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## **Research assessment and institutional financing in Estonia**

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Eesti Teadusagentuur  
Estonian Research Council

# **Research assessment and institutional financing in Estonia: 20 years of experience**

Madis Saluveer

Estonian Research Council

KRE, 4 October, Prague

# Outline

- Institutional restructuring in Estonia in 1990s and its outcomes
- International evaluations of Estonian R&D and funding system
- Changes in the institutional financing system
- Investing into the development of R&D system
- Estonian Research Information System ETIS
- Evaluating research - issues for discussion

# Institutional restructuring in 1990s and its outcomes

International evaluations of Estonian R&D and funding system

Changes in the institutional financing system

Investing into the development of R&D system

ETIS

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## R&D and higher education reform in 1990s

- Legislative acts to support the functioning of the new system were adopted
- Research financing system reformed
- Institutional reform launched
- International evaluations of research areas and the R&D funding system carried out
- Higher and post-graduate education brought into accordance with international criteria

## Institutional reform in 1990s

- 1989-1990 - the Estonian Academy of Sciences was re-organised into a classical (personal) type of Academy -> former Academy research institutes were merged with universities

Nature 1 Oct 2009: “With the exception of Estonia, the basic research in the region (CEE) is still controlled by the national academies of science...”
- 1990-1991 All Soviet Union ministerial branch institutes dissolved
- 1990 - Estonian Science Foundation and Estonian Innovation Foundation founded
- 1997 – Research Competence Council (=>Estonian Research Council) established
- 1997 - Archimedes Foundation founded (management of EU framework programmes + NCP network)

## Establishing the legal R&D „backbone“

- 1989 - 1990 - Estonian R&D Council, Estonian Science Foundation and Estonian Innovation Foundation founded
- 1994 – „Organization of Research and Development Act“ adopted by the Estonian Parliament; latest amendments approved by the Parliament in February 2011 (researcher career path, financing instruments, reorganisation of funding agencies)
- 1995 – Universities’ Act adopted
- 1997 – Estonian Academy of Sciences Act
- 2001 - Estonian R&D Strategy 2002-2006 “Knowledge-based Estonia” approved by the Estonian Parliament
- 2006 - Higher Education Strategy for 2006-2015 approved
- 2007 - Estonian R&D and Innovation Strategy 2007-2013 “Knowledge-based Estonia II” adopted by the Estonian Parliament

# Changes in higher and post-graduate education

- 1990 – uniform PhD degree system introduced in Estonia
- 1999 – Estonia signs the Bologna declaration
- 2002/2003 – Estonian universities adopt the 3+2 model for bachelor and master studies
- 2003 – research training (= doctoral studies) becomes 3rd pillar of the Bologna process
- 2012 - researcher career path (junior research fellow)



Institutional restructuring in 1990s and its outcomes

## **International evaluations of Estonian R&D and funding system**

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# International evaluations of Estonian R&D and funding system

- An international (1991-1992) and internal (1994) evaluation of all research areas carried out
- 2000-2004 - international evaluation of all the R&D areas carried out
- 2003 - International evaluation of the R&D financing system by PREST (Manchester, UK)
- 2010 – regular evaluation of Estonian R&D institutions: international team of 16 evaluators; 4 broad R&D fields („broad and shallow“ evaluation)
- 2011 – first targeted evaluation of a research area carried out („narrow and deep“ evaluation of plant and soil science)

Institutional restructuring in 1990s and its outcomes

International evaluations of Estonian R&D and funding system

## **Changes in the institutional financing system**

Investing into the development of R&D system

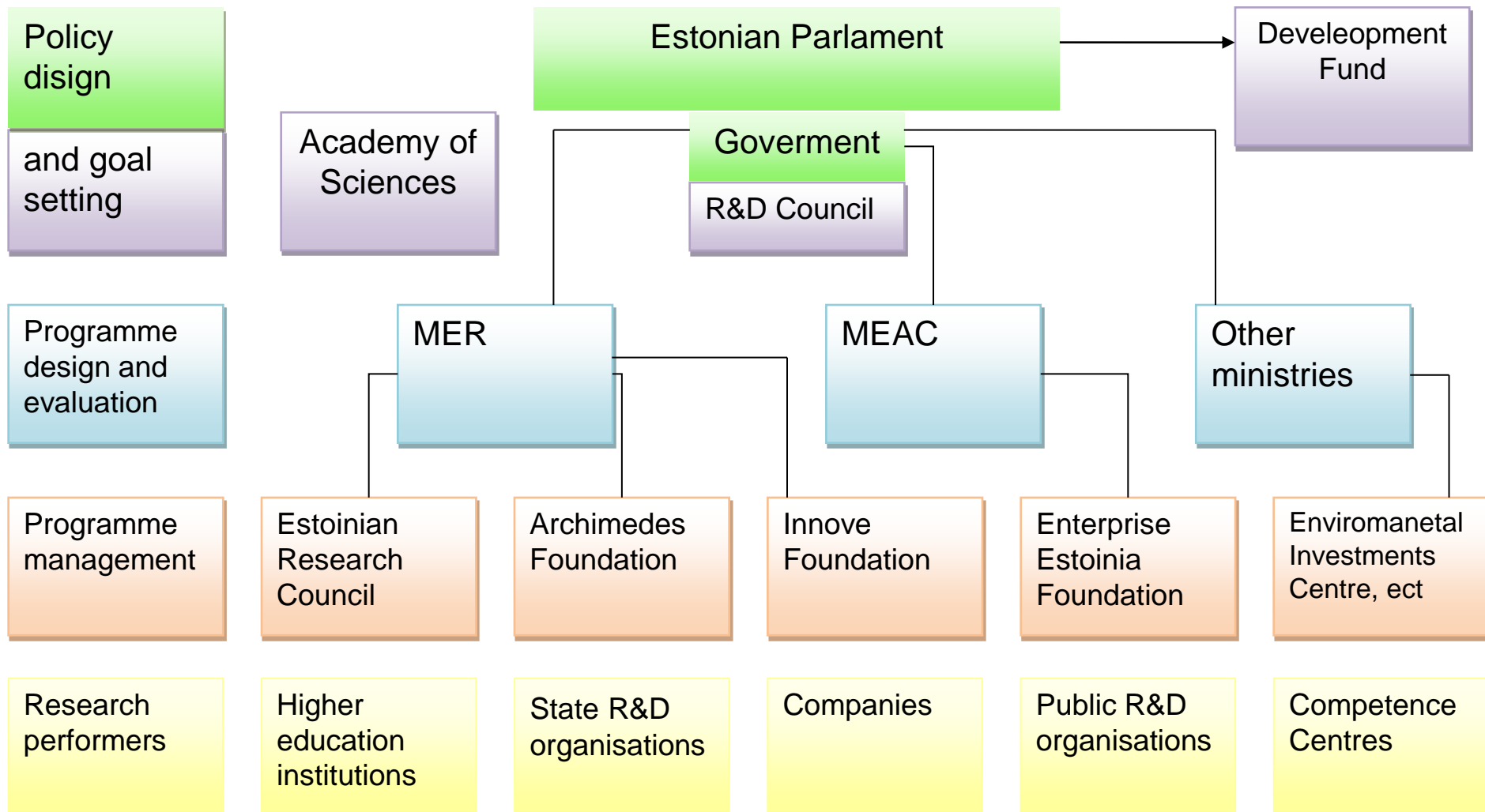
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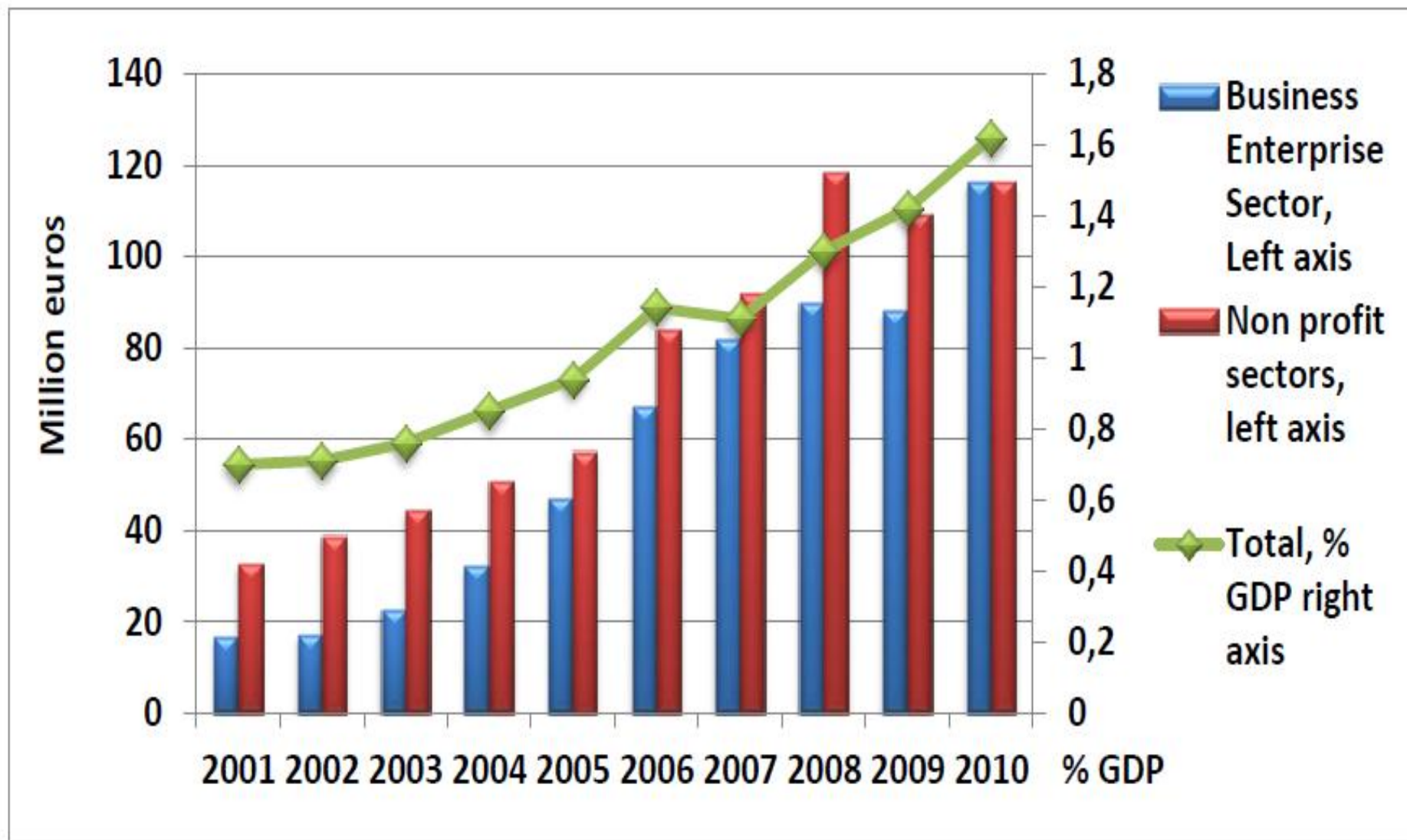
# Evolution of the R&D funding system

- 1994-2012: Estonian Science Foundation grants (personal)
- 1997 – 2012: targeted financing of research topics (multi-annual team funding of institutions)
- =>2012 ff: institutional and personal research funding
- 2005: Base-line funding (formula-based institutional funding)
- 1999: MER national programmes (limited domains, e.g Estonian language&literature, history, folklore; national collections; language technology, etc)
- 2001: Centres of excellence programme
- 2003: support for maintaining R&D institutions' infrastructure
- 2007: launch of EU-financed national programmes
- 2007: Post-doc funding schemes (Mobilitas, Ermos)

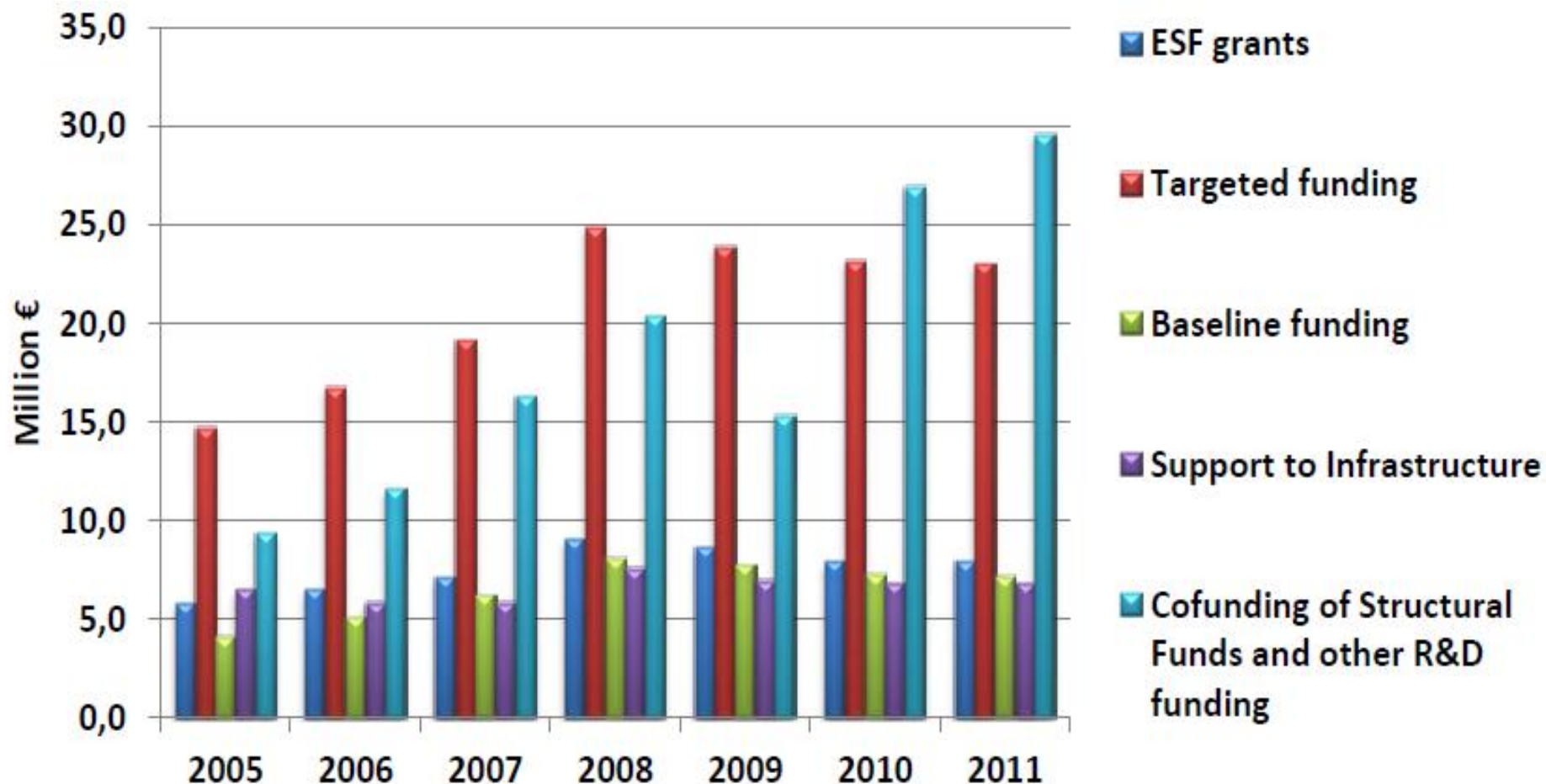
# Overview of the governance structure of the Estonian R&D system



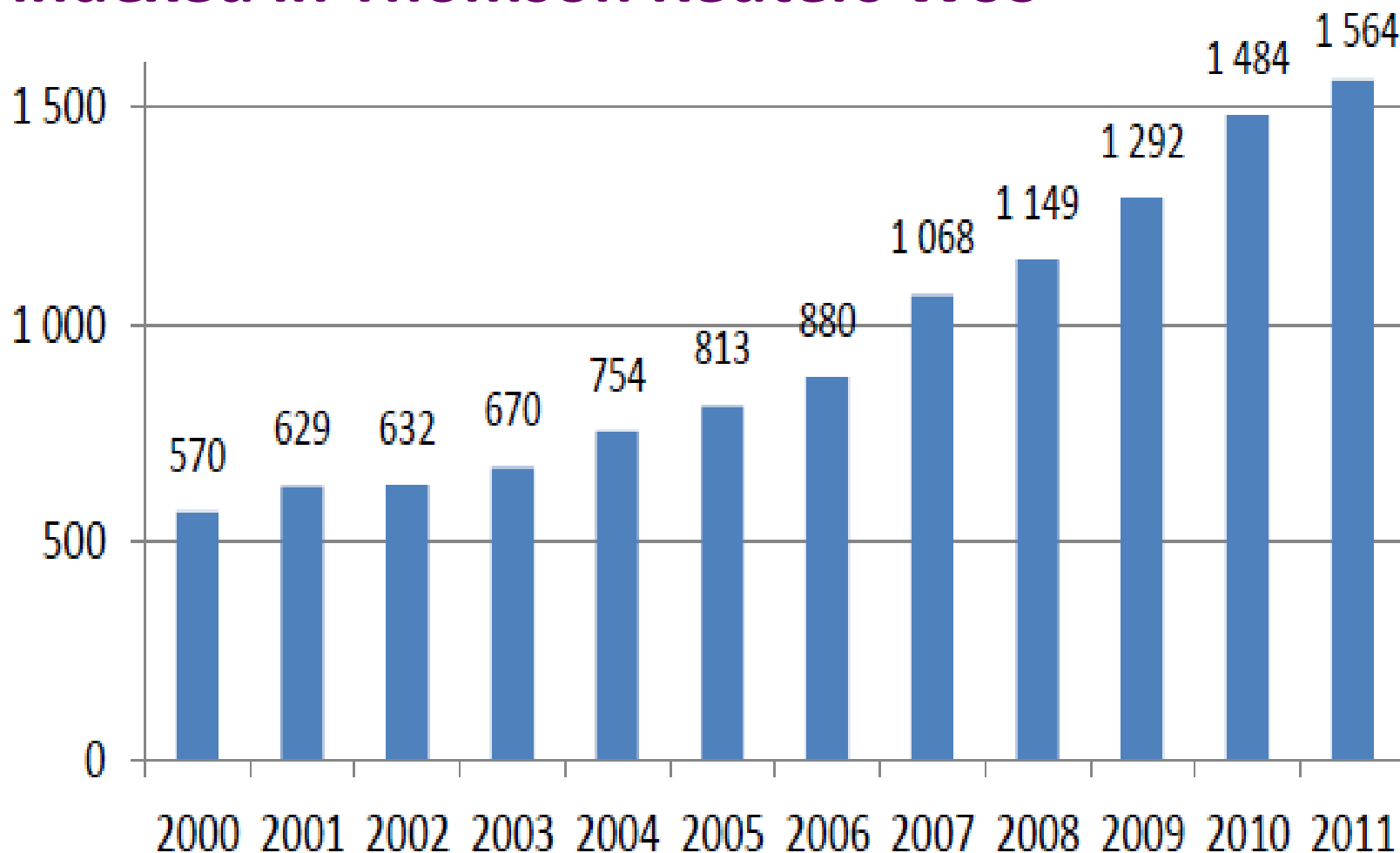
# Estonian R&D expenditure 2001-2010



# Financing of R&D from the budget of MER

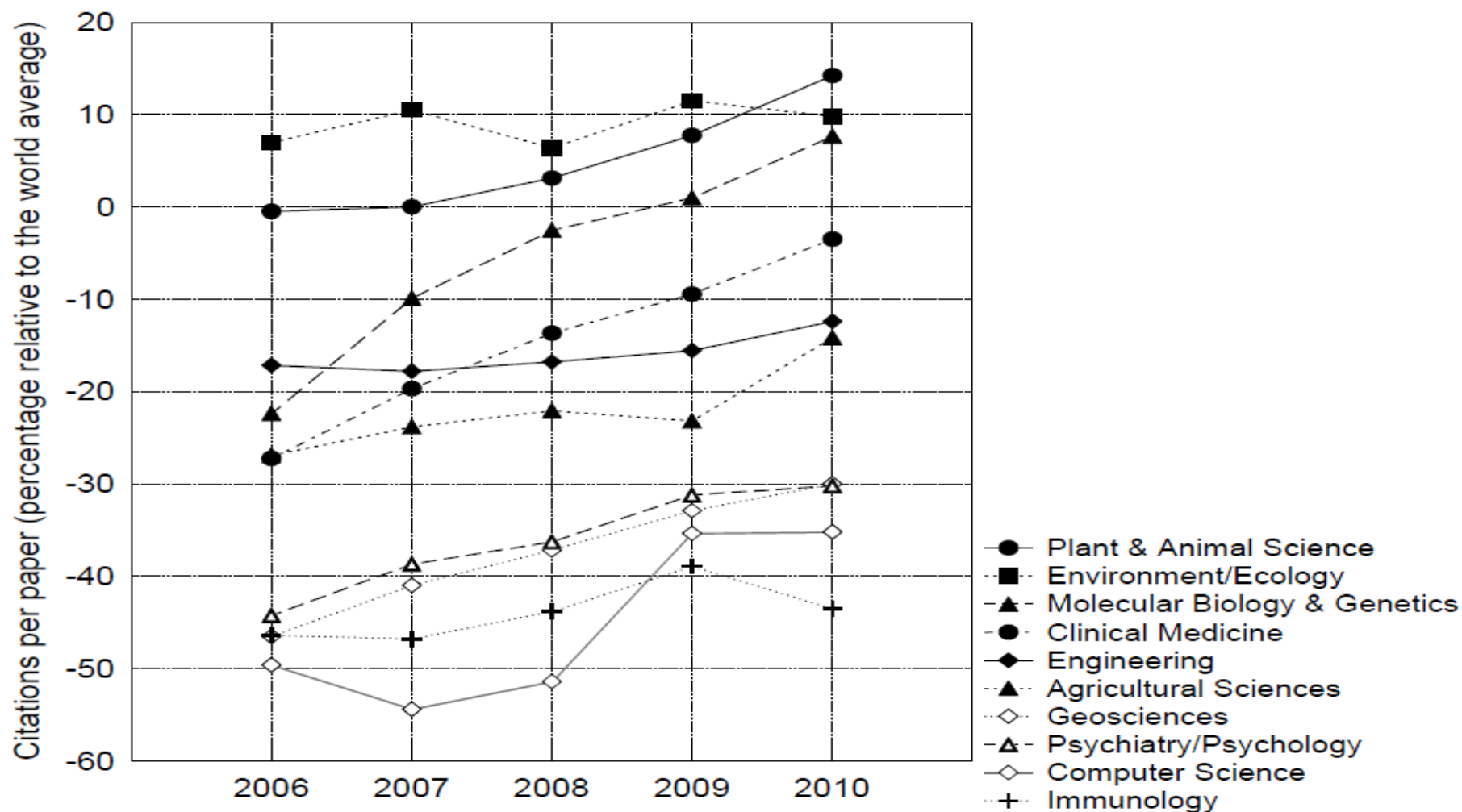


# Number of publications of Estonian researchers indexed in Thomson Reuters WoS

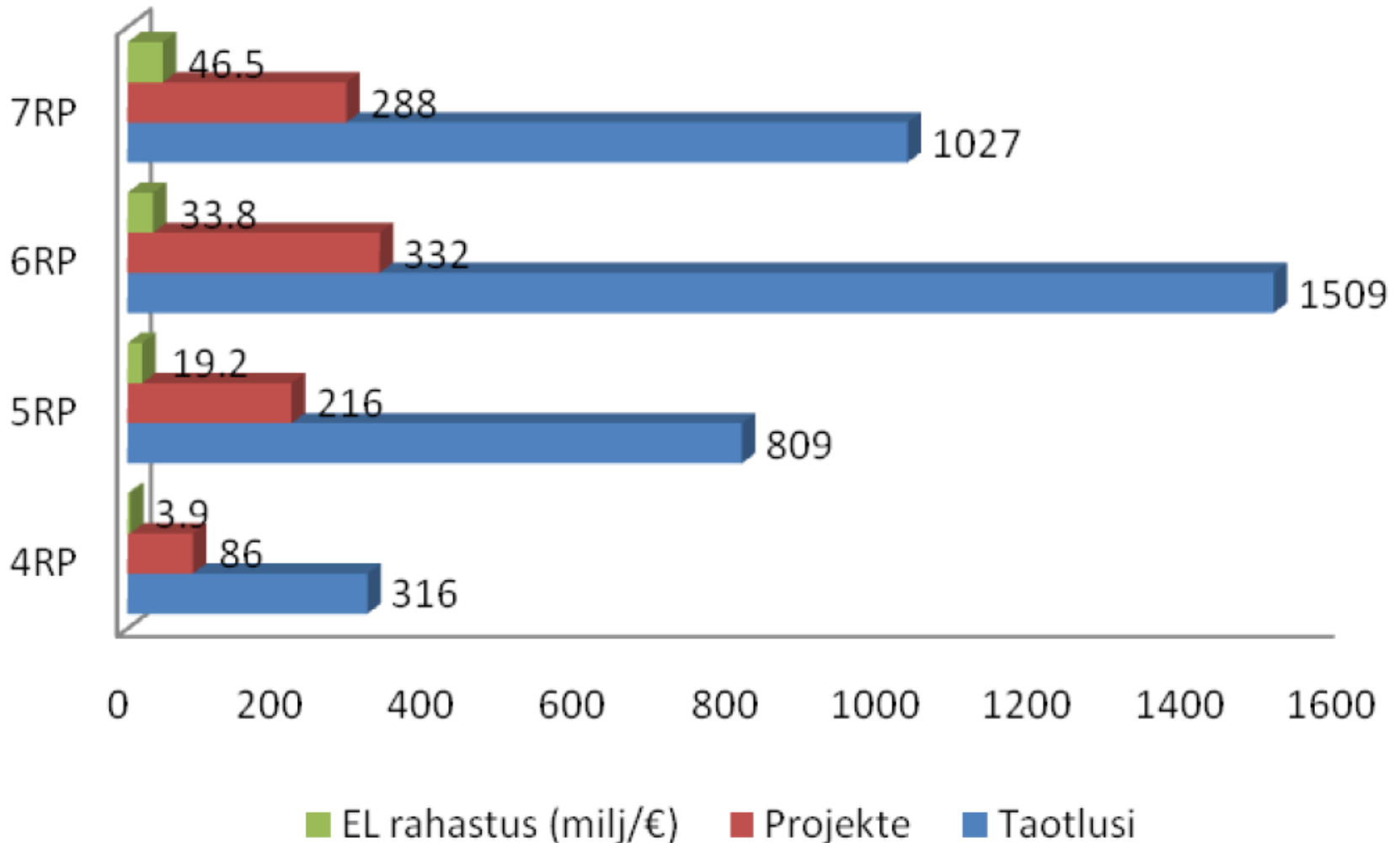




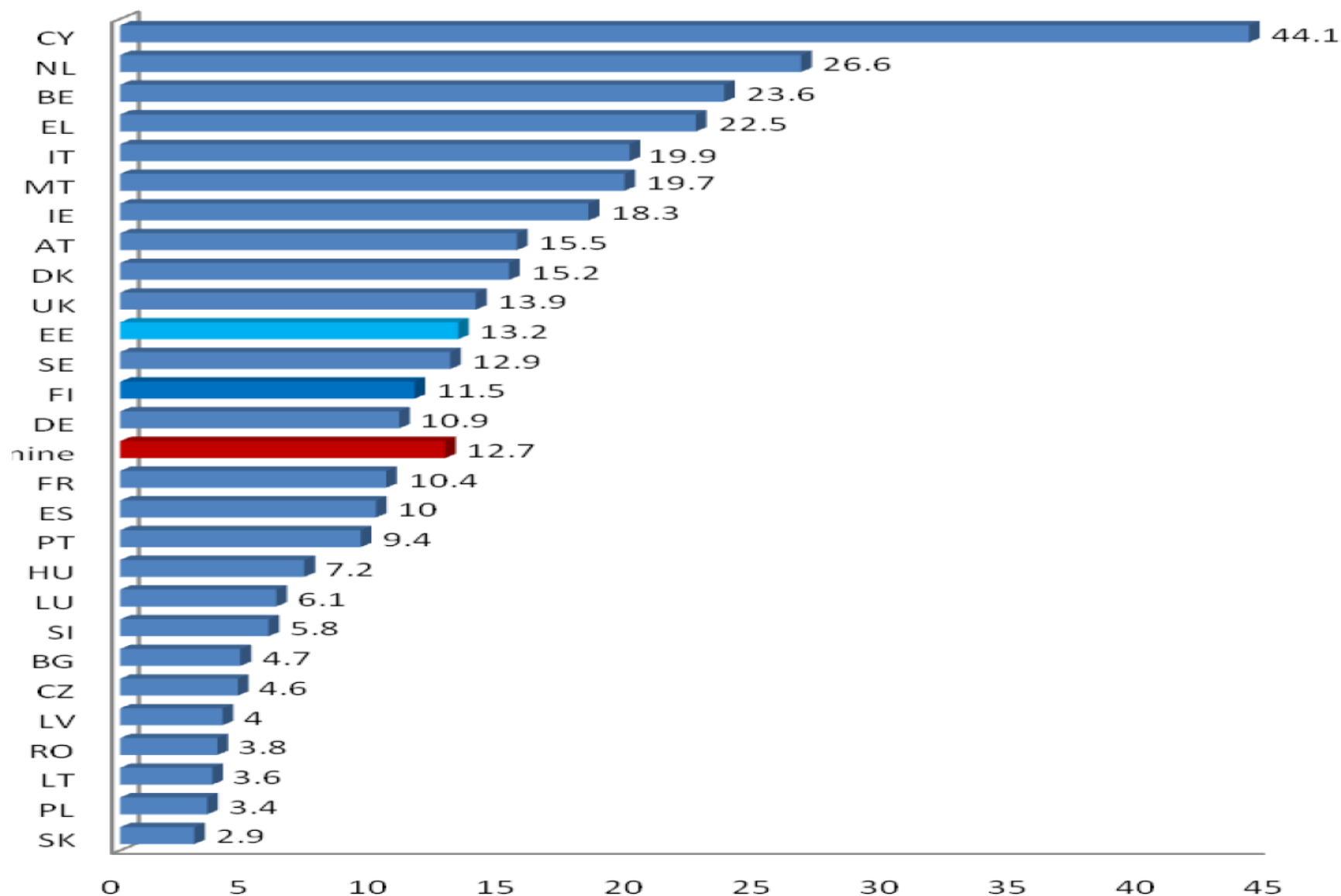
# Citations per paper of Estonian articles relative to the world average (ESI data)



# Estonian participation in 4 EU framework programmes



# FP7 budget per researcher (thousand €)



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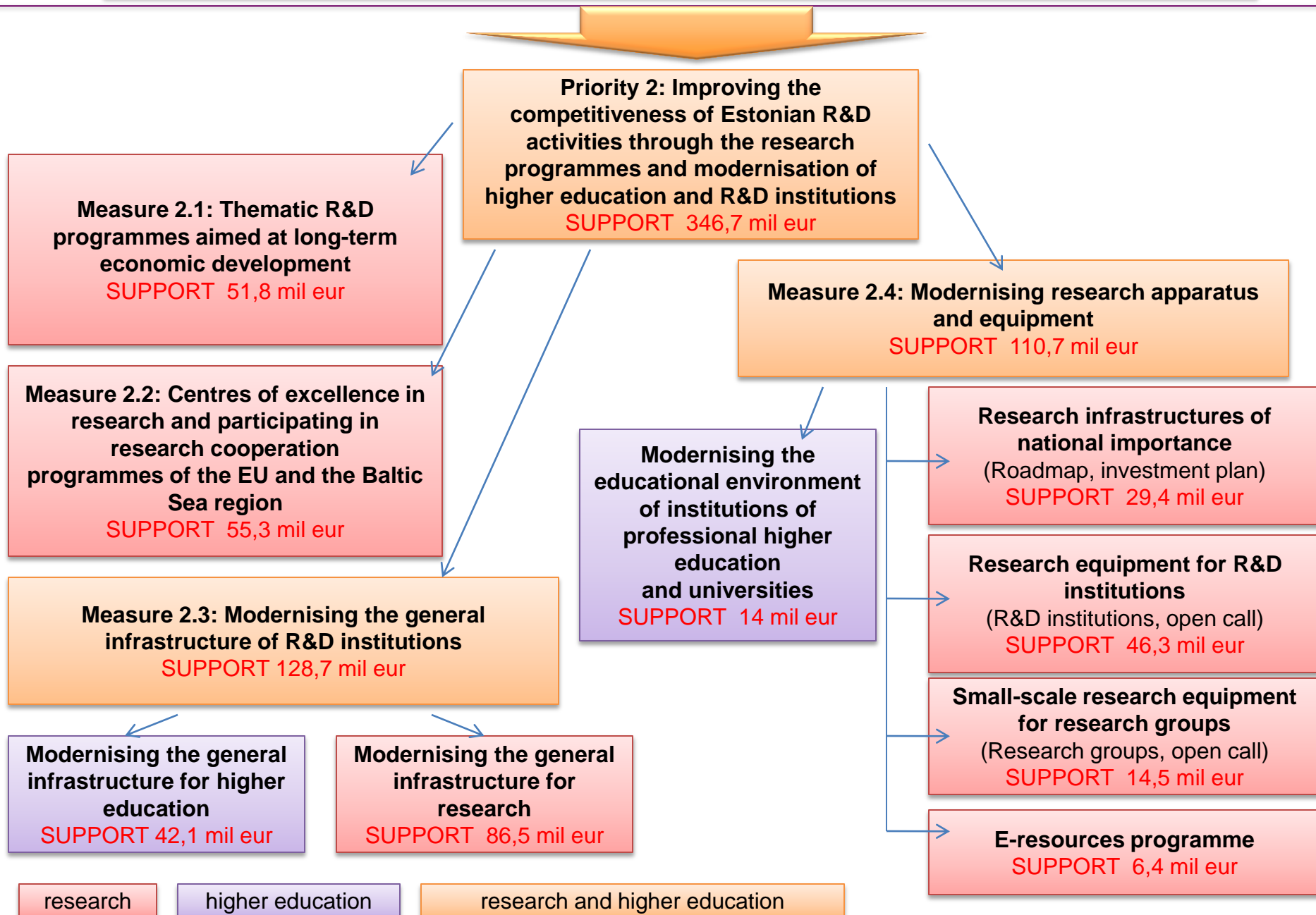
Changes in the institutional financing system

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## OP 2 – Operational Programme for the Development of Economic Environment



# Support for Research Infrastructures

**Before 2005:** random, single investments, small-scale, own resources of R&D organisations, single grants => no systematic activities were present

**Period 2005-2009:** support channeled via Enterprise Estonia, research infrastructures' programme (23.6 M€), support for infrastructures of Centres of Excellence (6.3 M€)

**Period 2009-2015:** introduction of a special measure targeted at Small-scale

- Small-scale research equipment for research groups (14.5 M€)
- Research equipment for R&D institutions (46.3 M€)
- Research infrastructures of national priority (29.4 M€)

## Estonian RI Roadmap



- RI roadmap – a long term (10-20 years) planning instrument that lists research infrastructures of national importance, either new or in need of upgrading
- The roadmap will be updated regularly (at an interval of 3 to 5 years) to take into account the changing circumstances and opportunities
- Being part of the roadmap does not mean that a RI will be funded but the roadmap will be used as an input for the investment decisions
- Budget 29.4 M € for 2010-2015
- Financed from EU ERDF (85%), state budget (10%) and own contribution (5%)
- <https://www.etis.ee/Portaal/infrastruktuur.aspx>

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## **Estonian Research Information System ETIS**

Evaluating research - issues for discussion



## ETIS GOALS

- an information channel and a tool for researchers and R&D institutions
- a place where researchers can submit grant applications and reports
- a place where financiers can process applications, reports and reviews
- a state register of R&D institutions, researchers, financiers and R&D activity
- a place to get fast and adequate R&D statistics
- a trusted data repository

# ETIS: legal foundations

## Legal Acts

- Organisation of Research and Development Act
- Public Information Act
- Personal Data Protection Act
- “The **data** entered in the Estonian Research Information System **are informative**. The entering of data in the Estonian Research Information System does not bring about any legal consequences unless otherwise provided in this Act or other legislation”.

## ETIS Regulation and it's directives

- > Classifications of the Research Fields
- > Types and Classification of Publications
- > List of Internationally Recognized Publishers

# Three pillars of information security in ETIS

- Confidentiality: protecting information from unauthorised disclosure;
- Integrity: protecting information from unauthorised modifications and ensuring that information is accurate and complete;
- Availability: ensuring that information is available when needed (24/7/365)

## ETIS: some facts

- ERIS (Estonian Research Information System, predecessor of ETIS) 1999-2006
- Need for large scale developments (real-time multi-partner dynamic system)
- Spring 2006: launch of ETIS with pre-installed data (users, publications, projects, etc)

### **Evolution of ETIS as data repository:**

- 2008 - 78 000 publication records
- 2010 - 100 000 publication records
- 2012 - 134 000 publication records
- 2011 - 39 different electronic forms in use
- September 2012: more than 76 000 visitors (Estonia 71 393, Finland 1 212, Germany 860, USA 581, UK 569, Sweden 547, Latvia 312, Italy 300, France 273, Spain 243)

# Classification of research fields in ETIS

Four broad research areas

**Biosciences and Environment (12 subfields):** Biochemistry, Microbiology, Genetics, Ecology, Biosystematics and –physiology, Forestry, Agricultural Sciences, Food Sciences, State of the Environment and to Environmental Protection, Substances Hazardous to the Environment, Geography and Regional Studies, Environmental Policy, Environmental Economy and Environmental Law, Biotechnology, Molecular Biology, Cell Biology, Biophysics and Economic and Technological Research relating to the above fields

**Culture and Society (14 subfields):** Philosophy, Theology, History and Archaeology, Cultures Research, Aesthetics and Arts Research, Philology and Linguistics, Law, Psychology, Special Education, Educational research, Social Sciences, Economics, Political Science and Administration, Communication and Information Sciences

**Health (11 subfields):** Biomedicine, Veterinary Medicine, Pharmacy, Dental Science, Nursing Science, Public Health Science, Clinical Medicine, Sport Sciences, Nutrition, Occupational and Environmental Medicine, Biochemistry, Genetics, Microbiology, Biotechnology, Molecular Biology, Cell Biology, Biophysics and Bioinformatics relating to the above fields

**Natural Sciences and Engineering (17 subfields):** Architecture and Industrial Design, Geosciences, Space Research and Astronomy, Mathematics, Statistics, Information Processing Sciences, Telecommunications, Electrical Engineering and Electronics, Medical Engineering, Physics and Technical Physics, Chemistry and Chemical Technology, Process Technology and Materials Science, . Mechanical Engineering, Automation Technology and Manufacturing Technology, Industrial Engineering and Management, Construction and Municipal Engineering, Energetics, Biotechnology relating to the above fields

# Classification of publications in ETIS

## 1. Articles in journals

- 1.1. Scholarly articles indexed by TR Web of Science and/or published in journals indexed by ERIH categories INT1 and INT2;
- 1.2. Peer-reviewed articles in other international research journals with an ISSN code and international editorial board, which are circulated internationally and open to international contributions; articles of ERIH category NAT;
- 1.3. Scholarly articles in Estonian and other peer-reviewed research journals with a local editorial board; scientific articles in journals important for Estonian culture Akadeemia, Looming, Vikerkaar.

## 2. Books/monographs

- 2.1. High-level peer-reviewed research monographs;
- 2.2. Other monographs;
- 2.3. Dissertations published in a series of dissertations (excluding manuscripts).

## 3. Articles in proceedings/a chapter in a book or in a collection

- 3.1. Articles/chapters in books published by the publishers listed in Annex (incl collections indexed by the TR Conf Proc Citation Index);
- 3.2. Articles/chapters in books published by the publishers not listed in Annex;
- 3.3. Specific research publications (dictionaries, lexicons, sets of maps, (field) guides, text-critical publications);
- 3.4. Articles/presentations published in conference proceedings not listed in Section 3.1;
- 3.5. Articles/presentations published in local conference proceedings

## 4. Editing scientific publications

- 4.1. Editing collections or special issues of research journals corresponding to the requirements set in sections 1.1, 1.2, 3.1, 3.2;
- 4.2. Editing of other research publications that are published by academic publishers.

## 5. Published meeting abstracts

- 5.1. Conference abstracts indexed by Thomson Reuters Web of Science;
- 5.2. Conference abstracts that do not belong to section 5.1

## 6. Other publications

- 6.1. Full articles in encyclopedias; 6.2. Text books and other study materials; 6.3. Popular science articles; 6.4. Popular science books; 6.5. Essays accompanying books of fiction; 6.6. Articles in other journals and newspapers; 6.7. Other creative activities

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**Evaluating research - issues for discussion**

# Evaluating research - issues for discussion

- Types, scope and frequency of evaluations
- Peer-review and/or „metrics“
- Scope of use of bibliometrics
- Need for a classification of publications
- Impact of evaluation on research funding



- THANK YOU FOR YOUR ATTENTION!