



Bioeconomy in Lithuania

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The role of agriculture, forestry and fishery in EU countries, 2010

Country	Share of agriculture, forestry and fishery, in GVA, %	Share of employees engaged in agriculture, forestry and fishery, in total number, %
Lithuania	3.4	9.0
Latvia	4.1	8.7
Estonia	3.5	4.2
Denmark	1.2	2.6
Germany	0.9	1.6
Sweden	1.9	2.1
EU-27, average	1.7	5.4

GVA – gross value added

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Lithuanian agriculture and food industry, production in mln. €

	2008	2009	2010	2011
Output of the agricultural production	2.302	1.866	2.043	2.579
Manufacture of food products and beverages	2.815	2.506	2.600	3.001

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Employment in agriculture and related areas

in Lithuania:	2008	2009	2010	2011
Average annual number of employees, <i>thous.</i>	1520	1415.9	1343.7	1370.9
Share of employees engaged in agriculture, forestry and fishery	7.9 %	9.2 %	9.0 %	8.5 %
Share of employees engaged in food products and beverages	3.4 %	3.4 %	3.4 %	3.6 %
Share of employees engaged in agriculture, forestry, fishery and food products, beverages	11.3 %	12.6 %	12.4 %	12.1 %

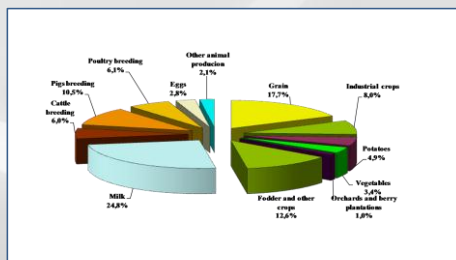
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Population in rural areas in LT

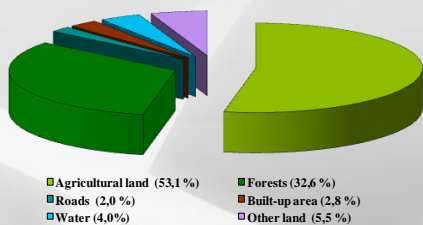
	2007	2008	2009	2010	2011
Average annual population in rural areas, <i>thous.</i>	1120,1	1112,4	1104,4	1086,4	1073,4
Share of rural population, %	33,2	33,1	33,1	33,1	33,1

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Structure of gross agricultural production on all farms 2010, %



Land stock structure, 2010 year, %



The bioeconomy in the EU-27 and LT

Sector	EU -27, annual turnover billion €	Lithuania, annual turnover billion € (2010)
Food	965	2.6
Agriculture	381	2.0
Paper/Pulp	375	-
Forestry/Wood ind.	269	1.2
Fisheries and Aquaculture	32	-
Bio-based industries		
<i>Bio-chemicals and plastics</i>	50 (estimation*)	0.14
<i>Enzymes</i>	0.8 (estimation*)	-
<i>Biofuels</i>	6**	0.12
Total:	2078	6.06

*Estimation for Europe for 2009; **Estimation based on a production of 27 million tonnes bioethanol and 7.7 million tonnes of biodiesel at average market price in Europe; ***EC Facts and figures on the CFP, Basic Statistics Data, ISBN 1831-0118, 2010 Edition

Commission Staff Working document accompanying the document Communication on Innovating for Sustainable Growth: A Bioeconomy for Europe, SWD(2012) 11 final

Biomass of agricultural plants in Lithuania

• The main agricultural products (thousands tons per year)

	2008	2009	2010	2011
Grain crops	3484	3892	2867	3304
<i>wheat</i>	1381	1749	1250	1869
Rape seed	330	416	417	484
Sugar-beet	339	682	707	878

Potential feedstock for industrial biotechnology: 1-2 mln. t/year of grain,
0.4 – 0.5 mln. t/year of rape seed.

• Secondary agricultural production (approx. thousands tons per year):

- Straw - 3000
- Rape straw – 700
- Sugar-beet waste - 600

Potential feedstock for industrial biotechnology: 2 – 2.5 mln. t/year of lignocellulosic biomass.

General characteristics of Lithuanian forests

Parameter	1998	2005	2010
Forest land area, thousands ha	1978	2091	2170
Of which plantations, thousands ha	424	463	
Total growing stock volume, millions m ³	348	393	
Mean volume per ha, m ³	184	198	
Total volume of mature stands, millions m ³	60	82	
Gross annual increment, millions m ³	12	13	
Forest coverage, %	30	32	33.2

Total amount of forestry residues which may be used as fuel or raw materials for industrial biotechnology: approx. 0.75 mln.t/year).

It is expected that short rotation tree plantations will add much to this amount in the future.

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Modern biotechnology in Lithuania

- 1961 – The programme of the biochemistry studies at Vilnius University
- 1962 – The department of Biochemistry at Vilnius University
- 1967 – Institute of Biochemistry
- 1971 – Factory of industrial enzymes in Vilnius

- 1975 – Institute of Applied Enzymology, now Institute of Biotechnology of Vilnius university
number of employees 130 in 1975; 740 in 1989.
 - R&D of classical fermentation and purification technologies for enzyme production.
 - The principal supplier of restriction endonucleases for genetic engineering in the USSR .
In 1983 - marketing of restriction endonucleases in Japan
 - Development of the first technologies in the USSR for the production of human recombinant proteins for medicine

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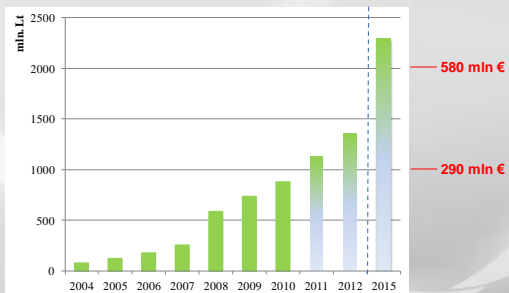
Modern biotechnology in Lithuania

- 1990/91 – Lithuanian independence.
- 1991/94 – Four spin-off's (formed on the basis of production branches), separated & privatized mainly by employees of these Co.
 - JSC **Fermentas** – products for life science research
 - JSC **Sicor Biotech** – recombinant human proteins
 - JSC **Biocentras** – environmental biotechnology
 - JSC **Biok** – enzyme containing cosmetics

Nowadays, the first three companies are the leaders of Lithuanian modern biotechnological industry

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Revenue of Lithuanian Biotech Enterprises (the 10 largest companies)



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JSC ThermoFisher Scientific “Fermentas”



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JSC Sicor Biotech (TEVA)



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SC "Amilina"
producer of wheat starch 100000 t/year
and wheat gluten



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JSC "Mestilla"
(biodiesel fuel producer, 100000 t /year)



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SC "Biofuture"
(bioethanol producer, 40 000 t/year)



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Science

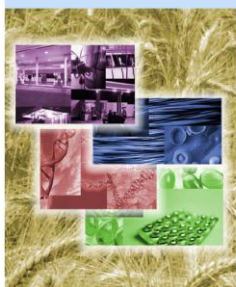
- **High technology development programme 2003 – 2006**
- **High technology development programme 2007 – 2013**
cover the areas of: biotechnology, mechatronics, laser technology, information technology, nanotechnology and electronics

- **Industrial biotechnology development programme 2007 – 2010**
- **Industrial biotechnology development programme 2011 – 2013**
applied research is initiated by SME together with research institution

Science & study institutions

- Vilnius University
- Vilnius Gediminas Technical University
- Kaunas University of Technology
- Vytautas Magnus University
- Lithuanian University of Agriculture

- Institute of Biotechnology
- Institute of Biochemistry
- Lithuanian Institute of Horticulture
- Institute of Immunology
- Institute of Oncology
- Institute of Agriculture
- Forest Research Institute
- Institute of Botany



White Biotechnology

Dr. Jens Riese, Principal
Leader of Global Biosystems Practice,
McKinsey & Company
Press briefing
February, 2009

CONFERENCE, EXHIBITION AND B2B PARTNERSHIP EVENT
SEPTEMBER 12-14, 2012, VILNIUS, LITHUANIA

Life Sciences Baltics

Life Sciences Baltics 2012 – International life sciences forum with top leaders from business and science from all over the world (300). The unique place for the Baltic's potential in life sciences to be presented to the international auditorium. The biggest event of such format in the region.

Next event: 2014!



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CONFERENCE, EXHIBITION AND B2B PARTNERSHIP EVENT
SEPTEMBER 12-14, 2012, VILNIUS, LITHUANIA

Life Sciences Baltics

- **Conference** – Nobel prize winner prof. Ada E. Yonath and many other famous experts from all over the world
- **Exhibition** – the most advanced life sciences sector companies operating in the Baltics
- **Partnership Event** – a great opportunity to find partners for business and FP7 projects
- **Company Visits** - site visits to the leading Lithuanian life sciences companies and R&D centres
- **Start-up session**
- Students Conference „The Coins“

More information: www.lsb2012.com

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Thank you for your attention

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