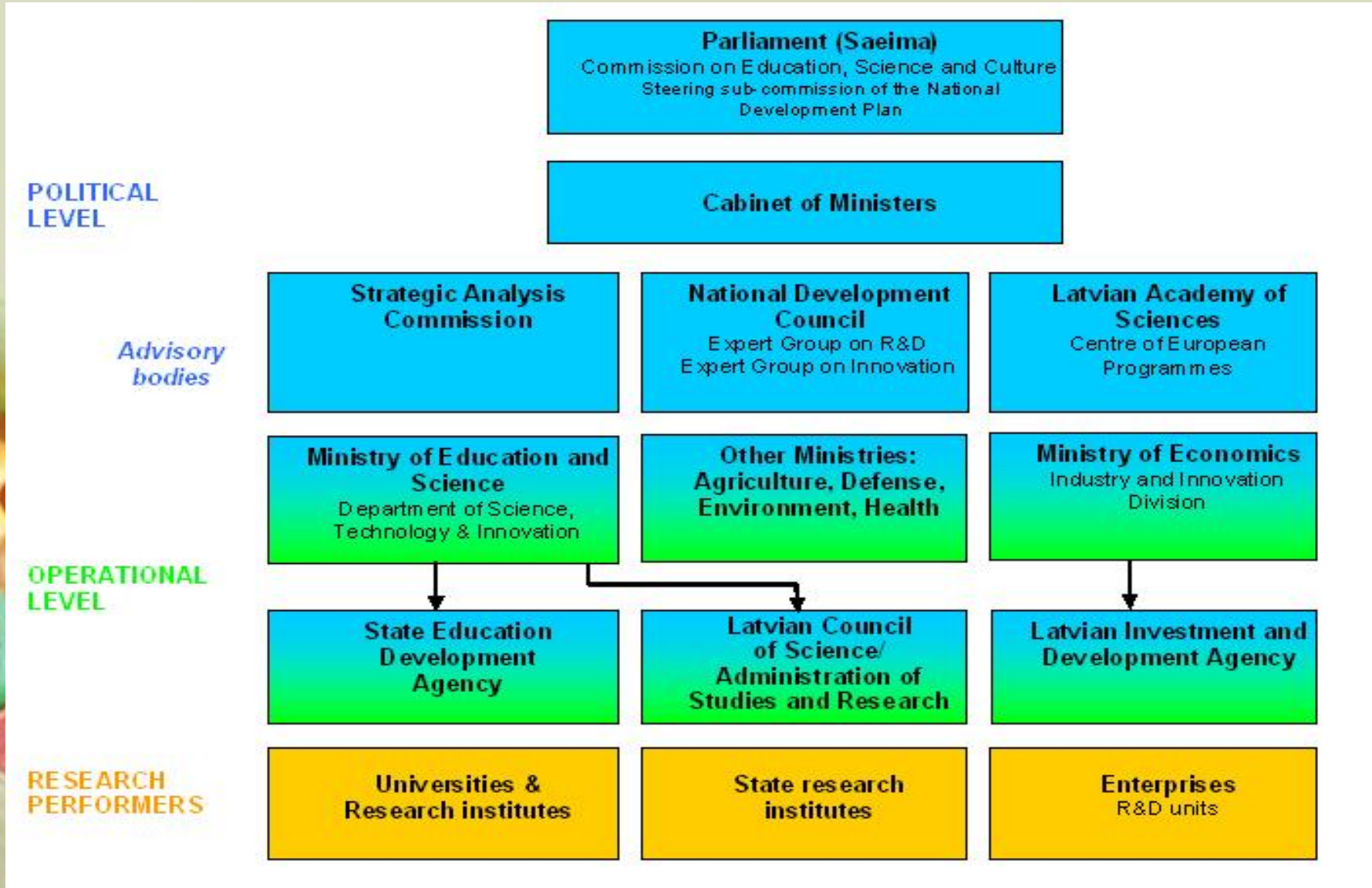
BioEconomy in Latvia

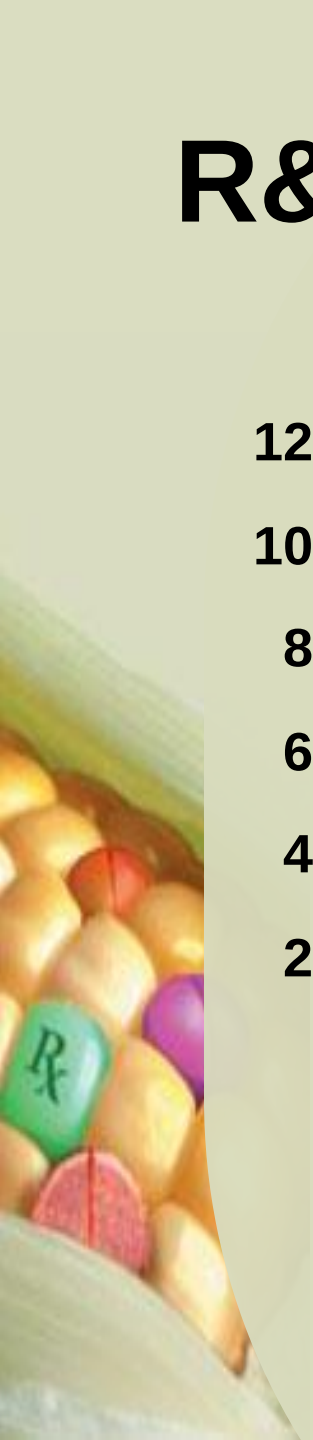
Ina Alsiņa

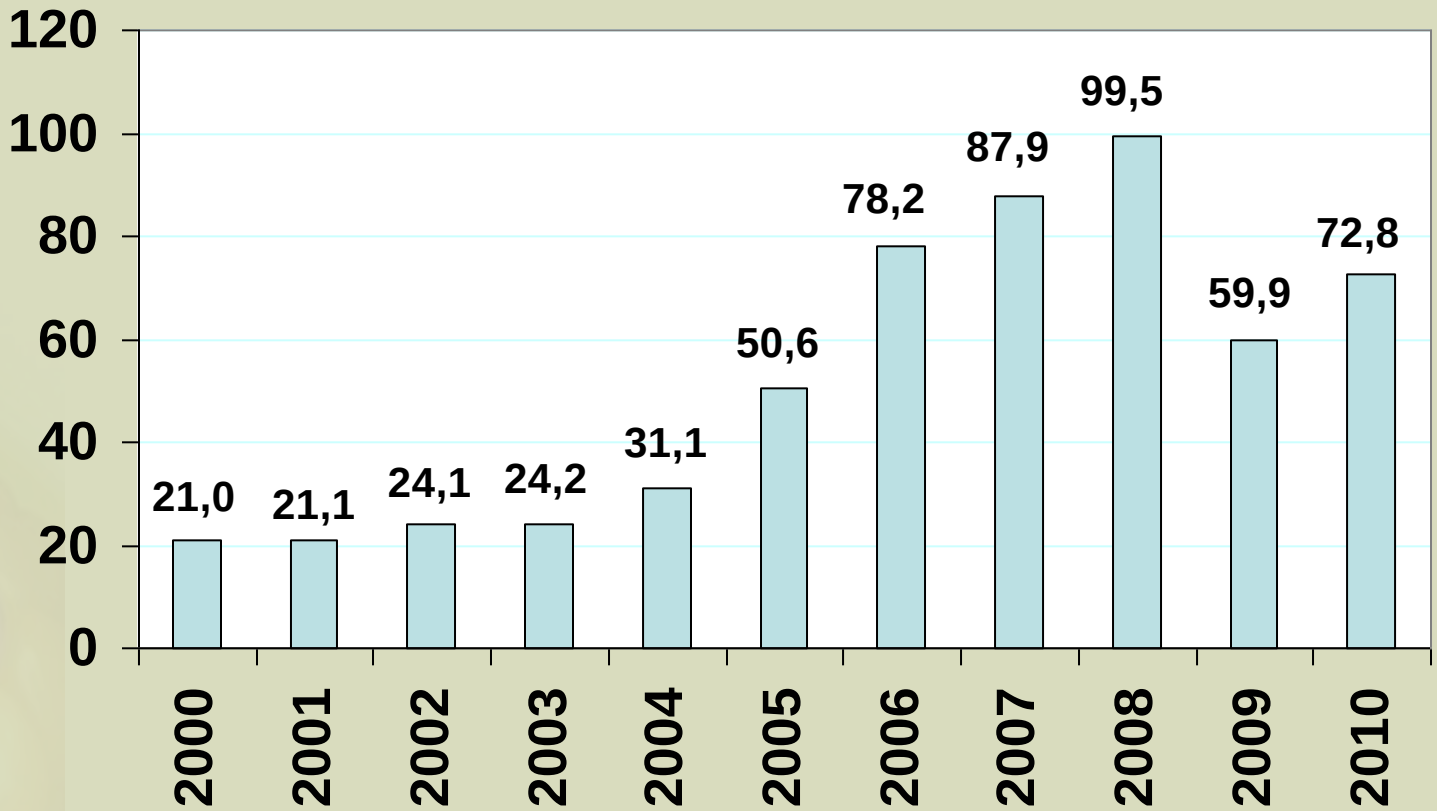
Latvia University of Agriculture

Latvian Research and Innovation Governance Structure

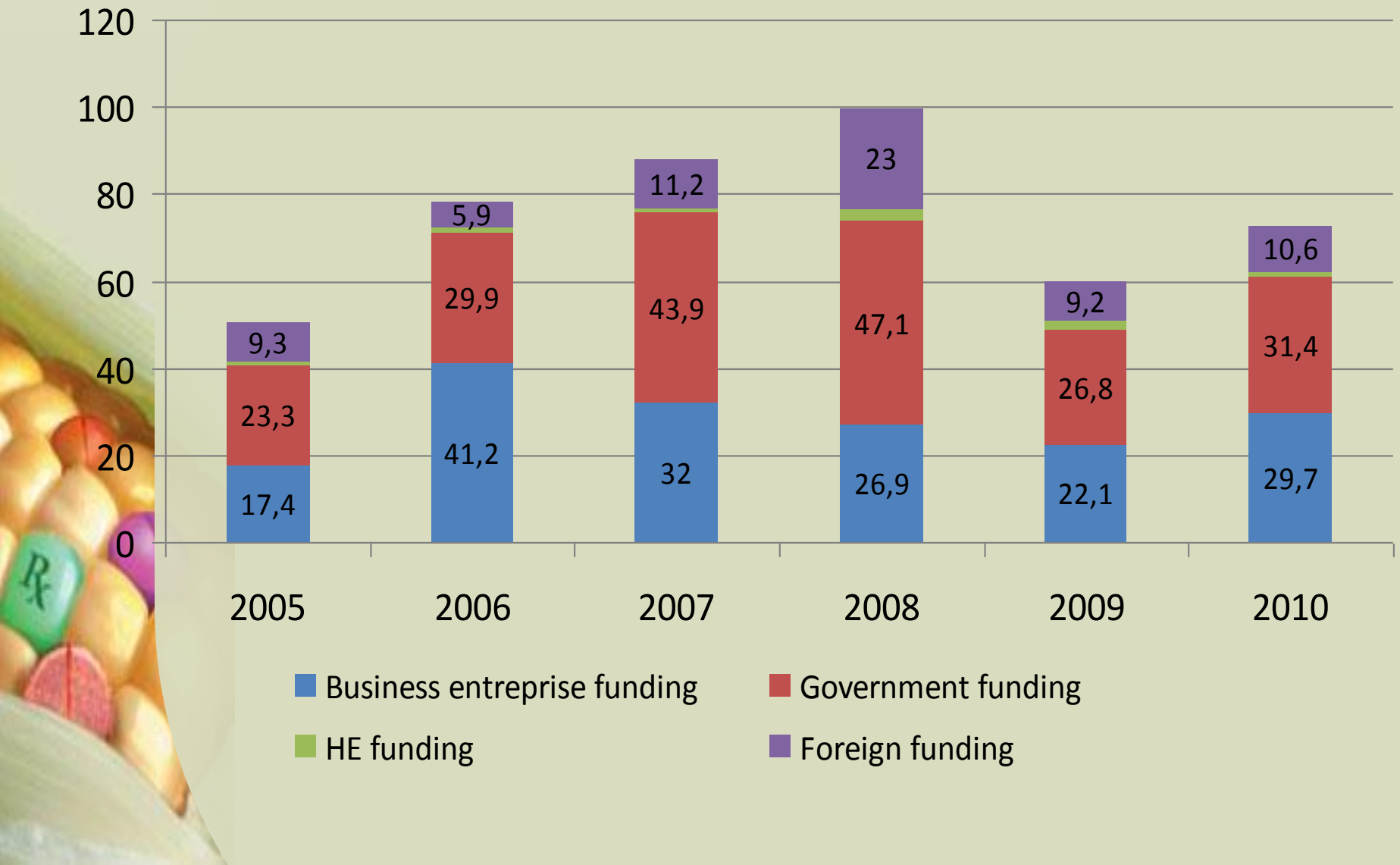


R&D Expenditure (mln. LVL)

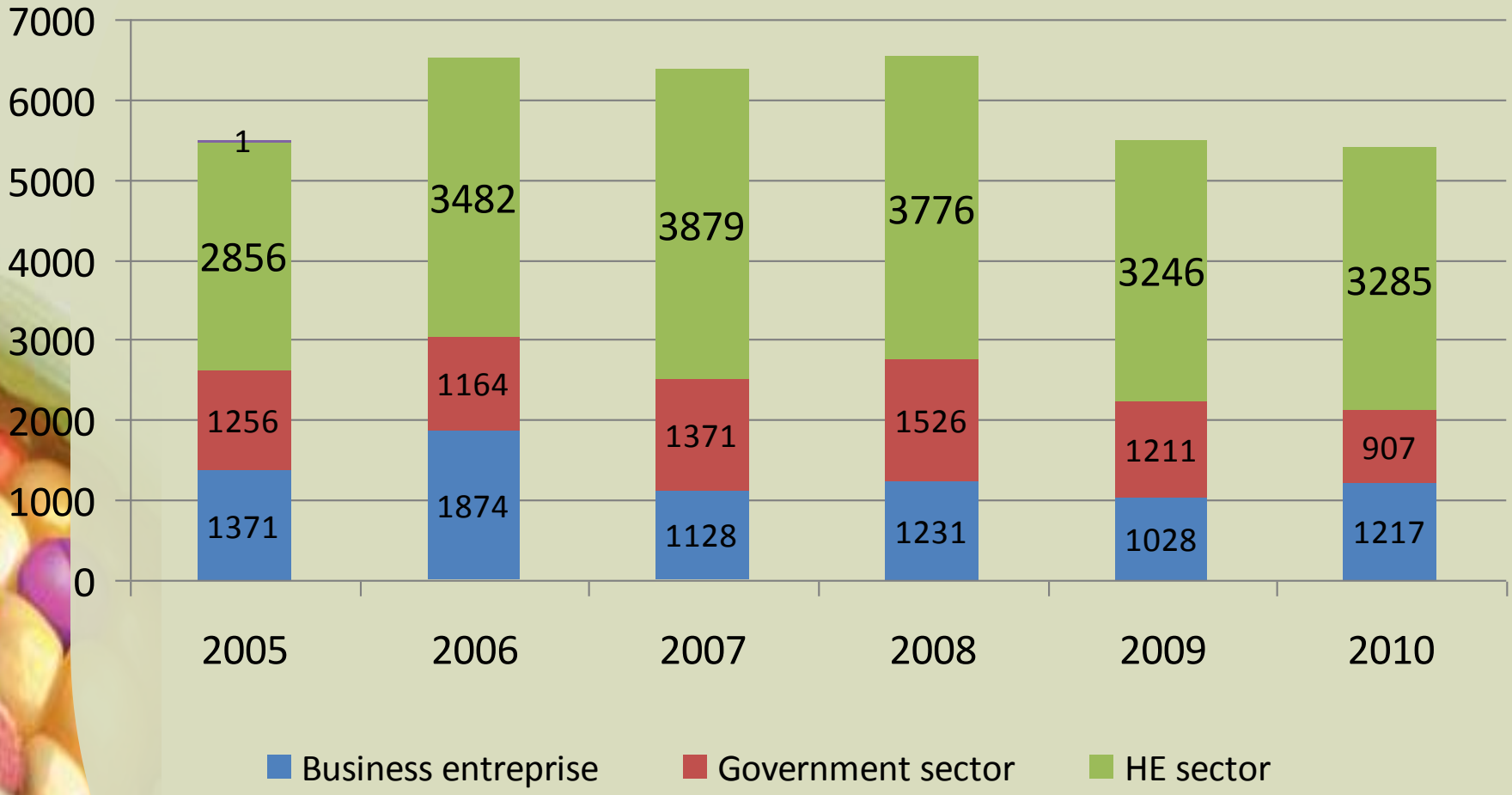




R&D Expenditure (mln. LVL)



R&D employers (number)

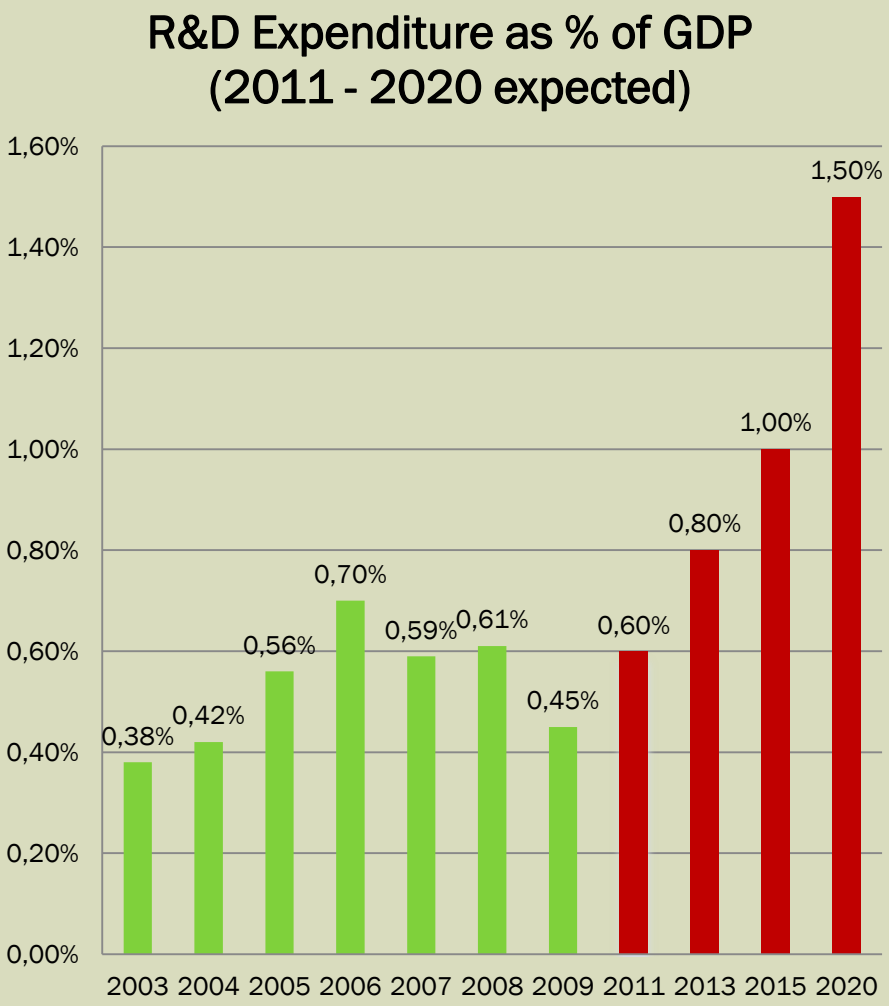


R&D INVESTMENT IN LATVIA

- **1,0% of GDP by 2015:** 0,45% should be financed by the public sector and 0,55% by the private sector.
- **1,5% of GDP by 2020:** 0,60% should be financed by the public sector and 0,90% by the private sector.
- **EU–27:**

2009: 2,01% from GDP

2020: 3% from GDP



Development of research and technologies

Transfer of knowledge and technologies

Innovative enterpreneurship (new products – goods, services, technologies)

2.1.1.3.2. Science academic network

Technology transfer contact points in universities

Business incubators – support for new innovative enterpreneurs

2.1.1.2. Support for participation in international research programmes, exhibitions

Competence centres

Support for introducing new products and technologies in production

2.1.1.1. Applied research projects

Development of new products and technologies

2.1.1.3.1.
1.call –Development of research base infrastructure

2.1.1.3.1.
2.call – Development of commercial research infrastructure

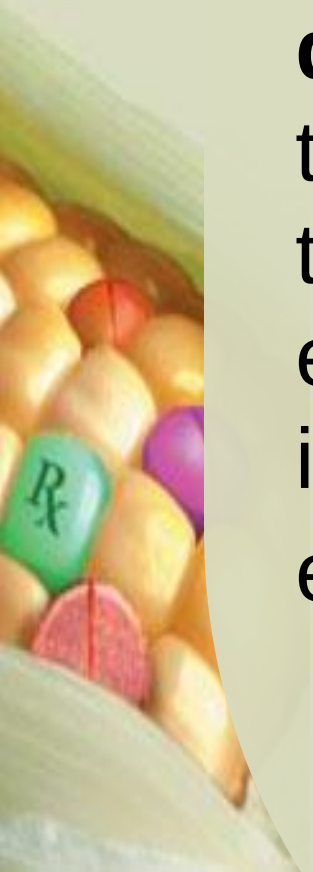
Investment projects with high added value

1.1.1.2. Support for involvement of human resources in science (ESF)

Activities for motivation increasing and starting the business

Ministry of Education and Science

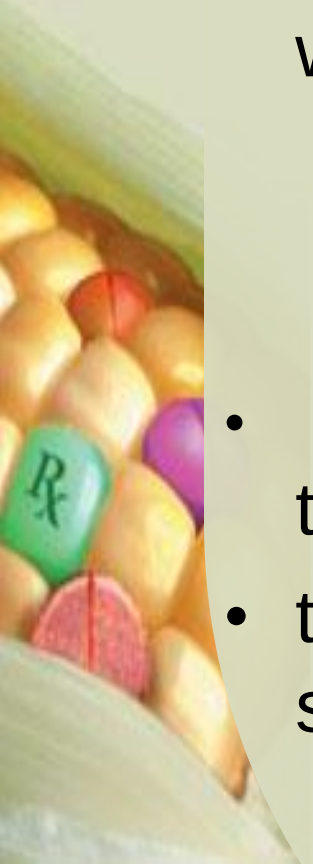
Ministry of Economy



The **key objective of the scientific and technological policy development** is to build science and technology as the basis for the long-term development of a civil society, economics and culture, ensuring the implementation of the knowledge economy and its sustainable growth.

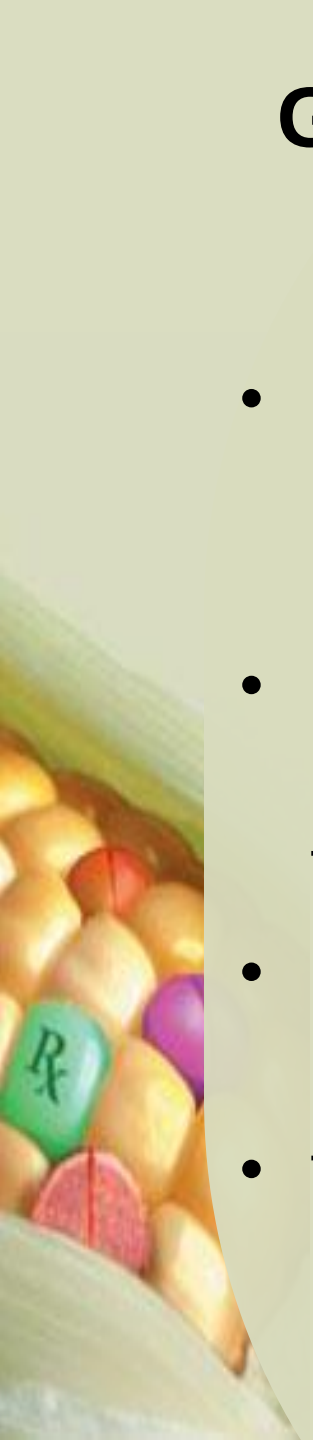
Main tasks:

- increase the number of employees in science and research,
- to establish competitive research institutions with modern material and technical support,
  - ensuring the consolidation of national scientific institutions
  - strengthening their infrastructure,
- the promotion of human resource attraction to science
- the facilitation of the competitiveness of scientists.



Guidelines of Research and Technology for 2009 – 2013

- renewal and development of scientific intellectual potential and research infrastructure;
- increase of state investment for research and technology also achieving private funding;
- competitiveness of scientific activities in international level;
- transfer of knowledge and technology.



Planning initiatives (1)

To concentrate human resources, infrastructure and financial resources as well as to facilitate competitiveness of scientific institutions at the international level:

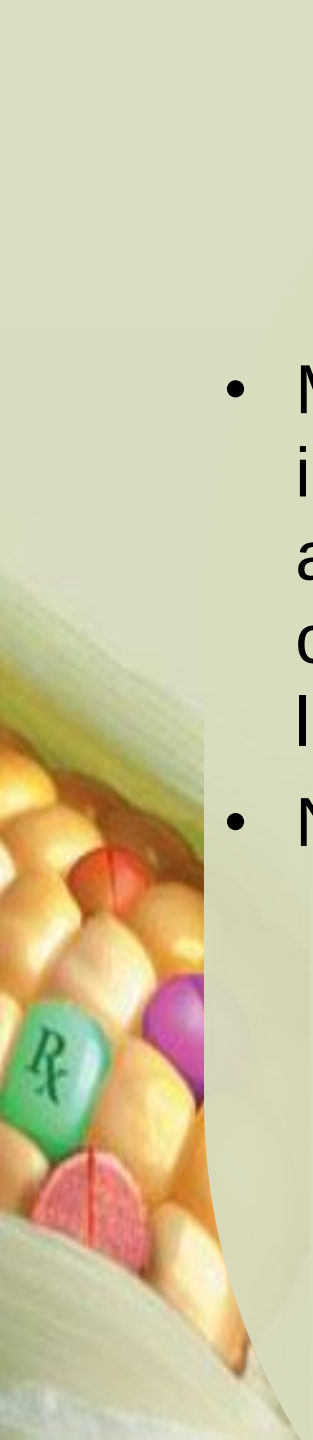
- **concentration of resources and development of the system, which is based on operating strategies of scientific institutions;**
- **implement three levels of hierarchy of scientific institutions:**
  - scientific institutions on regional level (20);
  - NLRC - national level research centers (9);
  - ESFRI road map level research centers (4-5);

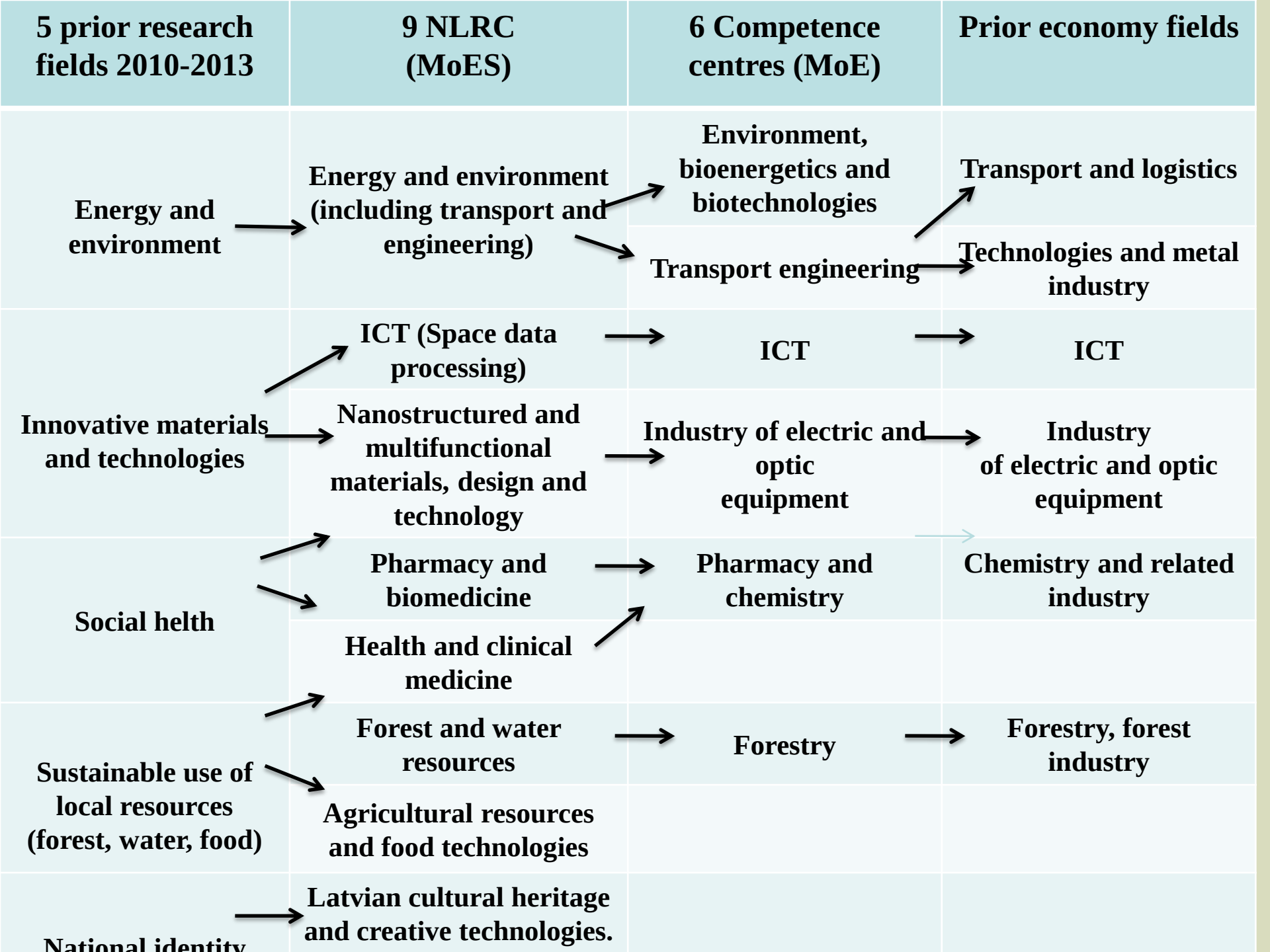
Planning initiatives (2)

- NLRC – framework for cooperation among scientific institutions and for concentration of scientific resources to ensure European-level research in national research priorities:
  - Energy and environment.
  - Innovative materials and technologies.
  - National identity.
  - Social health.
  - Sustainable use of local resources - new products and technologies.
- The main criteria are presence of corresponding field in national economy and a potential of scientific discoveries and implementation of innovations.

Planning initiatives (3)

- MoES has already defined the scientific institutions that have quality of research activities, scientific potential and international competitiveness for qualification to form National level research centers (NLRC)
- NLRC objective is
  - scientific excellence,
  - concentration of research infrastructure (prevention of its fragmentation and
  - commercialization of science/industry-science partnership).




5 prior research fields 2010-2013
9 NLRC (MoES)
6 Competence centres (MoE)
Prior economy fields
Energy and environment
Energy and environment (including transport and engineering)
Environment, bioenergetics and biotechnologies
Transport and logistics
Transport engineering
Technologies and metal industry
Innovative materials and technologies
ICT (Space data processing)
ICT
ICT
Nanostructured and multifunctional materials, design and technology
Industry of electric and optic equipment
Industry of electric and optic equipment
Social helth
Pharmacy and biomedicine
Pharmacy and chemistry
Chemistry and related industry
Health and clinical medicine
Sustainable use of local resources (forest, water, food)
Forest and water resources
Forestry
Forestry, forest industry
Agricultural resources and food technologies
National identity
Latvian cultural heritage and creative technologies.

Planning initiatives (5)

To promote science and technology transfer creating an institutional environment and supporting activities favorable for innovative activities as well as to promote public and private partnership:

- scientific institutions international evaluation of effectiveness, quality and excellence of performed research activities and definition of further development perspectives,
- involvement of private sector investments in R&D in several activities (infrastructures, state research programs, market oriented project program, applied research projects, competence centers, etc.).

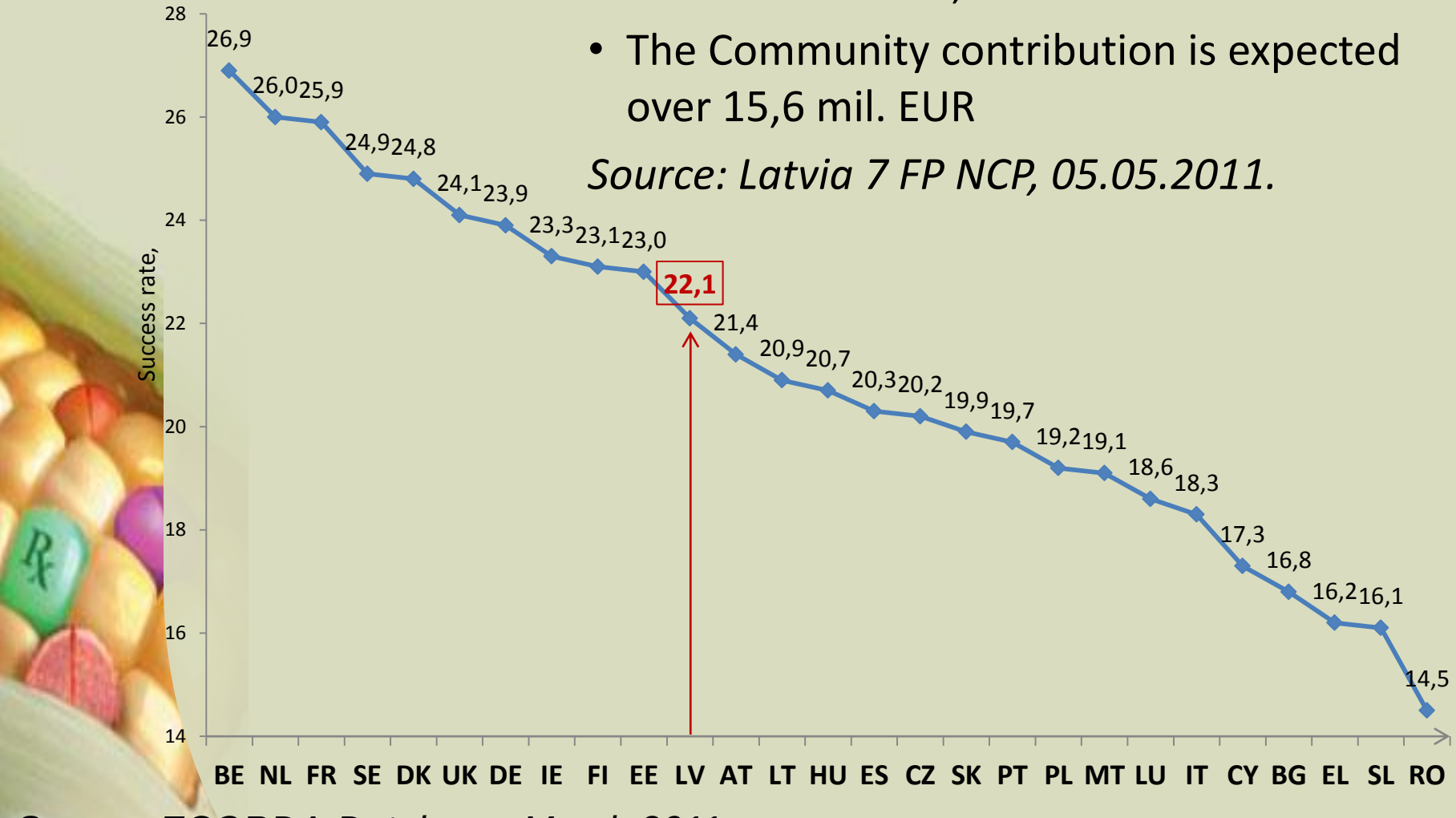
Budget “Science” sub programs (1)

State budget “Science” sub programs	2010 LVL	2011 LVL
Ensuring scientific activities	4 263 708	4 217 229
Base financing for science	7 939 628	7 939 628
Market-oriented research	279 321	160 800
Participation in EU research programs	1 000 000	1 000 000
State research programs	4 000 000	4 000 000
Provision of activities of Latvian Science Council	50 000	50 144
Total	**17 532 657**	**17 367 801**

In FP7 Latvia has submitted 740 project proposals:

- 162 proposals retained
- 141 contracts are concluded at the moment
- Success rate – 22,1%
- The Community contribution is expected over 15,6 mil. EUR

Source: Latvia 7 FP NCP, 05.05.2011.



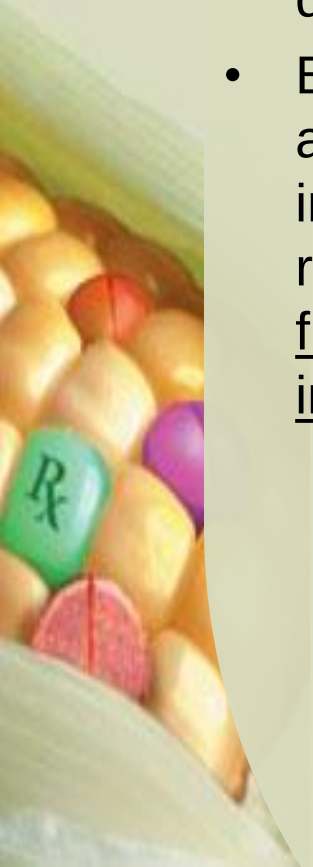
Source: ECORDA-Database, March 2011

Budget “Science” sub programs (1)

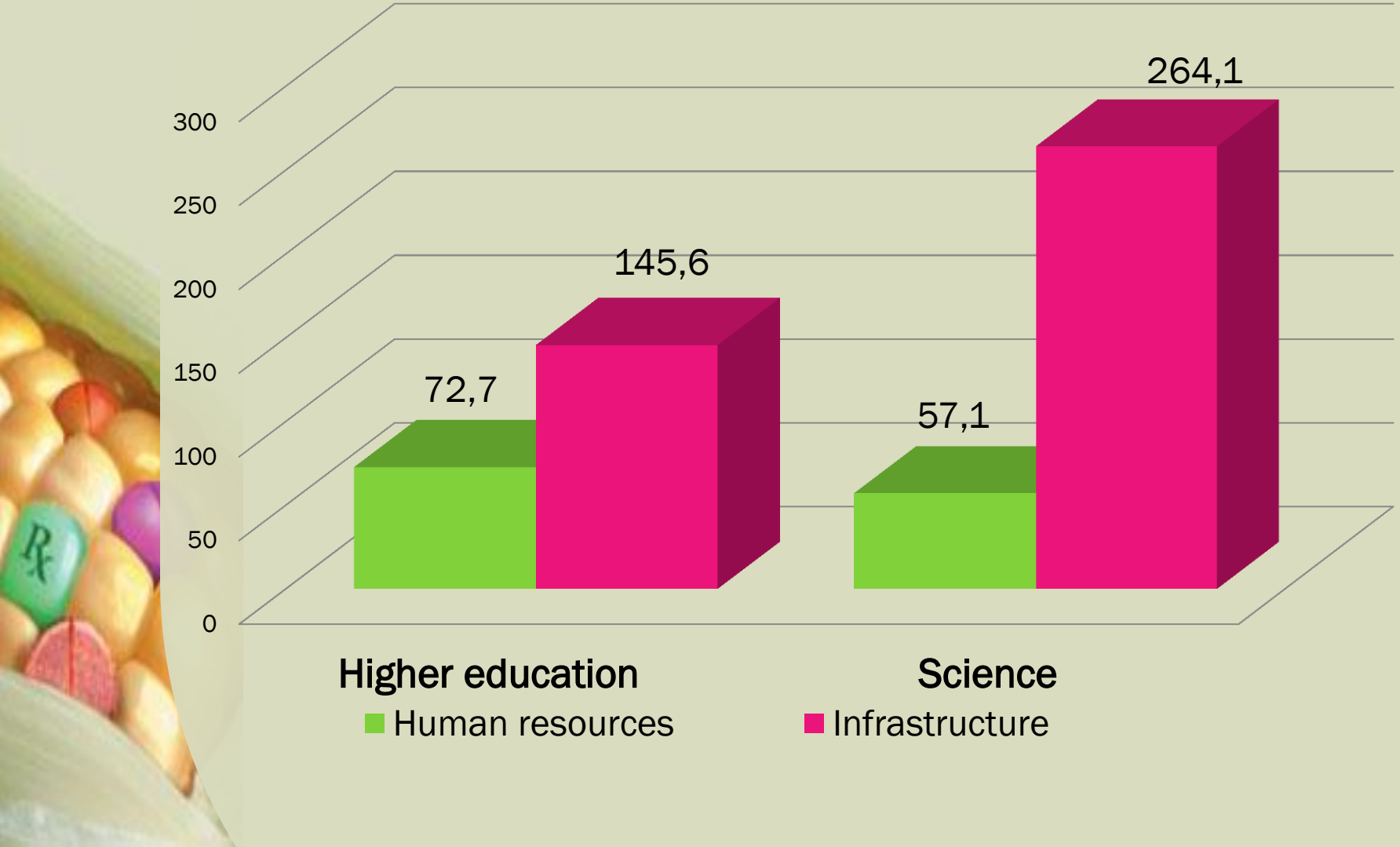
- The aim of the fundamental and applied research is to facilitate creation of new knowledge, to promote development of technological finding that may be without direct relation, putting them to immediate industrial and commercial use, and to support implementation of new and competitive scientific studies as applied for by scientists.
- The aim of market-oriented projects is to facilitate integration of science and manufacturing through supporting cooperation between scientists and entrepreneurs in the development of joint research projects, development of new technologies and products and to facilitate the development of technology-oriented sectors.

Budget “Science” sub programs (2)

- National research programs are state commissions for the performance of specific economic, educational, cultural or other sector of priority to the state with the purpose of promoting the development of such sector.
- Base financing for science is the state base line finding which aims to covering the maintenance costs for research institutions, base line salaries for researchers and salaries for research support staff, as well as ensure necessary co-finansing for the EU structural funds projects and other international projects.
  - **State base line funding is allocated to those state research institutions that satisfy definite quality criteria on research activities and scientific potential and it shall receive as international evaluation of the activity thereof every six years.**



EU Structural Funds for HE and Science in 2007-2013 (mln. EUR)



Results & Funding, 2007-2013

R&D infrastructure and support for applied research	
In 2010 within R&D projects 30 scientific institutions supported. During the period from 2011 to 2013 EU Structural Funds will provide additional funding 20,82 mil. LVL per year for persons employed in science sector. For comparison: the base funding 7,9 mil. LVL in 2010 (applies to ESF and ERDF).	ERDF 185,6 mil. LVL
Human resources	
ESF support for scientific groups was attracted to 585 full-time equivalent workers in the scientific staff that is more than 7,4% of persons employed in R&D in Latvia. Till 2013 is planned to increase the proportion of persons working in science and research field (% of working population in the country to 0.8%).	ESF 40 mil. LVL **Total:** **225.9 mil. LVL**

Structure of national economy (by added value),%

	2008	2009	2010	2011
Agriculture, forestry, fishery	3.0	3.8	4.5	4.5
Manufacturing	10.8	10.9	13.4	14.2
Other industry	4.3	4.9	5.3	5.2
Construction	10.1	8.0	5.9	6.0
Trading, catering and hospitality industry	18.8	16.9	18.2	18.8
Transport, storage	8.1	11.1	12.1	12.8
Other commercial services	28.4	27.5	25.8	24.5
Public services	16.5	17	14.8	13.9

Structure of national economy (by employed),%

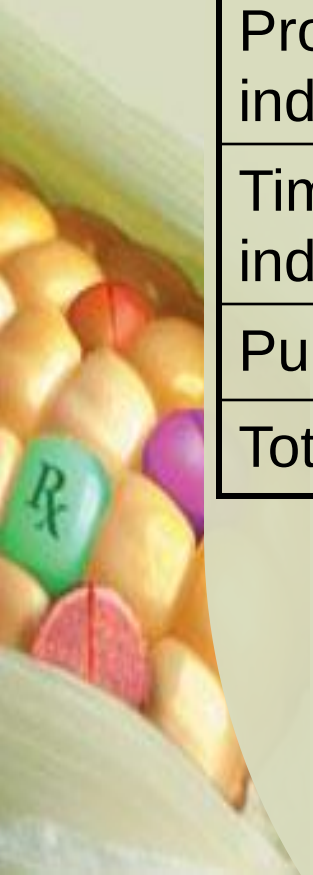
	2008	2009	2010	2011
Agriculture, forestry, fishery	7.9	8.8	8.8	9.7
Manufacturing	14.8	13.2	13.7	13.7
Other industry	2.9	3	3.2	2.7
Construction	11.4	7.8	7.1	7.3
Trading, catering and hospitality industry	18.9	19.1	19.0	18.8
Transport, storage	8.6	8.9	8.7	8.7
Other comercial services	14.9	16.9	17.7	17.5
Public services	20.7	22.3	21.9	21.6

Gross domestic product (bulk),% to previous period

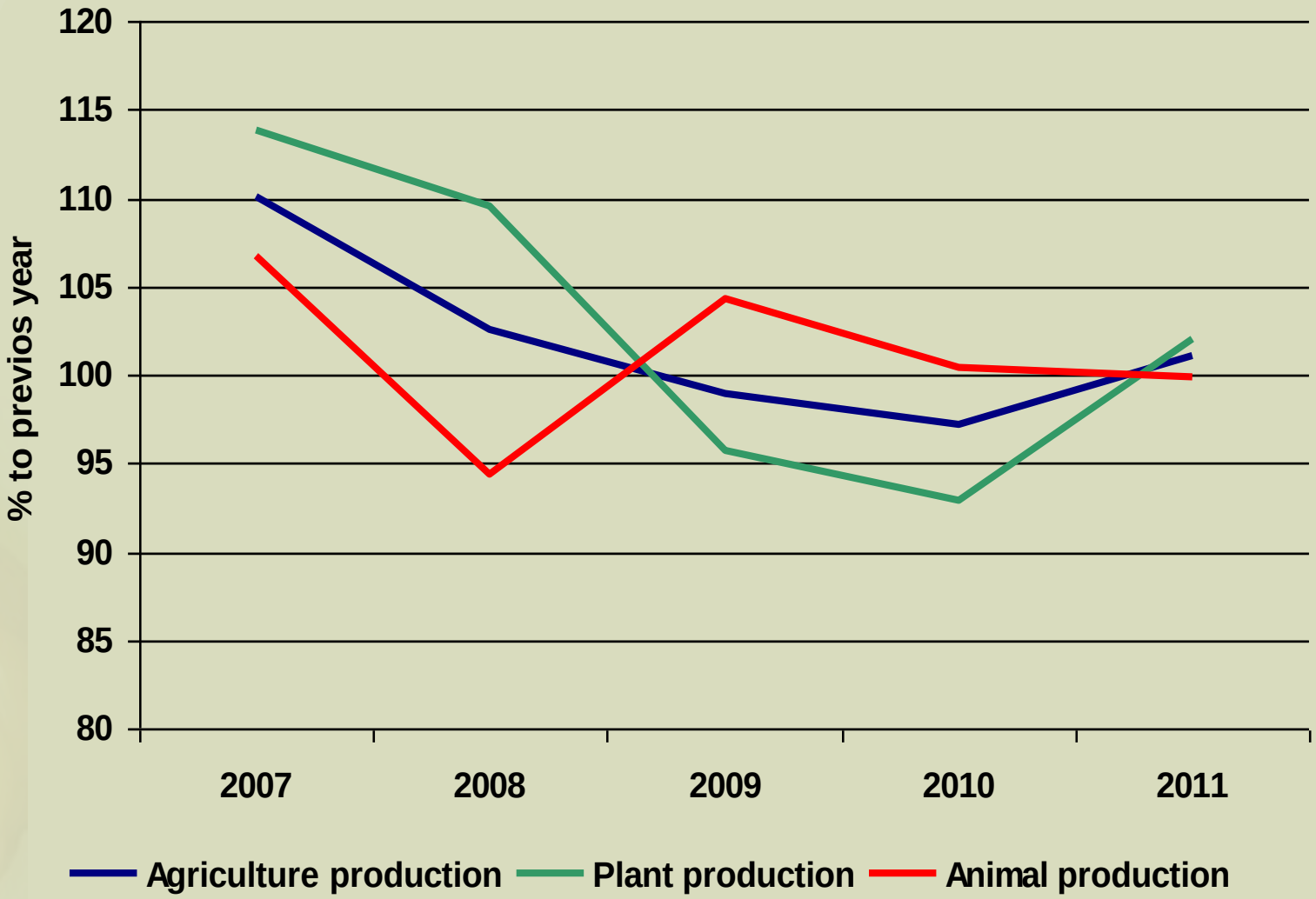
	2005-2007	2008	2009	2010
Agriculture, forestry	3.9	-2.2	9.1	2.2
Manufacturing	4.1	-8.6	-17.8	16.5
Other industry	3.4	6.0	-3.9	6.2
Construction	20.3	-3.5	-32.0	-23.9
Trading, catering and hospitality industry	15.7	-7.0	-25.2	3.1
Transport, storage	10.1	-0.3	1.1	5.6
Other commercial services	9.8	5.4	-14.7	-4.7
Public services	3.5	-0.1	-9.3	-6.4
GDP	10.3	-3.3	-17.7	-0.3

Export, %

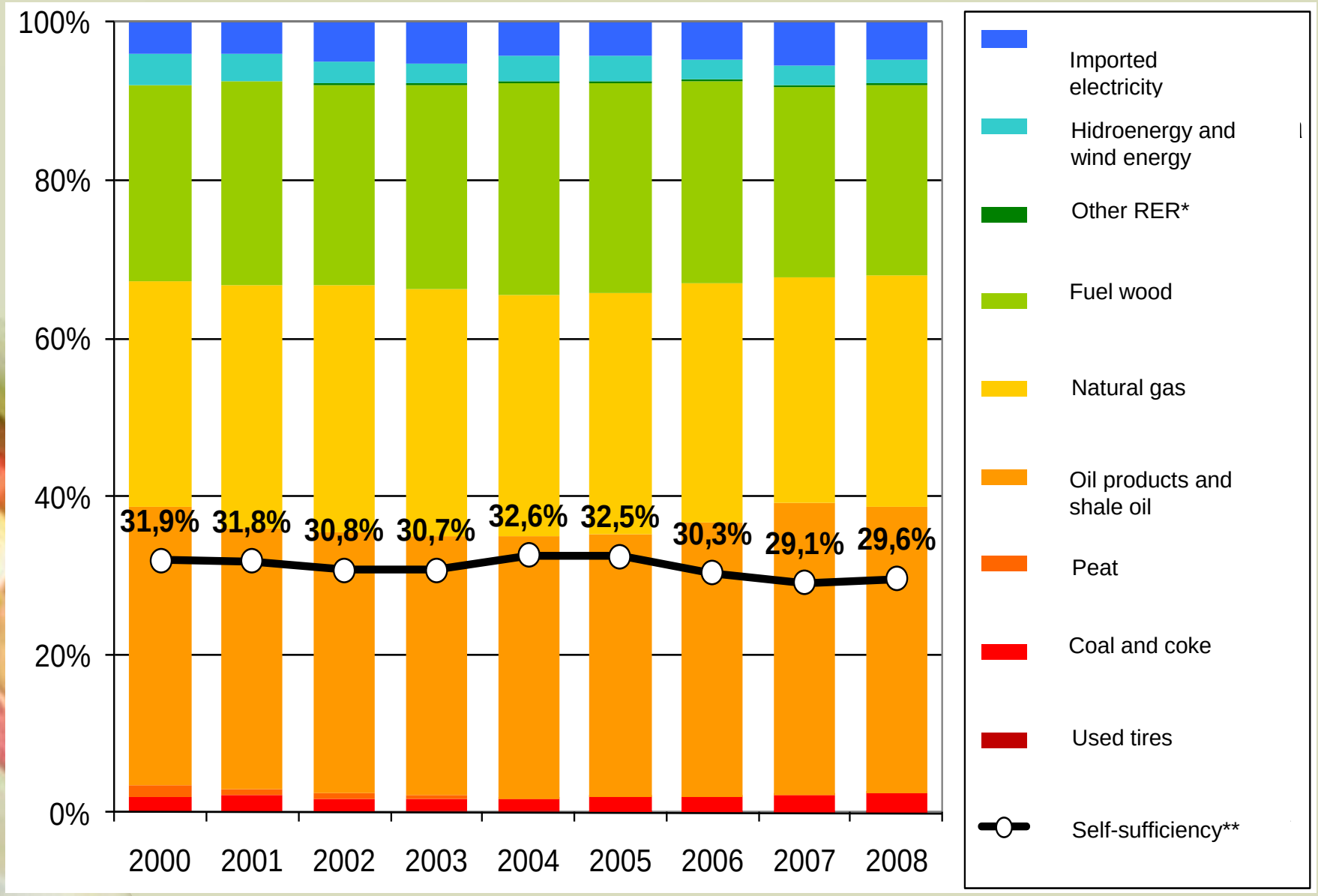
	2007	2008	2009	2010
Agriculture and food staffs	14.4	16.9	18.6	17.9
Production of chemical industry	7.4	8.4	8.5	7.4
Timber and wood work industry	22.5	16.6	16.5	19.0
Pulp and paper industry	1.7	1.6	1.8	2.1
Total (100%), billion LVL	4.04	4.4	3.9	4.7



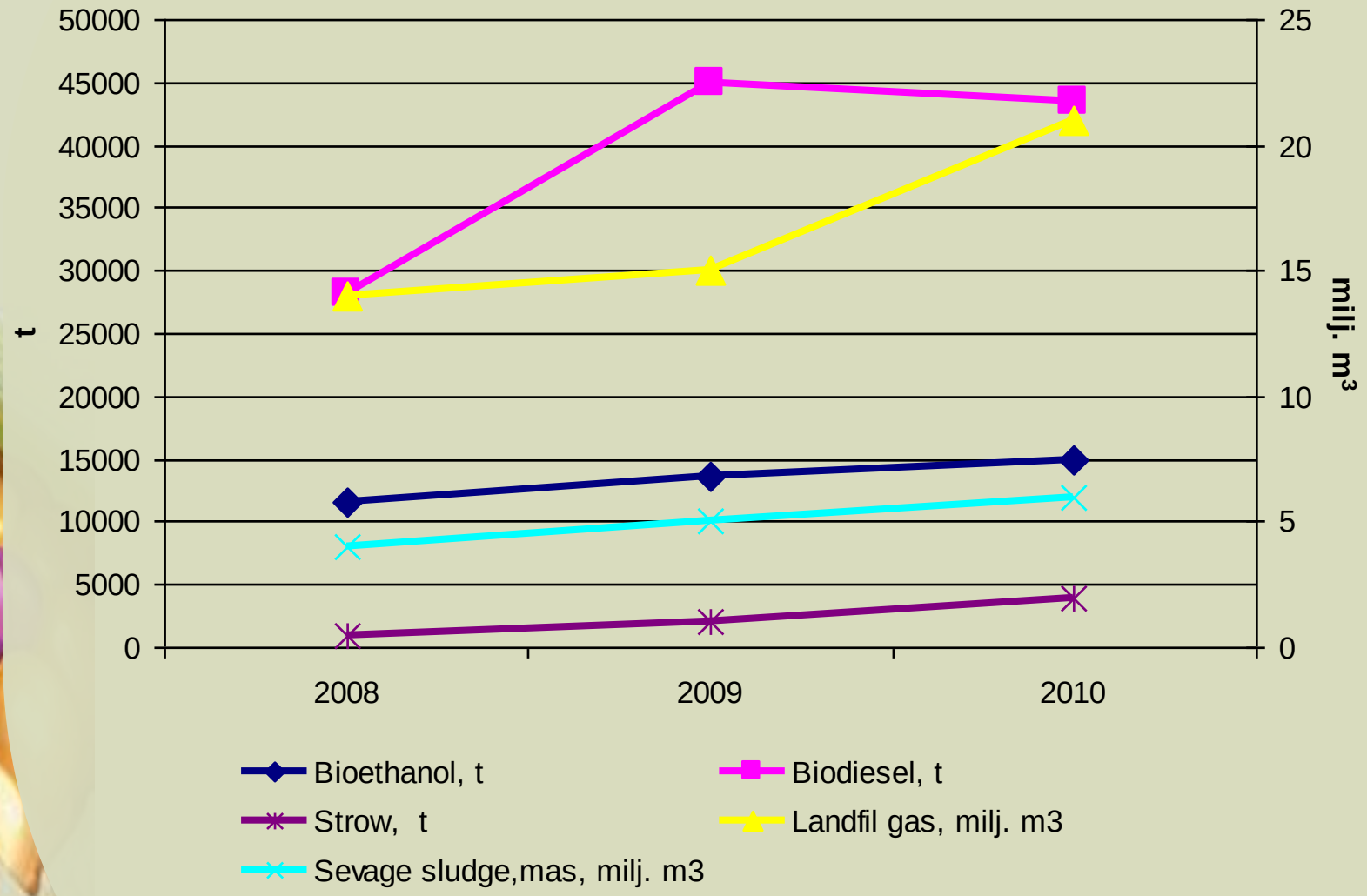
Indexes of agricultural production



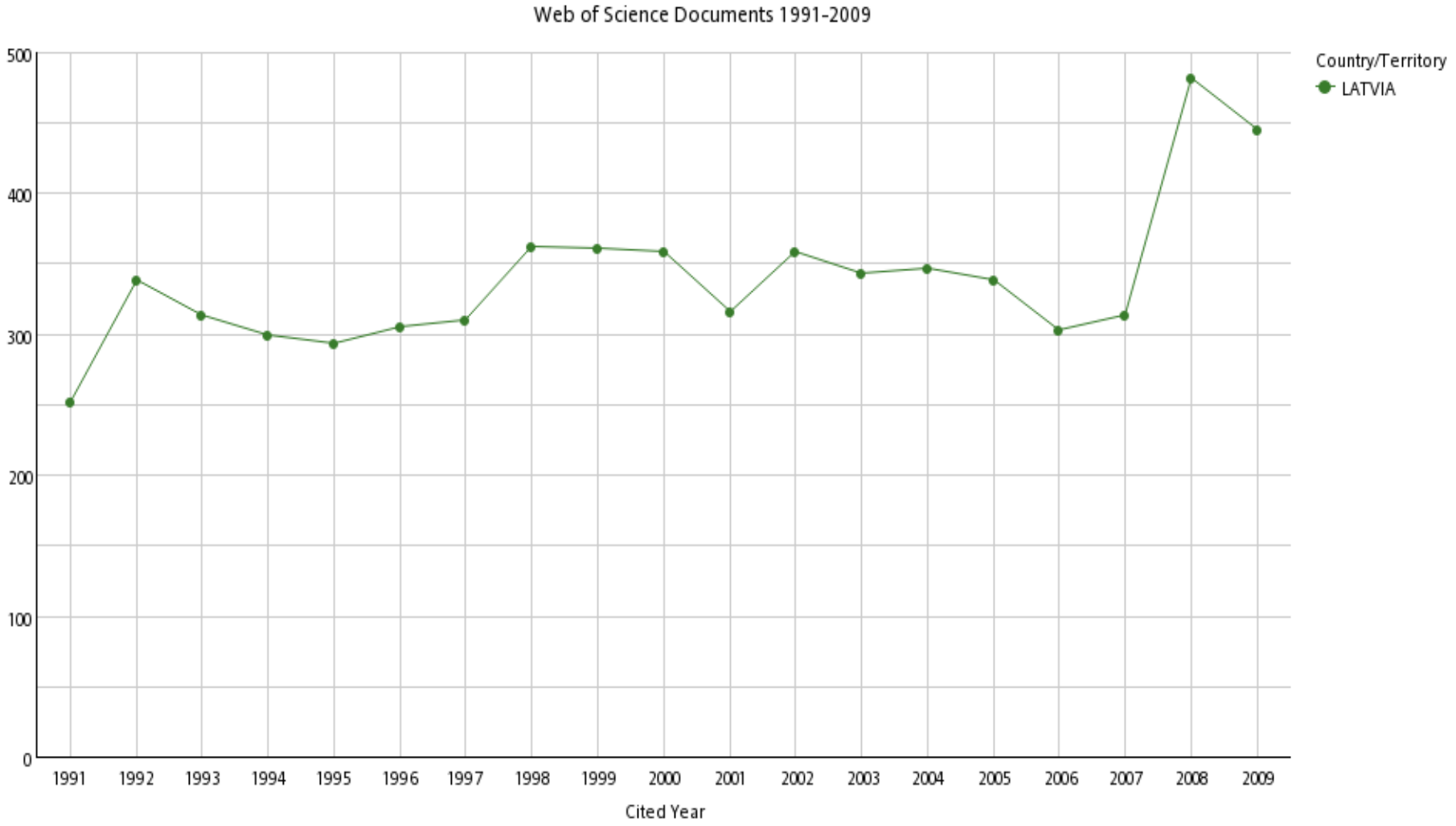
Trends in primary energy consumption



Production of renewable energy



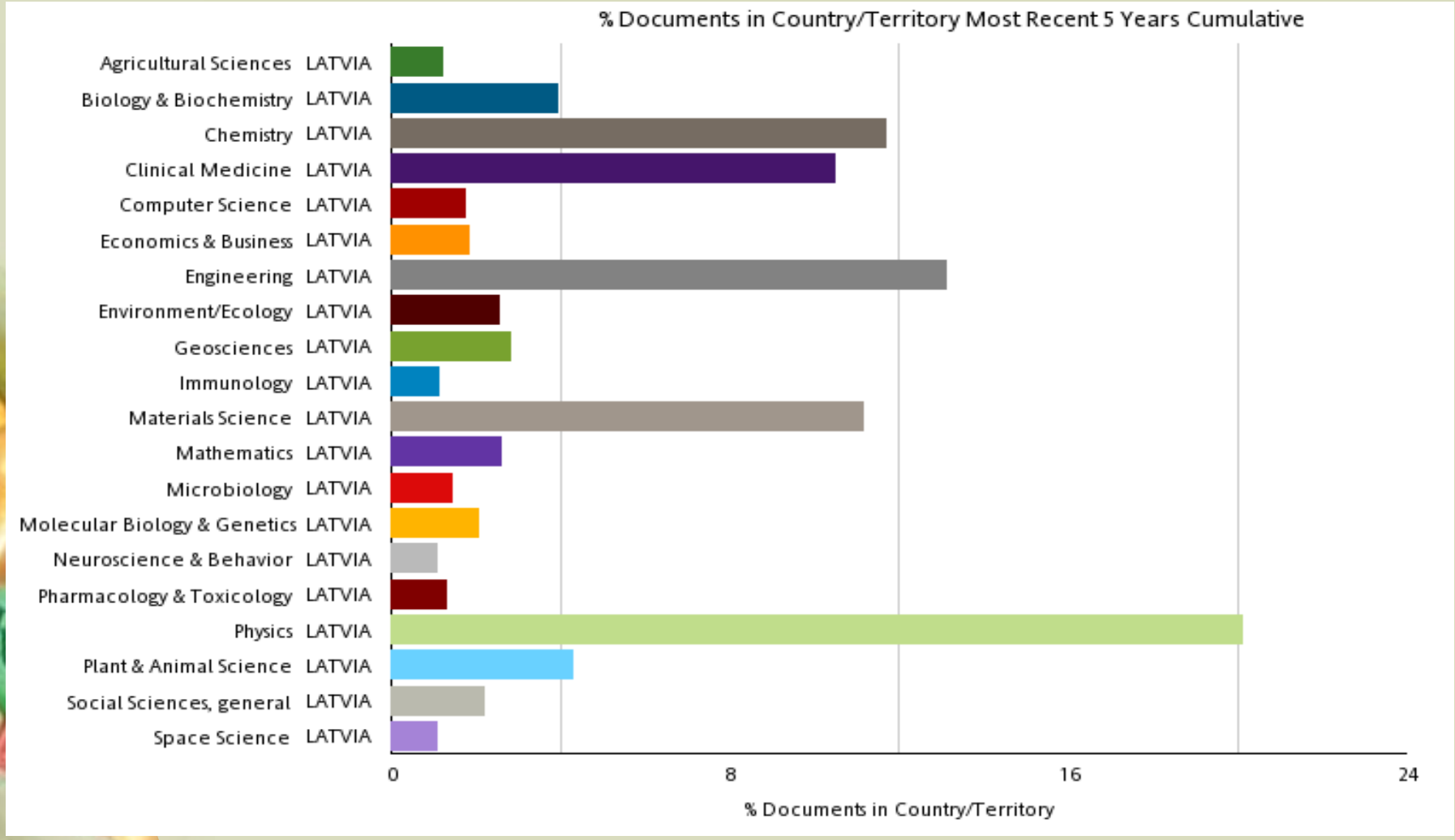
Latvian publications in high impact scientific journals



(overview October 2010)

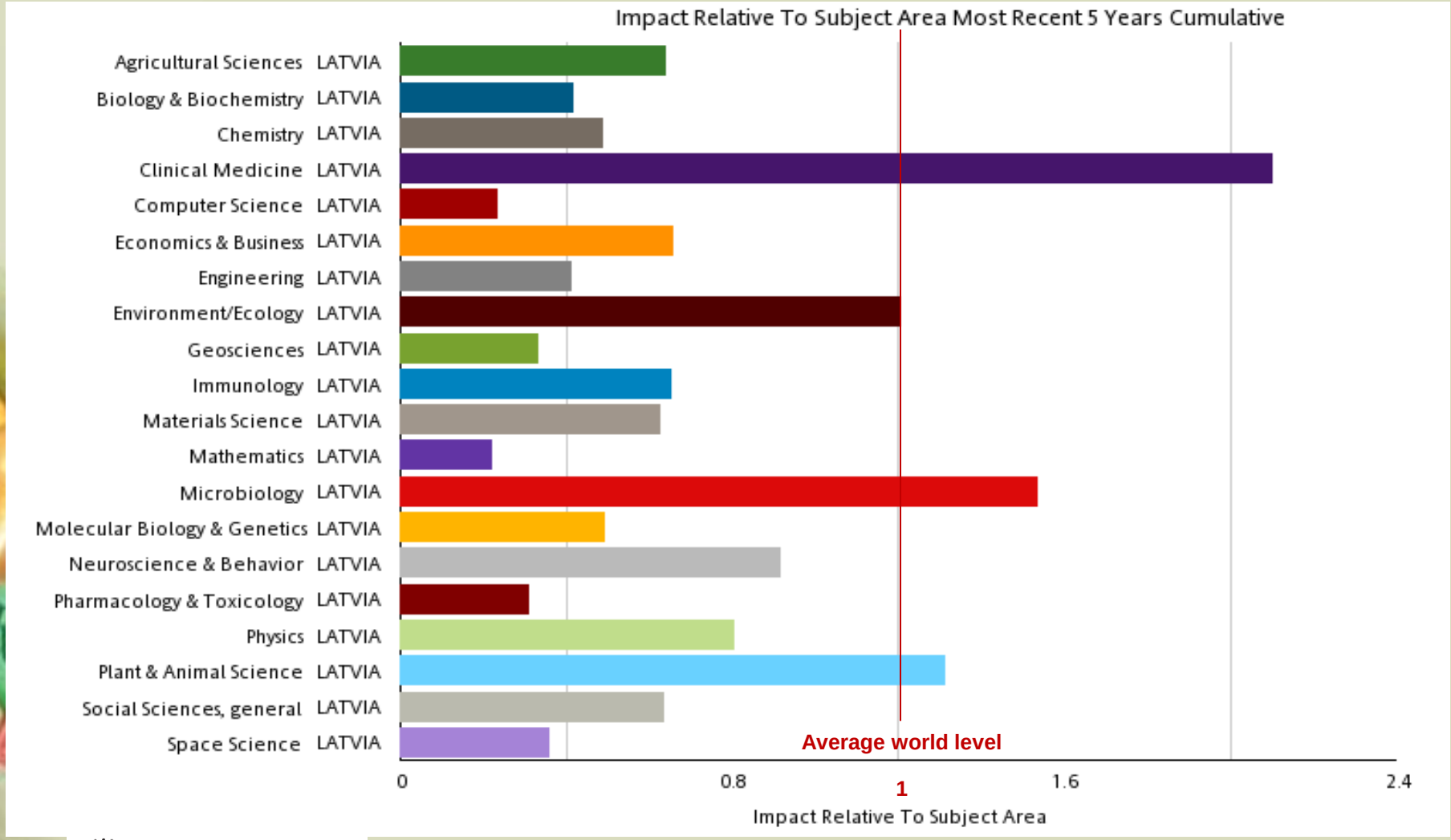
THOMSON REUTERS

Observing Latvia Research Focus



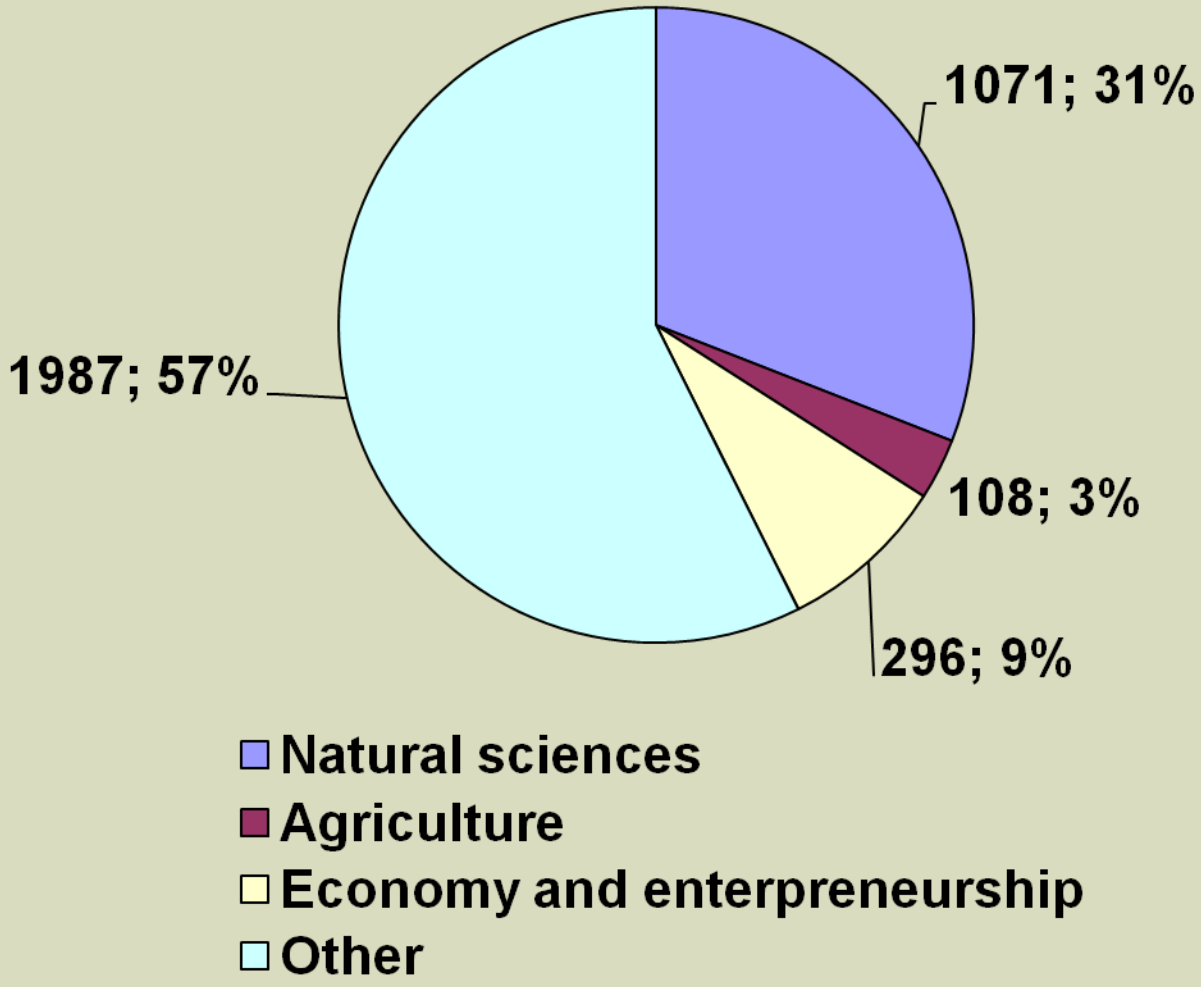
THOMSON REUTERS

Searching for Centers of Excellence



THOMSON REUTERS

, Number of Ph D. in Latvia



Research activities in Biotechnology

- Gene engineering (Latvian Biomedical Research and Study Centre)
- Recombinan proteines (Latvian Biomedical Research and Study Centre)
- Food biotechnology (University of Latvia, Latvia University of Agriculture)
- Environment biotechnology (University of Latvia, Riga Technical University)
- Stem cell biotechnology (University of Latvia)
- Biomaterials (Riga Technical University)
- Biodegradation of wood materials (Latvian State institute of Wood Chemistry)
- Biogass production technologies (Latvia University of Agriculture)
- Bioengineering (Latvian State institute of Wood Chemistry)
- Animal biotechnology (Research Institute of Biotechnology and Veterinary Medicine “SIGRA”)
- Systembiotechnology (Latvia University of Agriculture)

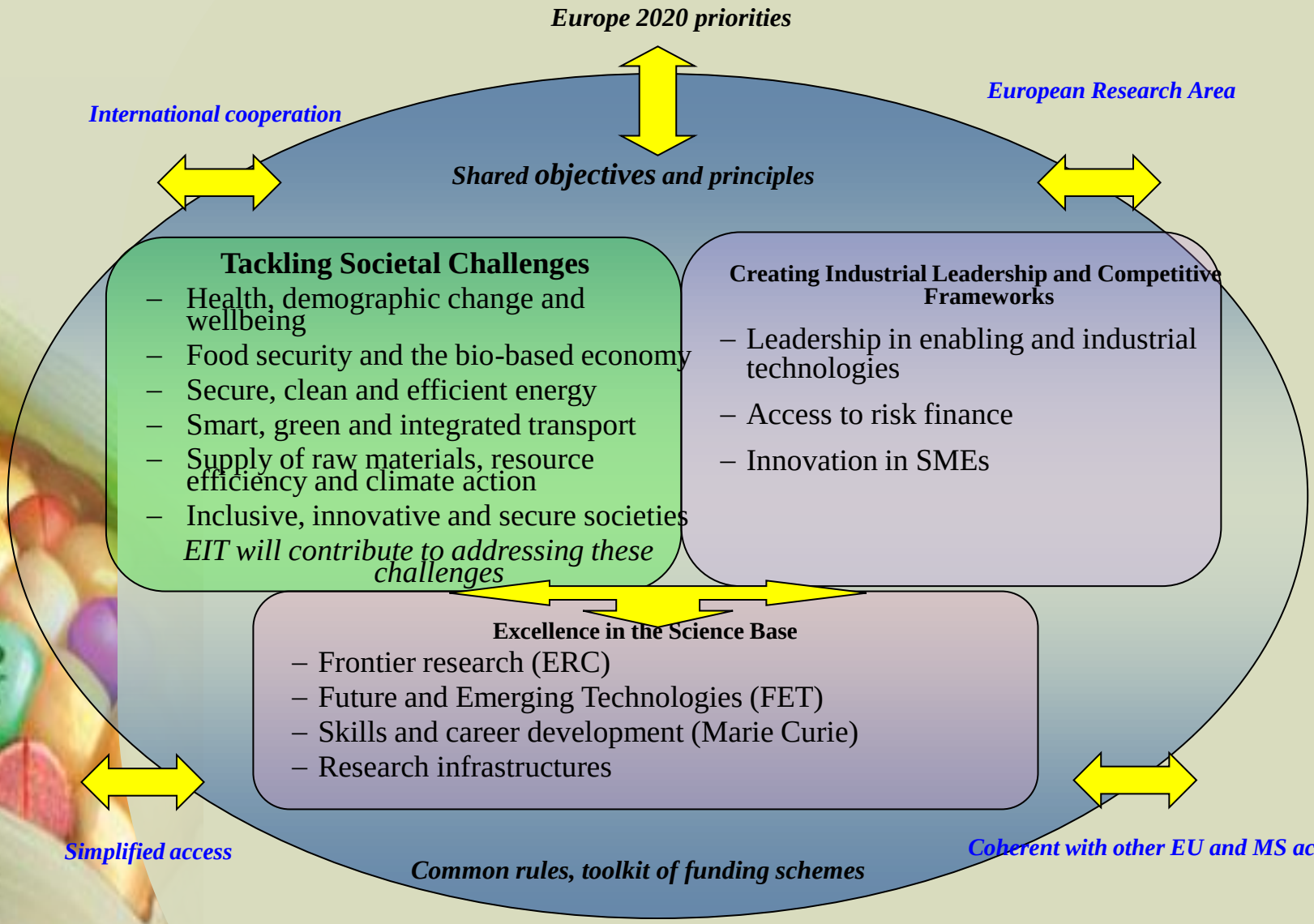
SME activities

Starting approximately from beginning of 1990s, first small and medium-size biotech companies (SME) appeared and organized their business activities based on private business conditions.

The activities of SME can divided in following directions:

1. Developing and manufacturing of biotechnological and medical equipment (Biosan, Elmi, Biotehniskais centrs);
2. Biotechnology services such as gene synthesis and development of biopharma preparations (Asla-Biotech, GenEra, PharmIdea, Anima Lab);
3. Manufacturing of biological active substances and application of biotransformation processes (Biolat, Silvanols, Bioefekts, BF-esse);
4. Industrial biotechnology (Jaunpagasts Plus, Latvijas Balzams);
5. Environmental protection (Eko Osta, BAO).
6. Marine biotechnology (Lateus)

Horizon 2020 – Objectives and structure



Thank you for your attention!

Ina Alsiņa
Latvia University of Agriculture
Ina.Alsina@llu.lv