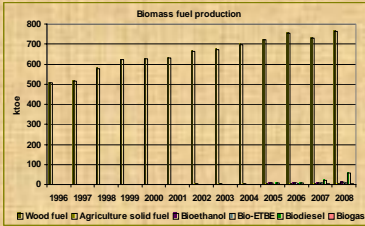
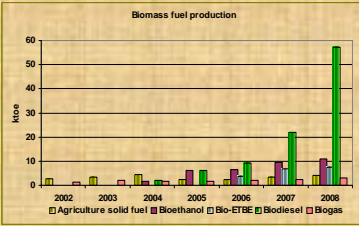


## TOTAL BIOMASS FUEL PRODUCTION IN LITHUANIA in 2008 was about 800 ktce

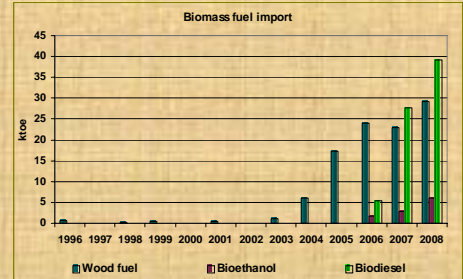
- The main biomass fuel is wood fuel.
- About 60% of the total amount of wood fuel is used in household sector and 18% in DH sector.
- Nearly 360 boilers with a total capacity of approximately 610 MW are installed in DH sector.



Source: Department of Statistics under the Government of Lithuanian Republic



## Biodiesel, bioethanol and wood fuel are the main products for import and export

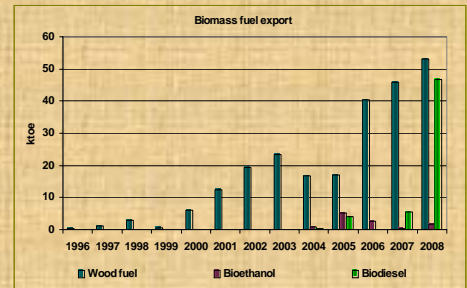


Source: Department of Statistics under the Government of Lithuanian Republic

## BIOFUELS FROM AGRICULTURE

- The production of bioliqids started in 2002 and their share is constantly growing.
- 5 bioethanol refineries with annual production of 11 ktce.
- 5 biodiesel plants with annual production of 57 ktce.

Biodiesel	2007	2008	2009	2010
Number of producers	3	5	5	5
Production capacity	50	192	204	204
Bioethanol				
Number of producers	1	2	5	5
Production capacity	40	52	200	200



Source: Department of Statistics under the Government of Lithuanian Republic

## BIOGAS

Total biogas production in 2008 was 3 ktce.

- First biogas reactors (methane tanks) were constructed in the 80' for treatment of sewage water sludge. However, after the accident in a similar plant in Russia, commissioning of such plants was suspended;
  - The yeast producer in Panevėžys town, constructed the first biogas reactor, processing yeast and organic residues for ethanol production in 1992;
  - Today there are 7 operating biogas power plants, using anaerobic method for processing of biodegradable waste and producing heat and electricity in combined cycle;
  - 2 power plants using landfill gas.
- Due to Renewable Energy Law the largest potential for biogas is seen in development of CHP plants using landfill gas, gas from industrial waste (bioethanol, dairy, slaughterhouses, etc.) and in agriculture.



JSC "Sema"



Yield of biomass plants for energy in the second growing year, t ha<sup>-1</sup>

Plant species	Biomass yield t ha <sup>-1</sup>
<i>Miscanthus giganteus</i>	6.6
<i>Sida hermaphrodita</i>	9.6
<i>Silphium perfoliatum</i>	4.3
<i>Artemisia vulgaris</i>	7.2
<i>Dactylis glomerata</i>	7.0



## SUSTAINABILITY ISSUES IN ENERGY SECTOR

### Certification:

- All state forests (appr. 50% of the total) are certified according to FSC and most of the private forests, operated by large-scale owners, are certified according to FSC or PEFC. Ministry of Environment is responsible for forest certification. Part of wood processing industry is certified according to FSC "Chain of Custody".
- Requirements for construction and testing of all equipment burning wood fuel are described in harmonized standards covered by directive 89/106/EEC except for the standard for central heating boilers.
- Attestation of conformity for such equipment fired with wood fuel according to the schemes and technical specifications guiding to technical regulation STR 1.01.04:2002 (change in 2003-05-19) "Construction products. Conformity evaluation and CE marking", that adopts directive 89/106/EEC are mandatory.
- In 1997, the Ministry of Agriculture and the Ministry of Health established a specialised institution Ekoagros designed to certify organic agricultural and food products;
- There is no certification system in Lithuania applicable for the whole biomass production chain under conventional agricultural practices.

### RESPONSIBLE INSTITUTIONS

- Comprehensive implementation of sustainable development principles in national policies started only several years ago;
- Traditional distribution of responsibilities among Ministries of Energy, Agriculture and Environment is maintained;
- Mo Energy is responsible for bioenergy development, while Mo Environment and Mo Agriculture play a secondary role;
- Thus, harmonisation of production and sustainability approaches is still a task;
- Sustainability along the production chain is still a challenge.