



MINISTRY OF  
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# Biotechnology in Estonian RD&I policies

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## Estonia's innovation performance

- ✓ Share of innovative companies in Estonia has increased from 36% in 2002 to 49% in 2004 (*Community Innovation Survey IV*)
  - But process, not product innovation - prevailing type of innovation costs is investments into machinery and equipment (ca 70% of all innovation expenses)
- ✓ Private sector investments into R&D have grown from 0,23% of GDP in 2002 to 0,42% of GDP in 2005 – highest growth rate of private R&D in Europe
  - But R&D performing enterprises make only 0,5% of all enterprises (357 enterprises in 2005, 262 in 2004, 236 in 2003)
- ✓ Innovation expenditure as a share of innovative companies' turnover is 2,4%, and has not increased since 2000. Only a fifth of innovators have expenditure above 5% of turnover.
- ✓ Sales of new products and services amount to 11,6% of innovators' turnover

### **Innovation in Estonia is predominantly incremental and lacks systematicity**

On that background, biotechnology sector shows up as one of the main R&D performing sectors among ICT, electronics and optical equipment industry, finance and chemical industry



## Estonia's innovation policy objectives 2002-2006

Objectives set out in national RD&I strategy Knowledge Based Estonia 2002-2006:

- ✓ Updating pool of knowledge, focus on three technology areas (biomedicine, ICT, nanotechnology)
- ✓ Increasing the competitiveness of industry, main precondition – integrate mechanisms between research and industry

Main targets related to:

- ✓ Increasing level of expenditure on R&D up to 1,5% of GDP by 2006 (*0,94% in 2005, 2006 expected to be slightly above 1%*)
- ✓ Achieving better balance between basic and applied research activities (*in 2005 30% basic research, 20% applied research, 50% experimental development*)



## Selected results

### *Technopolis 2005*

- ✓ Improved R&D financing governance
- ✓ More effective doctoral studies system
- ✓ Centres of Excellence and Competence Centres
- ✓ Increased R&D capacities of enterprises
- ✓ New investments into R&D infrastructure
- ✓ Support for commercialisation of research results
- ✓ Increase of human resources at innovation support structures

### **NOT materialised:**

- ✓ Technology programmes (*although feasibility study for biotechnology programme was conducted by Fraunhofer ISI in 2002*)
- ✓ Support to science-industry mobility



## Public funding of biotechnology

Instrument	Funding organisation	Budget (MEUR)	% of total funding of biotech	% of total budget of the measure
R&D Financing Programme 2002-2005	Enterprise Estonia	4,7	15%	25%
Competence Centres Programme 2003-2007	Enterprise Estonia	5,8	19%	60%
R&D Institutions' Infrastructure Development Programme 2004-2007	Enterprise Estonia	8,4	27%	30%
Centres of Excellence' Infrastructure Development Programme 2004-2007	Enterprise Estonia	2,9	9%	45%
Spinno Programme 2004-2007	Enterprise Estonia	0,4	1%	10%
Business Incubation Programme 2004-2007	Enterprise Estonia	0,1	0%	12%
Grant-based Funding of R&D Institutions 2002-2005	Estonian Science Foundation	1,0	3%	4,4%
Targeted Financing of R&D Institutions 2002-2005	Estonian Scientific Competence Council	7,9	25%	11%
<b>Total</b>		<b>31,2</b>	<b>100%</b>	



## Knowledge-based Estonia 2007-2013

### Follow-up strategy:

- ✓ Continuation of the existing support measures (in improved format)
- ✓ Wider circle of enterprises benefiting from the innovation policy tools, better targeting
- ✓ Sectoral dimension more emphasised, better elaborated
- ✓ Emphasis on human capital and cooperation
- ✓ Emphasis on long-term oriented policy making skills and know-how



## Thematic priority setting

- ✓ Key technologies: ICT, biotechnology, materials
- ✓ Socio-economic challenge areas: healthcare, environment, energy, security

Will be further specified based on the results of foresight activities that will be launched by Estonian Development Fund

Will be carried out:

- ✓ Through national R&D programmes (emphasis on R&D-capable companies)
- ✓ Through cluster development (emphasis on innovation-capable companies)

*Important to achieve interaction between different sectors of the economy: high and low tech sectors, manufacturing and services; creative industries etc*



## National R&D programmes

- ✓ Information and communication technologies (incl applications in health care)
- ✓ Biotechnologies (incl biomedicine and pharmacology)
- ✓ Material technologies
- ✓ Energy (incl oil-shale and sustainable energy technologies)
- ✓ Defence and security

### **Goals:**

- ✓ Increased R&D capability
- ✓ Critical mass
- ✓ Application of key technologies in the economy
- ✓ Economic returns (sales of new products and services)
- ✓ Better public services (health, security etc)

### **Preconditions:**

- ✓ Strategy-building in specific sectors, shared visions
- ✓ Strengthened cooperation between ministries and agencies, active role of the leading ministry in shaping the R&D demand



## Points of departure for national R&D programmes

- ✓ One or more narrow, well-defined focuses
- ✓ Academic excellence
- ✓ Relevance to industry, which is proved by co-funding

National R&D programmes:

- ✓ Include a set of measures on research, innovation and capacity building in education and enterprises
- ✓ Will be tailor-made for each priority field by *ad hoc* group
- ✓ Are predominantly a management instrument, combining and directing different generic measures to serve priority field. Establishing new support measures only for uncovered needs



## Implications for Biotechnology Sector

- ✓ No problems with excellence in Estonian context
- ✓ Low level of applicability of biotech in other industries, except for dairy industry

### Options:

- ✓ **Setting stakes on public sector:** how biotech development and application could contribute to achievement of the strategic objectives of Ministry of Social Affairs, Ministry of Environment, Ministry of Agriculture? Implications for research fields and budgets?
- ✓ **Not forgetting Estonian industry,** however immature it may seem from point of view of applying biotech. What would be the niches of biotech development that e.g wood industry could benefit from?
- ✓ **Commercialisation of IPR**
- ✓ Attracting foreign pharma companies to Estonia?
- ✓ ...



**Thank you!**

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