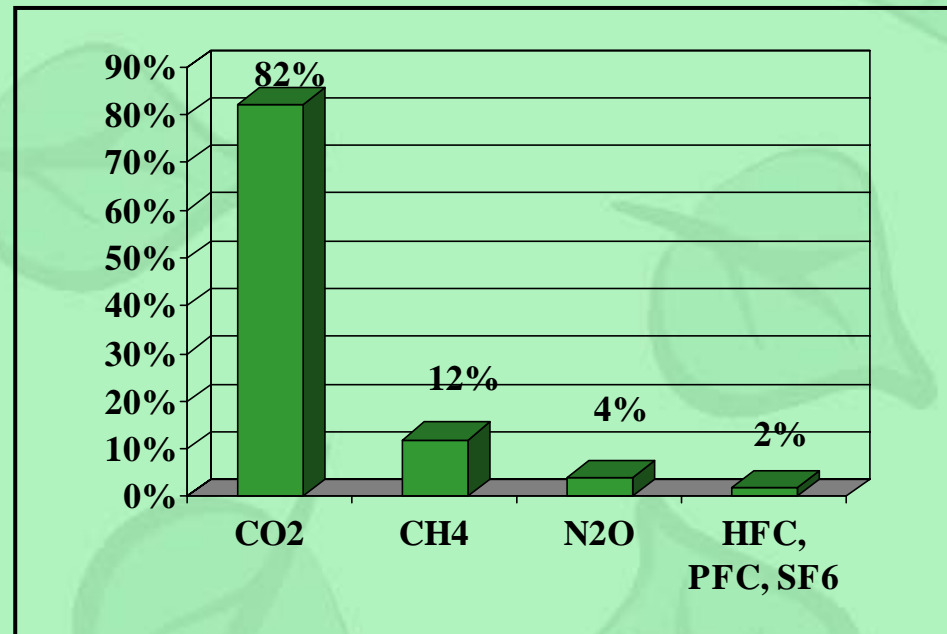


Greenhouse effect



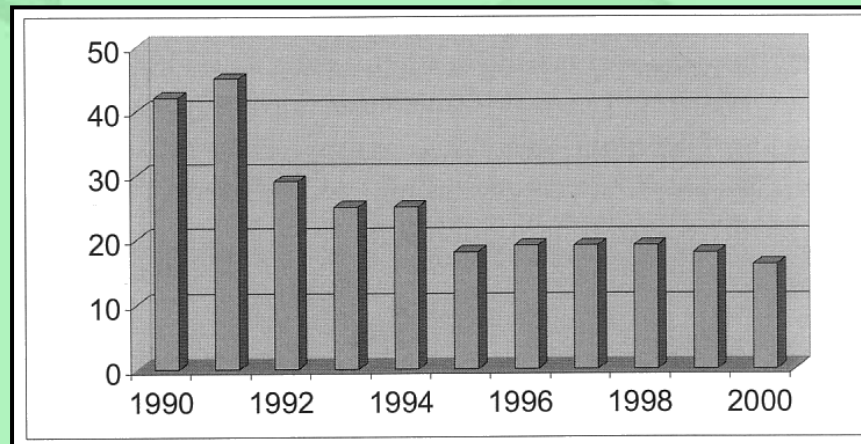
Anthropogenic greenhouse gasses

Concentration of global atmospheric of CO₂



Kyoto protocol requirements for Lithuania

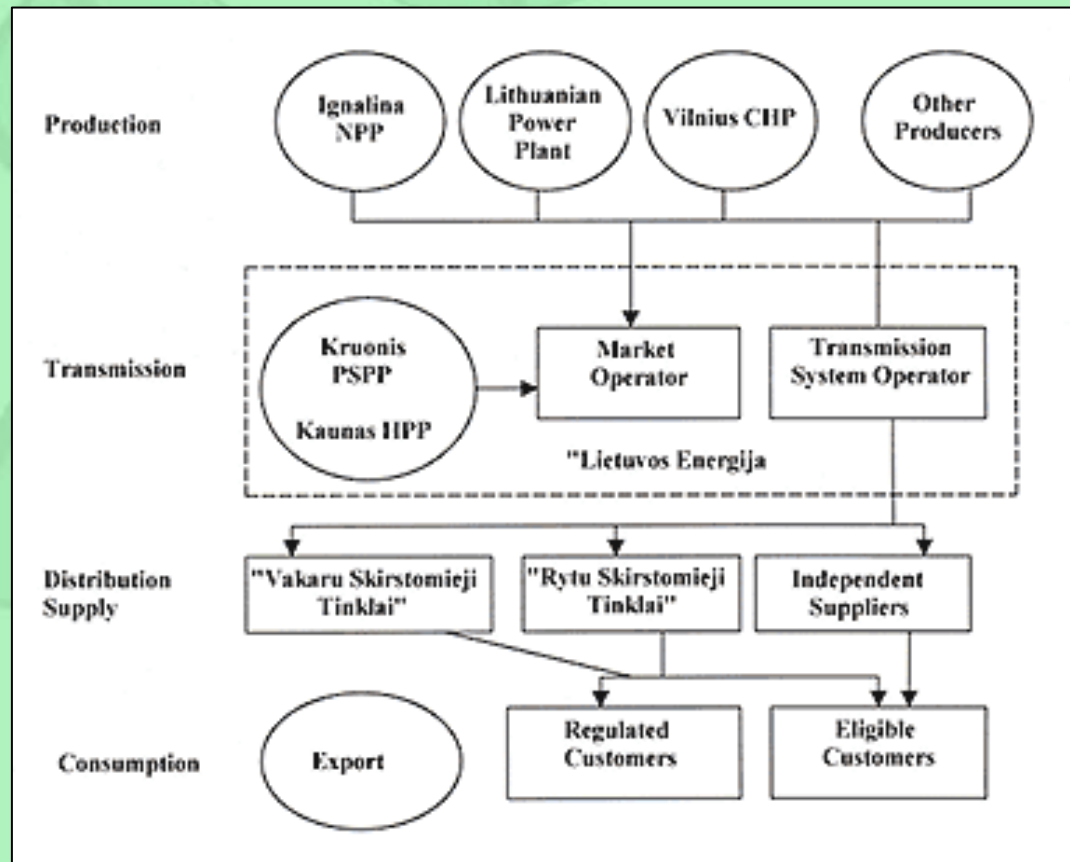
- ~65 km² area, 3.7 million population
- 2002 Kyoto protocol ratification, 8 % of the 1990 level by the 2008- 2012
- Carbon dioxide emissions changing tendency (Mt/m)



- Only 54.6 % of the KP requirements in 2005 - 2007

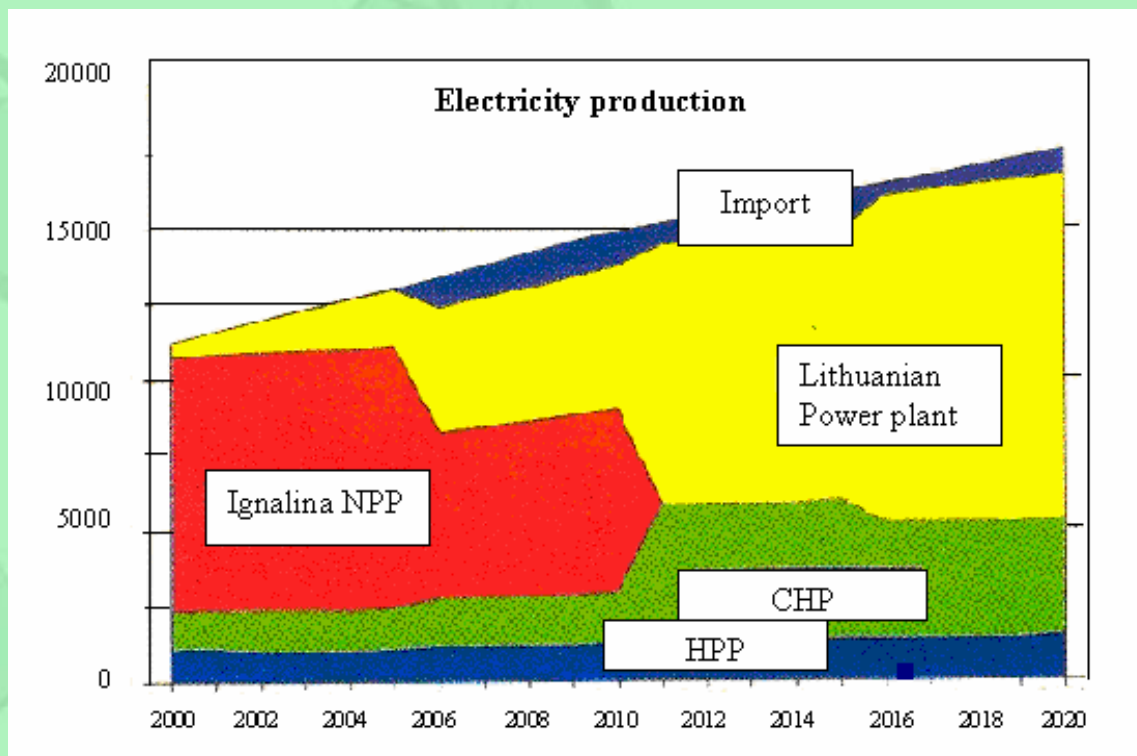
Lithuanian energy sector

- 70 % of residential house area is heated from DH system
- Electricity sector:



After 2004

Changes after May 2004:



Electricity production scenario after Ignalina NPP closure in 2005 and 2010

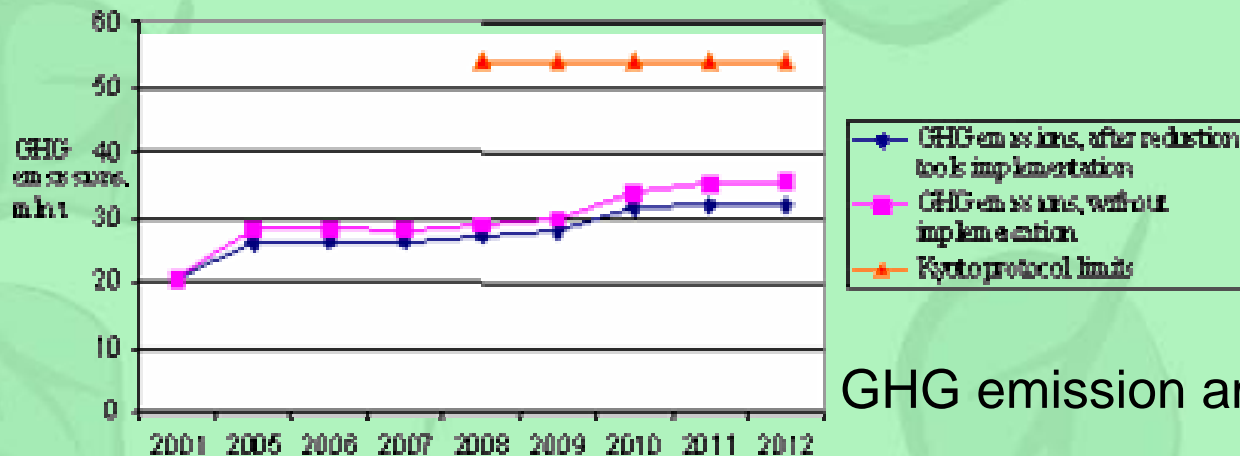
International emission trading

- Permission to release 1 t of CO₂ to the atmosphere
- Amount of permitted emissions, capacity >20MW:

Electricity, t _{CO2} /MWh		Heat, t _{CO2} /MWh	
Condensing PP	0.65	DH (without NG)	0.310
CHP (without NG)	0.85	Other DH	0.253
Other CHP	0.45		

Price: ~ 11-12 Eur/t_{CO2}

Fines: 40 Eur/t_{CO2} (2005-2007),
100 Eur/t_{CO2} (2008-2012)



GHG emission amount in LT

Biomass as a tool

Sustainable CO₂ circle:

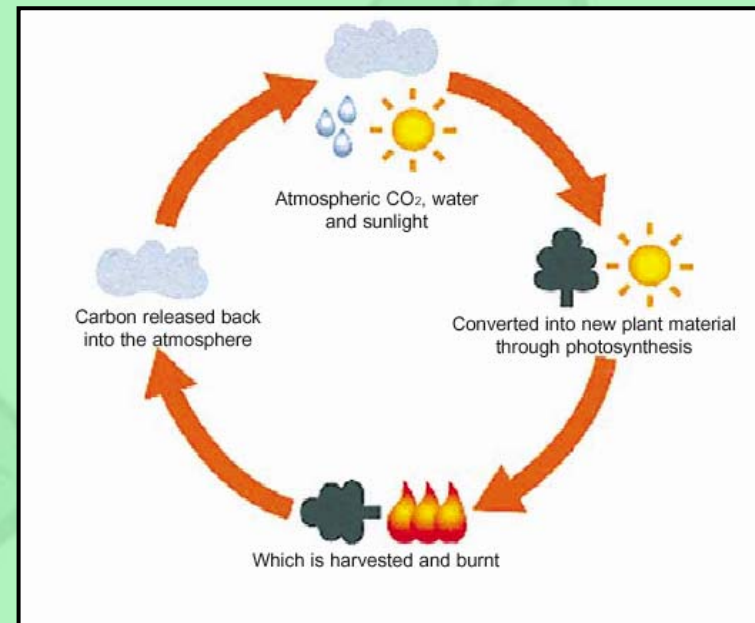
CO₂ emissions, burning different fuel:

✂ 1 t coal - 2,1 t CO₂ (0,350 t/MWh)

✂ 1 t fuel oil - 3,1 t CO₂ (0,278 t/MWh)

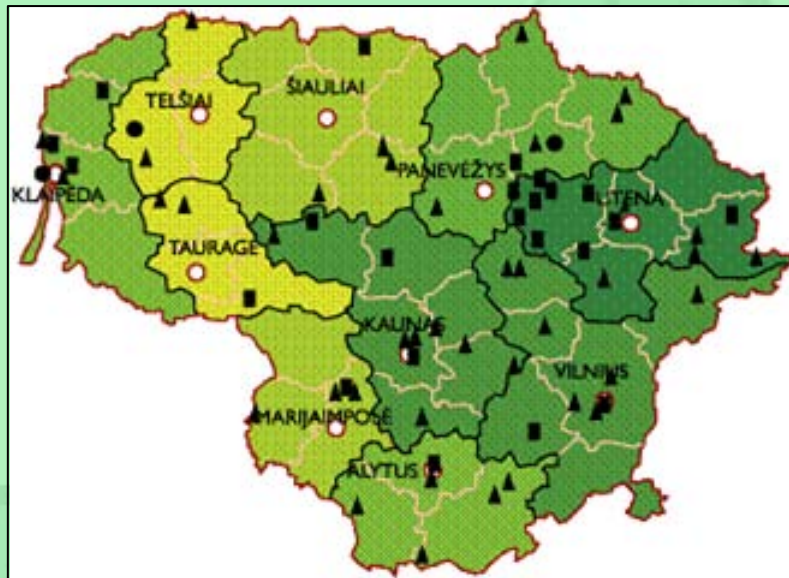
✂ 1000 nm³ natural gas - 1,9 t CO₂ (0,202 t/MWh)

✂ 1 t biomass - 0,0 t CO₂ (0,0 t/MWh)



Implementation and legislation

Biomass fueled plants
(67 projects, 251MW)



■	Installed capacity 0,2-1 MW
▲	Installed capacity 1-10 MW
●	Installed capacity > 10 MW

Legislation:

- National Energy Strategy,
- National Program of Energy Efficiency Increase,
- Energetic Law ,
- Heat Law,
- Biofuel Law,
- Program of Biofuel Production and Consumption in 2004-2010,
- Environmental Protection Law,
- etc.

Biomass potential in Lithuania

EU obligations

Ignalina NPP closure

Natural gas network monopoly

Fuel import/export

6.9 TWh of 9.8 TWh biomass technical potential

Straw - 0.99 TWh in 2002 till 7.05 TWh in 2020

Energy crops – 800 000 ha unused territory

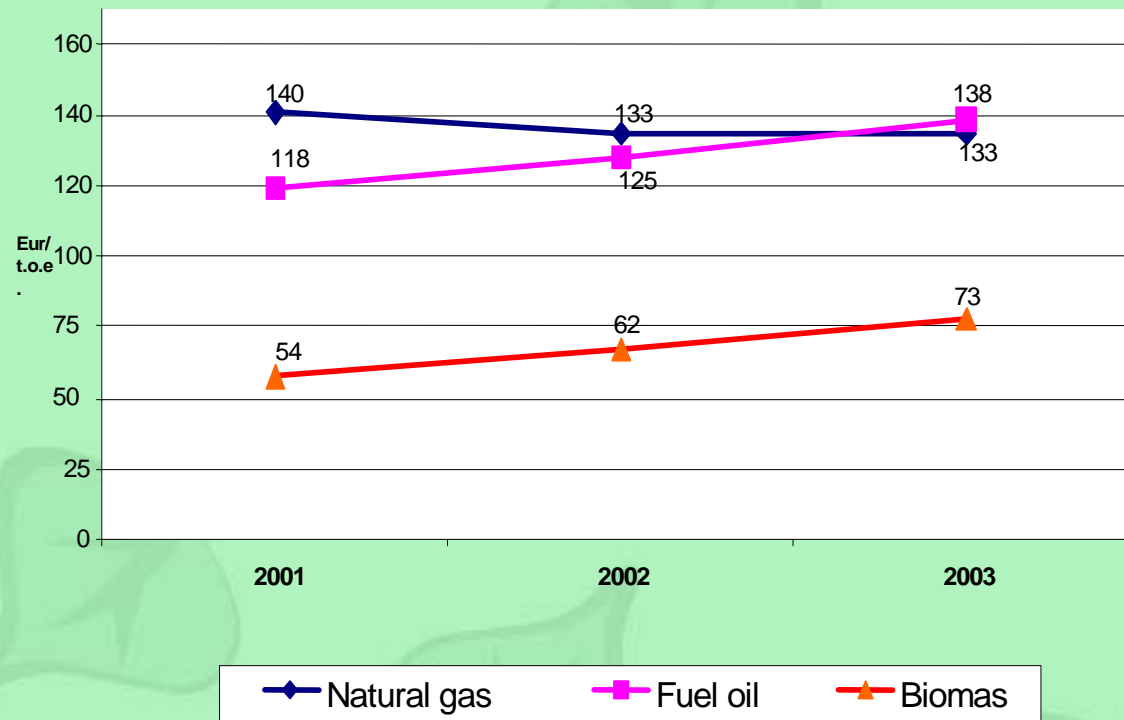
27.2 TWh: - 7.5 TWh (wood)

- 1.9 TWh (straw)

- 17.8 TWh (energy crops)

Obstacles

Fuel price



Cellulose plant

New Vilnius CHP plant

Export