Evaluation of Research and Development in Estonia 2010-1017

Regular Evaluation May 2017

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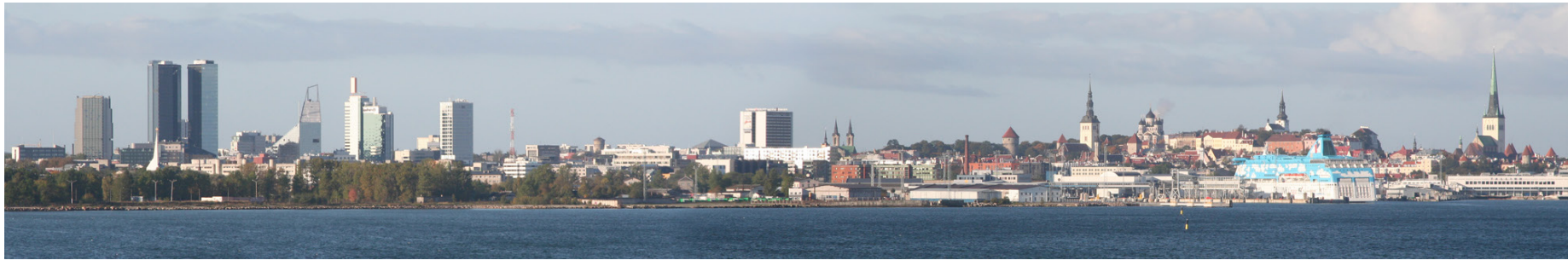
Heidelberg University



Panel Members

Ole Jannik Bjerrum Denmark
Anne Boddington UK
Aline Bonami France
Verity Joy Brown UK
Algimantas Čepas Italy
Jennifer Clare Green UK
Andrew E. Clark France
Barbara Ekbom Sweden
Christian Enss Germany
Geoffrey Michael Gadd UK
Hans Gellersen UK
Jan-Gunnar Persson Denmark
Martin Halliwell UK
Frands Herschend Sweden
Boye Jensen Denmark
Peter Jonker Netherlands
Simo Knuuttila Finnland
Ronald J Maughan UK
Ian McConnell UK
Marialena Nikolopoulou UK
Elianne Kristin Riska, Finnland
Isabel Torres, UK

Tallinn May 2017

Fields of the Evaluation

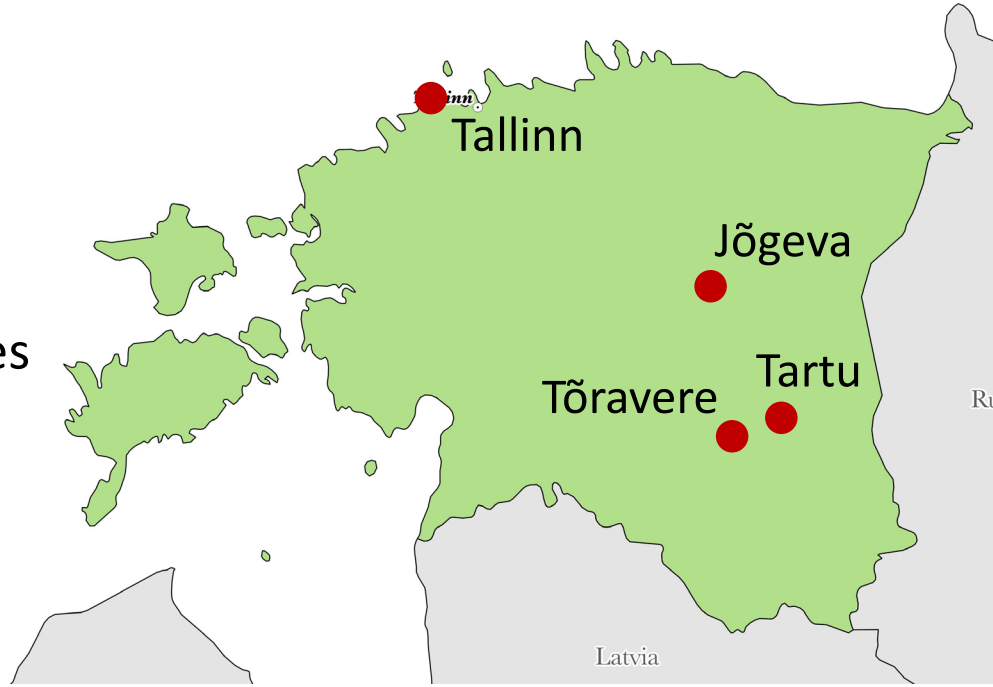
1. Natural sciences (10 units)
2. Engineering and technology (4 units)
3. Medical and health sciences (6 units)
4. Agricultural and veterinary sciences (4 units)
5. Social sciences (5 units)
6. Humanities and the arts (9 units)

Procedure of Evaluation

Mai 2017 visits at units with hearing and laboratory visits
39 units at 6 universities, 4 R&D enterprises
and 11 other institutions of higher education

Report based on:

- self-assessments provided by units
- hearings with members of units
- visits of laboratories and infrastructures



Why bother doing an evaluation of research and development?

Are things going in the right direction?

Are there problems somewhere?

How can research and development be made more efficient?

Where do one need to make adjustments?

Assessment of Output

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What is the Output of Research and Development

Not papers and not impact in Journals !!!!

its knowledge and new products

and well-educated people

Assessment Criteria and Indicators

- Scientific impact of research
- Sustainability and potential of research
- Societal importance of research

Based on

Organisation of Research and Development Act

Universities Act,

Scientific Impact of Research

Scientific impact refers to the size and impact of the direct R&D output – publications and industrial property items – in an international field-specific comparison.

Indicators of scientific impact:

Number of publications and their classification

Impact of scientific articles

Number of industrial property items

R&D outcomes (publications) with highest impact (assessment by the institution);

Significant additional information in terms of scientific impact (assessment by the institution)

Sustainability and Potential of Research

Sustainability is assessed through the ability of the institution to maintain R&D at a sufficient level in the corresponding field in the medium term (seven years).

The principal focus of sustainability is on human and financial resources. For universities, R&D linkages to doctoral studies is also considered under this criterion.

Potential considers the internal and external resources and opportunities to the institution that have yet to be developed or utilized.

Indicators of sustainability and potential:

The composition of the R&D staff;

The number of doctoral students and graduates;

The amount and structure of R&D revenue;

The adequacy and state of infrastructure;

R&D-related collections;

Societal Importance of Research

Societal importance of research refers to the relationship between the R&D and current and potential (research, environmental, economic, societal/cultural, etc.) concerns.

Coherence with society may be best achieved by carrying out applied research that is currently important at the national level or, in the long-term perspective, potential R&D which could have an impact on the environment, the economy, and/or community and culture, even at the global level.

Indicators of societal importance of research:
Societal importance of research may be described by the indicators of criteria 5.1 and 5.2, in case they are associated with a specific aspect of societal impact (e.g. how doctoral graduates have had an impact on the society (based on facts, not assumptions)).

R&D revenues from service contracts with enterprises or the government; counselling activities for the state or enterprises on current societal issues; transfer of R&D outcomes and popularization to society; publicly available databases, publications, products/services as outcomes of R&D activities or other facts that indicate societal importance of research.

Some Observations Part 1

- the quality of research and development in Estonia is generally high and many of the units evaluated for this report are strong competitors on an international level
- the number of very successful research groups is certainly impressive with a few being outstanding
- at some institutions, there are groups and units of subcritical size
- overall amount of funding for most units seems satisfactory but appears too fractured
- the absence of stable core funding impacts most units negatively because of difficulties to maintain infrastructures and to allow them to keep the necessary level of qualified staff
- the proportion of competitive funding is generally too large

Some Observations Part 2

- some institutions did undergo major restructuring
- Interdisciplinary centers are formed at the expense of disciplines
- research spectrum is overall somewhat narrow
- there is a trend to have more tenure-track positions, but their seems no general plan to make this transition
- infrastructure of the evaluated units is generally quite good and in many cases of high international standard
- infrastructure has hugely benefited from European structural funds, which will run out soon
- the equipment of few groups seems to be far outdated and clearly needs upgrading

Some Observations Part 3

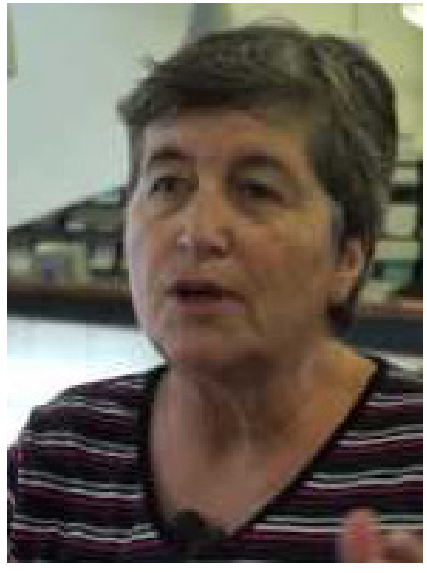
- PhD students are well trained and, in most cases, appear to do excellent research
- financial support of students is quite different in different units
- the demand for three publications to be graduated appears arbitrary
- public outreach activities exist a some universities but should be increased
- the concept of R&D enterprises (institutes) as pipeline between basic research and the commercial market is working well
- the strong bias for applied research is dangerous in long terms
- only a small fraction of academic positions is filled by top-level foreign scientists

Natural Science

The team

Geoffrey Gadd
Biology

Hans Gellersen
Computer Science



Aline Bonami
Mathematics

Christian Enss
Physics

Units

	Scientific Impact	Sustainability Potential	Societal Importance
Software Technology and Applications Comp. Center	good	good	very good
Tartu Observatory	very good	very good	very good
University of Tartu	very good	very good	very good
Tallinn Technical University	good	very good	good
Estonian Biocentre	good	good	very good
Tallinn University	good	good	very good
Estonian University of Life Sciences	very good	very good	very good
Cybernetica AS	very good	very good	very good
Center of Food Technology	very good	very good	very good
National Institute of Chemical Physics and Biophysics	very good	satisfactory	very good

very good good satisfactory

Natural Science General Comments

- focus on computer science, life science, environmental science and chemistry
- strong bias for applied research
- mathematic and physics is a rather small portion
- Interdisciplinary is currently a hot topic
- Infrastructure is mostly very good, due to European structural funds
- PhD students mostly seem to enjoy what they are doing and are well supported
- only a small fraction of academic positions is filled by top-level foreign scientists

Recommendations to the Estonian Research Council

- provide long term funding for large scale infrastructures
- reduce the impact of metrics in funding decisions
- establish a program for infrastructure funding
- keep funding basic research without requirements of application and industrial partners
- extent visitor program to strengthen long term relations
- give higher priority for starting faculties in project funding and infrastructure calls
- include panel members in the preparation of an evaluation
- Establish a steering board for evaluations: researchers, industry representatives, external experts, council members, ministry
- computer platform needs to be fixed

Recommendations to The Ministry of Education and Research

- demand long-term strategic plans from all institutions including research profiles, appointment plans, infrastructure needs, organizational and educational aspects
- provide broad support for basic research and education
- increase core funding and keep level of competitive funding
- free researchers from unnecessarily detailed regulations and quality assessments
- support high level international appointments in a special program
- provide sustained long-term support for large-scale infrastructures
- establish a program for infrastructure to substitute the European structural funds
- consider stepping up Estonian share in important international infrastructures

Thank you

Estonian Research Council:

Doris Pavlov, Eva-Liisa Otsus, Kadri Raudvere, Maarja Sillaste, Karmen Kert, Priit Tamm, Andres Koppel

Fellow panel members:

Ole Jannik Bjerrum, Aline Bonami, Verity Joy Brown, Algimantas Čepas, Jennifer Clare Green, Andrew E. Clark, Barbara Ekbom, Geoffrey Michael Gadd, Frands Herschend, Hans Gellersen, Frands Herschend Martin Halliwell, Boye Lagerbon Jensen, Peter Jonkers, Simo Knuuttila, Ronald J Maughan, Ian McConnell, Marialena Nikolopoulou, Jan-Gunnar A. Persson, Elianne Kristin Riska, Isabel Torres