ARCHIMEDES FOUNDATION
EU INNOVATION CENTRE

innovaatika

SIXTH FRAMEWORK PROGRAMME

Special issue on Estonia

The Sixth Framework Programme

Launching event, Brussels 11-13 November 2002

Estonia

Location: Southern coast of Finnish Gulf

Population: 1.36 million

Area: 43431 km^2

GDP per capita, current prices PPS:
9800 (42% of EU average)

Gross Domestic Expenditure on R&D
(GERD) in 2000: 0.66 % of GDP

GERD as aim for 2006
in Estonian R&D strategy: 1,5 % of GDP

Number of researchers per 1000 workforce: 4.0

Workforce with a higher education 13% of total

Dear reader of Innovaatika

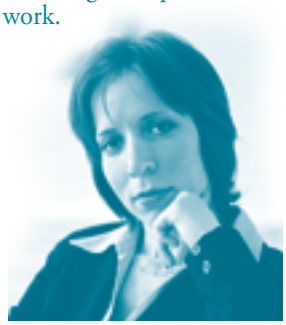
It is with hope and great enthusiasm that Estonia is following the EC's steps towards creating the European Research Area (ERA). The latest communications from the Commission, "More Research for Europe – towards 3% of GDP" and "The ERA: providing new momentum" have prompted a lot of constructive discussion. This is so, first and foremost, because in Estonia we also believe that research and development are the main driving forces of socio-economic progress. The Estonian R&D Strategy for 2002–2006 "Knowledge-based Estonia", approved by our Parliament (Riigikogu) a year ago, envisages that by 2006 the total R&D expenditure of Estonia must approach 1.5% of GDP. True enough, it is only half of the 3% fixed at the Barcelona European Council in 2002 as an objective for the EU, but we have to be realistic. It is obvious that for many EU countries, and especially for small candidate countries, this task in the given time-frame is still unrealistic. However, in order to reach the 3% target it is important to establish a common upwards trend.

The main instrument for creating the ERA is the 6th Framework Programme. The Estonian R&D community followed the preparatory work for it with great interest. The expectations are high, as our experience from the previous Framework Programmes is very positive. Estonian scientists have participated in EU Framework Programmes since 1993, starting with the PECO, COPERNICUS and INCO-COPERNICUS programmes. Estonia was also the first candidate country to associate the FP5 in May 1999. It was for the first time that the whole programme was opened for participation; therefore we can say that R&D is the area in which we are EU members before having officially acceded!

And looking at the preliminary results it's obvious that this participation has been very successful and by standards of productivity Estonia stands among the three best candidate countries.

I hope that with our joint efforts we will succeed in building the European Research Area which will treasure and advance the values that once were the cornerstones of the Republic of Letters, thus making Europe the best place in the world to live and work.

Mailis Rand
Minister of Education



Discover Estonia!

research in Estonia

A glance at the research in Estonia

We live at a really dynamic age. While the developments in Europe are gathering momentum, Estonia is willing to speed up, in order to be in line with the other countries. As the ideas of the European Research Area are materialising, we do not want to stand idly by, but are eager to partake in the process.

Research leaders and officials from all over Europe will gather in Brussels to proclaim open the 6th EU Framework Programme. Hopefully, the latter will bring about a host of many cooperation projects. Recently, however, the discussions in Europe have also focused on general aspects, wondering what the typical features of European scientific research are, and trying to discover why many things are better in the USA and what this can lead to. One train of thought is connected with the idea of the European Research Council (ERC). The question is that despite the great influence of the framework programmes on the development of Europe, they have not been able to boost research notably. Brussels is in command of ca 5% of the research funds, while most of them are at the disposal of the national research councils. For example, the members of the European Science Foundation hold 50-60% of the research funds of Europe. Could the ERC be the motor for intensifying basic research? After all, it is basic research that can guarantee long-term success. For example, it is new ideas that can lead to breakthroughs in both genetic engineering and nanotechnology. This does not mean that one can underestimate the role of applied research and applications – on the contrary – the two go together.

ERC-related issues were discussed at a recent meeting in Copenhagen presided by Denmark. The underlying idea was approved of, but a large number of technical questions was raised as well. As a representative of a candidate country, I stressed at that gathering that in order to have a say in EU matters, the candidate countries must have reached a certain level. What are our assets in Estonia? We have worked out an R&D strategy, our funding is based of peer-reviews, we have launched a programme for Centres of Excellence in Research, we have a positive experience of taking part in the grants market, we have PhD's and post-docs support programme, etc. Is that enough? It seems that technically (in terms of structures) and in essence (research results) we have done everything possible. At the same time, there are problems. Firstly, our funding (both in percentage and volume terms) is extremely small. Secondly, we are short of people. Thirdly, in order to be reckoned with, one has to be visible. Fourthly, the relationship between research and the society needs to be improved, etc.

The small funding is caused by two main factors – our small GDP and our economy's insignificant contribution. Indeed, the two are mutually related but the GDP growth can be furthered by launching programmes in key areas of R&D mentioned in our strategy (biomedicine, information technology, materials science). Of course, it is yet to be seen whether the efforts of the Ministry of Economics and Communication in forming innovation structures can take us to the path tried by Finland. Europe's target is 3% + 2/3, or in other words – 3% of the GDP should go to R&D, while 2/3 of it must come from the economy.

With the exception of our nearest neighbours Sweden and Finland, no other countries in Europe have achieved this level yet. The goals are good, but maybe we should move on step-by-step, setting the first goal at 2% + _? The figures, however, only reflect the means, while what we do is more important. Doubling the research results would give us a firm basis among the closest regional clusters of Helsinki-Turu, Stockholm-Uppsala, Copenhagen - Lund – Malmö. Tallinn - Tartu (or vice versa) should be quite comparable to the latter.

The shortage of human resources is an even more serious problem. The hitherto arbitrary educational policy has drained away many talented people, the numbers of doctoral students do not correlate with that of PhD completions. Yet there are many instruments at our disposal – grants, post-doctoral benefits – to make young people interested in research careers. First and foremost, it is important that society would set great store by knowledge and research.

Visibility is the precondition of mobility. Although we say that mobility should be a two-way street, we know that in reality this is not so. Professor I. Siotis from Greece has once said, "Mobility is towards action". The Estonian programme for Centres of Excellence is one way to enhance our visibility, and should be exploited to the maximum.

There is an inherent controversy in the relationship between research and society – while scientists would like to enjoy the freedom of pursuing research logic, society is interested in immediate tangible results. But one should bear in mind that the knowledge-producing part of society can always see things in longer-term perspective than the part appreciating a moment's gains. Both are right, but achieving the balance between the two may be sometimes quite overwhelming. Sure enough, there is still much to be done in Estonia in treasuring knowledge in society.

Hard times and tight financial conditions have made us make choices. I am certain that our choices have been right. We have adopted a positive programme, and we are aware of hazards and shortcomings. A recent EU Report also emphasised - the framework is good, but the infrastucture and administrative capacity need to be improved. Thus the Ministry of Education and Research should focus its efforts on those.

Prof Jüri Engelbrecht
President of the Estonian Academy of Sciences

fp5

Estonian Participation in the European Union Fifth RTD Framework Programme (FP5)

Estonia was the first candidate country to associate with the 5th Framework Programme (1998–2002) from May 1999. Estonian scientists had gained some experience from participation in EU Framework Programmes already since 1993, starting with the PECO, COPERNICUS and INCO-COPERNICUS programmes. In case of FP5 the whole programme was for the first time opened to participation.

Participation of Estonia in FP5 (by November 2002)

Proposals submitted 809
Successful proposals 216
Selection rate 26.8%
Estonian coordinated projects ca 10%

Participation of Estonian organisations by special programme (% of total)

	QoL	IST	Growth	EESD Envir	EESD Energy	INCO II	SME	IHP
proposals submitted, %	29.30	17.09	3.08	19.64	7.22	2.02	7.11	14.54
proposals selected, %	23.36	12.70	4.10	25.00	10.25	2.87	9.02	12.70
Success rate	21.1	21.3	33.3	36.5	32.2	38.9	30.0	24.3
Share from Candidate Countries total %	7 %	4 %	2 %	9 %	7 %	4 %	10 %	8 %

Source: Foundation Archimedes, ISA – Information service accession states at http://www.dlr.de/isa

Estonia has participated most actively in the FP5 sub-programmes QoL and EESD. This demonstrates the high potential of Estonian researchers and experience in international work in the fields of biosciences, medical sciences and environmental sciences.

The success rate of Estonian proposals has been the highest in EESD.

The share of Estonian participations in FP5 Specific programs (from 2 – 10%) compared to the Estonia's population (1,37%) and GDP (1,34%) from the Candidate Countries total.

The share of Estonians participations in FP5 compared to its share in the total population and total GDP of Candidate Countries is ca 3,5 times higher.

Estonian participation by type of organisations (% of total)

	Universities and research institutions	bussiness enterprises	governmental agencies	other non profit
Proposals	73 %	17 %	8 %	18.7 %
Successful projects	68 %	15.8 %	7.8 %	22.7 %

Source: Foundation Archimedes

Different R&D support structures (foundations, non-profit organisations) of Estonia have participated in FP5 actively: their share was ca 20% of all proposals and projects.

Enterprises make up 17.0 % of applicants in FP5 – the projects oriented more to information society (40.6% of all successful projects) and biotechnology (18.7%).

The most of successful projects (25%) with the participation of enterprises were co-ordinated by Estonia, 14% by Germany and 10.7% by the United Kingdom.

Science potential in Estonia is divided between two dominant, nearly equal capacity research centres – Tartu and Tallinn, from where 94% of proposals was presented.

Our Partners

From successful projects with Estonian participation 25% were coordinated by Nordic countries, but looking at partner-countries separately, bigger countries were stonger: in 20% of projects the coordinator was from UK, 12,5% were coordinated by German and 11.7% by Finnish coordinator. 10% of successful projects had coordinators from Estonia. A lot of proposals and successful projects were coordinated also by partners from Sweden, The Netherlands, Denmark, Italy, Austria. Proposals with coordinator from Belgium and Norway had selection rate nearly 50%.

Supporting Structures

The National Contact Point (NCP) host organisation Foundation Archimedes is the heart of the Framework Programme in Estonia. The NCPs of FP5 sub-programmes at Foundation Archimedes carried out the task of information dissemination, training, consultancy and partner search.

In addition to information days and seminars a system of continuous information flow is organised through the Web site of Foundation Archimedes (http://www.irc.ee), different mailing lists and the printed newsletter Innovaatika.

Estonian NCPs participated in joint projects involving NCPs of different countries, such as BALT-NET, TRANSTRACC, PROGRESS, BALTDYN, INNBANKSS, Womencraft, Idealist-5FP, CAFÉ and TRAIN-NET. Through the IRC and OPET networks they have contacts with the respective centres of 32 different countries. The most important cooperation partners were Germany (in 5 joint projects), Italy (4), Latvia (4), Lithuania (4), U.K. (4), Austria (3), Czech Republic (3) and Sweden (3).

See detailed overview of Estonian participation in FP5 at http://www.irc.ee/Eng/news.htm

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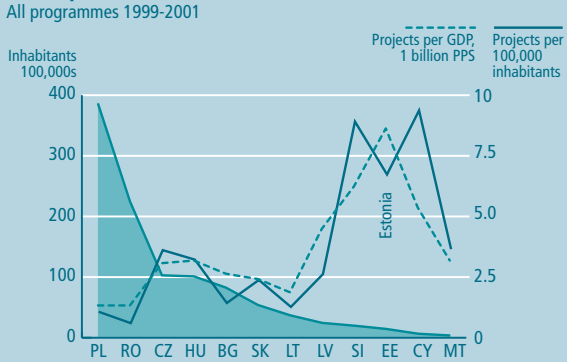
Participation of candidate countries in FP5

All programmes 1999-2001



Source: ISA – Information service accession states at www.dlr.de/isa/ EUROSTAT Yearbook 2002

research in Estonia

University of Tartu

The only classical university in Estonia

The University of Tartu is the only classical university in Estonia, performing the role of the national university as well. Universitas Tartuensis not only provides academic tertiary education, carries out basic and applied research, maintains and develops the Estonian culture, but as a flagship of innovative thinking, it also fosters many-sided development of society. The University aspires to the highest standards in all its fields of activity, considering co-operation and international relations to be of utmost importance.

Research university with a glorious history

Academia Dorpatensis, as the University was called by its founders, was established in 1632. The University followed the progressive theories of the 17th – 18th centuries and flourished in the 19th century as an important part of the European research area. Such eminent scholars, the physicists Moritz Hermann Jacobi, Emil Lenz, the chemists Carl Claus and Wilhelm Ostwald, the physiologist Carl Schmidt, the pharmacist Johann Georg Dragendorff, the anatomist August Rauber, the natural scientist Karl Ernst von Baer and many others have either studied, lectured or carried out research at the University.

Focus of interest

The University of Tartu forms the centre of Estonian science. Functioning from 1919 as the national university with Estonian as its language of instruction, it also provides teaching in English, Russian, German and several other languages. There are about 400 foreign students from 28 countries at the University; about 400 foreign researchers and lecturers visit the university annually. A special programme has been prepared for international students by the Centre of Baltic Studies which offers courses on particular cultural, economic and ecological aspects of the Baltic Region. The EuroCollege and the Faculty of Social Sciences run several Phare, Tempus and Estonian Science Foundation projects in European studies, intercultural communication and cross-border co-operation.

The centre of academic excellence

The University of Tartu, as a comprehensive university carries out research in a wide variety of fields, from natural, physical and biological sciences to humanities and social sciences.

Of particular interest may be research into

- molecular and cell biology,
- gene technology,
- immunology,
- pharmacology,
- laser medicine,
- material science,
- laser spectroscopy,
- marine studies,
- biochemistry,
- environmental technology,
- computational linguistics,
- psychology,
- semiotics.

Position in the country

In the year 2001, the University received 43% of Estonian state allocations for R&D. It also provided 44% of Estonia's Master and 60% of Doctoral Students. Of its annual 3,000 research papers, 40% were published abroad, and 413 in the ISI citation index journals.

In the 4th EU Framework Programme the University of Tartu had 16 projects to the sum of 818, 000 ECU. In the 5th Framework Programme , the University has signed 28 contracts so far, amounting to the sum of 3.5 million euros.

Centres of excellence

The Institute of Physics of Tartu University (www.fi.tartu.ee) was by the FP5 INCO II programme selected as one of the 34 Centres of Excellence in Candidate Countries which were eligible to financial support from the European Commission.

Three centres are nominated to bear the name "Estonian Centres of excellence in Research" (see also page 10):

- the Centre of Basic and Applied Ecology,
- the Centre of Behavioural and Health Sciences,
- the Centre of Excellence for Gene and Environmental Technologies),

and three Estonian nominee centres of excellence:

- the Centre of Excellence in Increasingly Complex Molecular Systems,
- the Centre of Molecular and Clinical Medicine,
- the Research Unit for Estonian Language Technology.

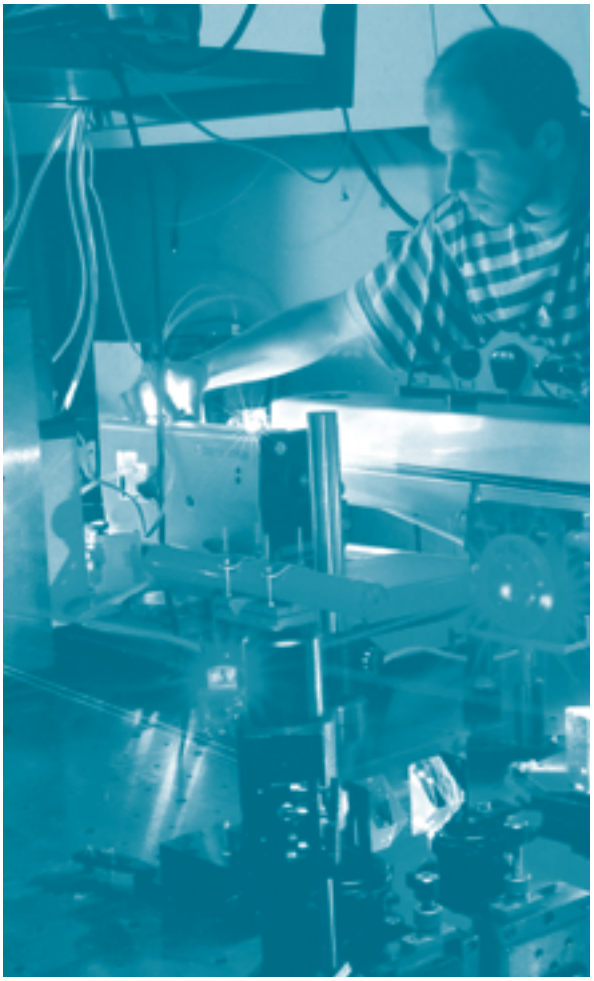
research in Estonia

Environment and co-operation

Tartu has two universities, a science park and a number of other R&D institutions. The University of Tartu has close research links with Estonian Agricultural University, the Estonian Biocentre, the University clinics and other R&D institutions both in Estonia and abroad. To-date the University has signed co-operation agreements with 28 universities abroad. Being a leader in innovation, the University actively participates in regional activities, co-operates with local enterprises and innovation support structures. Ten percent of the University's income derives from its contractual activities. A number of international and regional training and co-operation projects for academic personnel and entrepreneurs are under way. The University spin-off firms are active in the fields of gene technology, lasers, medical apparatus building, material science, environmental technologies and geoinformatics.

To find a partner from Tartu University
visit website http://www.ut.ee/english/
and contact the EU and Industrial Liasion Office:

Head of office: Dr Madis Saluveer
Tel: +372 7 375516,
e-mail: madis.saluveer@ut.ee
http:// www.ut.ee/ta/index_i.html



Estonian Agricultural University (EAU)

The mission of Estonian Agricultural University is to guarantee sustainable use of natural resources and enhance rural development.

EAU is the only university in Estonia prioritising such academic and research activities that are directed towards sustainable development of natural resources which are essential for human existence as well as for the preservation of national heritage and habitat.

EAU is the centre of research and development in such fields as agriculture, forestry, animal science, veterinary science, rural life and economy, food science and environmentally friendly technologies.

EAU is seeking partners for networking in the following three entwining areas with the aim of improving the quality of life.

- Estonia is rich in unique habitats - numerous forests and bogs, large areas of wetlands and wetland woods, meadows covered with scattered trees, alvars, coastal and bottom-land meadows - and biological communities. Hence EAU has acknowledged expertise to do research in **regional biodiversity**.
- Fifty years of collective farming and the transition period have left us a legacy of intensive land use followed by arable land abandonment. On the one hand, overgrowing of cultivated land is a waste of resources, on the other, it brings about disappearance of sea views and semi-open landscape types in the coastal area and on the islands. Therefore an urgent task faced by EAU is to discover and propose the best **future for the fallows**.
- The economic difficulties of the transition period gave Estonia a favourable starting point for fostering **organic farming**. Now enthusiastic groups of farmers and researchers supported by willingness of society are taking their first steps in this field.

For more about research institutions of the
Estonian Agricultural University, visit the website
http://www.eau.ee/english/research/index.html

And contact the Department of Research and Development:

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Kreutzwaldi 64, Tartu 51014, Estonia
Tel: +372 7 313 045
E-mail: andi@eau.ee

research in Estonia

Tallinn Technical University (TTU)

The only university of engineering and technology in Estonia.

Tallinn Technical University has good engineering education and research traditions dating back to the 1930s. Its location on the coast of the Baltic Sea has provided a good contact network to advanced technology companies and research institutions in all the Nordic countries. Proximity and good connections have been instrumental in establishing close relations with the universities and research institutions of Helsinki and Stockholm.

Tallinn Technical University has defined itself as an entrepreneurial university and collaboration projects with industry are one of its research priorities. The goal of the University in R&D is to conduct fundamental and applied research of national and international significance, to provide new technological solutions at an internationally recognized level, as well as to implement R&D results and know-how in teaching. Tallinn Technical University promotes domestic and international scientific co-operation through strengthened contacts with businesses, business associations, other higher educational and research institutions and public sector authorities. Since 1998 TTU has signed bilateral contracts of collaboration with 54 universities.

The development of the university is sustainable and feasible only if new external sources are attracted. On the other hand, it becomes more and more clear that the latter involve both financial and intellectual resources.

It is crucial to expand our contact base in order to gain access to new partners. On the national scale, we seek better collaboration within Estonia and face the challenges of social and economic needs. But acknowledging the global scale of technological progress, being in the frontline means active collaboration with our foreign partners - either from close proximity like Finland, Sweden, Russia, and Latvia or from more distant countries. We anticipate that many new ideas and research projects can be accomplished through effective collaboration within the 6th Framework Programme with partners from the EU member states, associated states and from third countries.

9 faculties:

- Civil Engineering
- Power Engineering
- Humanities
- Information Technology
- Chemical and Materials Technology
- Economics and Business Administration
- Science
- Mechanical Engineering.

7 research institutes

- Institute of Energy Research
- Institute of Economics
- Institute of Geology
- Institute of Chemistry
- Institute of Cybernetics
- Institute of Oil Shale
- Institute of Marine Systems

The University has selected 8 Centres of Excellence:

- Centre of Environmental Technology Processes,
- Centre of Biomedical Engineering,
- Centre of Photovoltaic Materials,
- Centre of Biomedicine and Biotechnology,
- Centre of Electronics and Bionics,
- Centre of Digital Systems Design and Testing,
- Centre of Dependable Computing
- Centre of Nonlinear Studies.

To promote the Academia-Industry relationship, the University has launched the programme of Centres of Technological Competence. The programme will create new contacts with businesses and formalise collaborative research projects. To-date five Competence Centres have been established:

- Oil Shale,
- Gene- and Biotechnology,
- Materials Technology and Mechanical Engineering,
- Energy Technologies
- Electronics and Computer Sciences.

Examples of collaborative research projects

- The Department of Thermal Engineering has conducted research for AS Eesti Energia and its subsidiary AS Narva Power Plants, collaborating within the boiler renovation project. Additionally, the Department has conducted work related to the development of flame-pipe boilers supplied with oil, gas and timber burners, and equipment for bio-mass combustion.
- The Department of Mining has developed close co-operation with Eesti Põlevkivi (Estonian Oil-Shale Company), a major mining company in Estonia.
- The Departments of Electrical Drives and Electronics, Electrical Power Engineering and Electrical Engineering, and Electrical Machines have done research for infrastructure-related companies of electrical engineering (such as ABB Eesti AS) and power engineering (Eesti Energia AS).

research in estonia

- The Department of Environmental Engineering has been working on the EU–funded project on the Lake Peipsi water catchment area modeling research.
- Civil engineering departments provide research and valuable expertise to companies and public authorities responsible for planning infrastructure.
- The Chemical Technologies and Environmental Technologies departments carry research into designing and building a prototype for vapor measurement, which is an example of a successful project with a major international company.
- The laboratory of semiconductors is carrying out studies to design photovoltaic solar cells based on $A_1 B_3 C_6$ (CIS) monograin layers. In collaboration with a Dutch company, it has been a very successful project in the area of new materials.
- Research groups from the Faculty of Information Technology are collaborating with different foreign companies. The most successful research areas cover the use of bioimpedance for the analysis and control of the function of the heart (St Jude Medical), signal processing (Fincitec OY) and the research of semi-conductor materials (SiC, Clifton Electronics, Estonia).
- TTU has establishing the Development Centre of MAI (Mobile Application Initiative) to perform testing and development in the field of mobile applications. This is done in close cooperation with local telecommunication companies.
- TTU participates in 17 EU 5th Framework programme projects and has additionally 4 projects finalizing contract phase.

Business Support Activities at Tallinn Technical University

To promote commercialization , the Spinno programme has been developed at TTU, which aims at commercializing R&D products and creating favourable conditions and motivation for economic advancement. Additionally, the Spinno programme support measures are intended to intensify the University 's collaboration with industry.

Tallinn Technical University collaborates closely with the non-profit organisation Connect Estonia which supports new start-up companies and companies in their early growth phase with service providers and venture capital companies.

To find a partner in Tallinn Technical University, please visit the website http://www.ttu.ee/index_eng.html

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Tallinn Pedagogical University (TPU)

Tallinn Pedagogical University (www.tpu.ee) has acted as a promoter of new educational ideas and as a centre for teacher training in Estonia for more than 83 years. Today it is a central training and research establishment in Tallinn, which focuses its research activities on humanities, social and natural sciences, develops programmes in sports and fine arts, and is an active partner in scientific co-operation at different levels.

TPU has six faculties, two colleges and the following four research institutes:

- Institute of Ecology
- Institute of International and Social Studies
- Institute of Educational Research
- Institute of Estonian Demography.

The Institute of Ecology (www.eco.edu.ee.) focuses on environmental problems such as the natural and human-induced spatial-temporal changes in matter cycling, and modelling and prediction of development trends of ecosystems.

Besides the basic research programmes, the Institute carries out about 20 applied research projects annually in the following main areas:

– effects of mining on the environment;
– spreading of pollutants and monitoring of air quality;
– human impact on landscapes;
– industrial accidents and their impact on nature and population;
– restoration of spoilt mining areas.

The Institute of International and Social Studies (www.iiss.ee) focuses on the study of social and political processes of global, regional and local scale. Since 1995 it has published the most comprehensive yearly review of Estonian society: The Estonian Human Development Report. The research areas of the IISS include Social Stratification, Family Sociology, Social Anthropology, Political Science, International Studies, Criminological Research.

A few examples of the TPU's international projects:

Within the 5th Framework Programme the Department of Psychology participated in the project "The social Problem and Societal Problematisation of Men and Masculinities" (2000 – 2003, www.cromenet.org.), while the IISS is presently participating in the project "Values Systems of the Citizens and the socio-economic Conditions - Challenges from Democratisation for the EU Enlargement" (www.kuwi.euv-frankfurt-o.de/~vgkulsoz/EU%20Projekt/EUwelcome.html).

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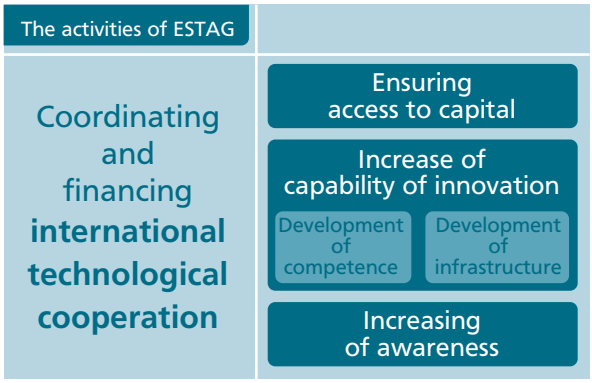
technology

ESTAG - Your Partner in Financing Technology Development in Estonia

The Estonian Technology Agency (ESTAG) can assist you in finding and financing an R&D partner in Estonia. Alternatively it is possible to finance your own R&D efforts in Estonia.

The main activities of ESTAG are concerned with providing funding for R&D projects and assisting companies in finding technology transfer partners. Additionally the Agency is responsible for developing the national innovation system through promoting innovation awareness, raising entrepreneurial competence and developing technology transfer infrastructure within the economy.

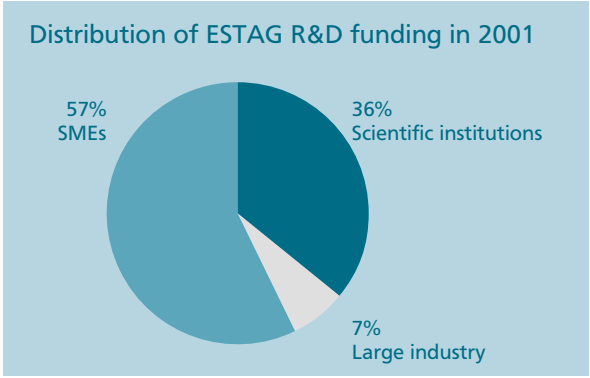


ESTAG can help foreign companies to find a technology transfer partner in Estonia, be it for the reason of licensing, technical assistance or R&D co-operation. In case of R&D co-operation we will be able to provide the Estonian partner with a grant and a loan for carrying out either applied research or a product development project. Also, a feasibility grant will be available to your partner.

Financing an R&D effort of a foreign-owned subsidiary in Estonia.

During its one and a half years of operation ESTAG has financed a number of foreign-owned R&D undertakings in Estonia. Should your company choose to start your own R&D activities here, ESTAG can give you direct financial support for R&D projects as to Estonian companies. The paperwork related to project application is kept to the necessary minimum and the application procedures will not take more than three months. For further details please turn to our English web page at www.estag.ee

In addition to financial support to your R&D project, ESTAG can help you to prepare the project through partially funding the feasibility study preceding the project. Moreover, it is possible for us to provide consultation in investment and business matters in co-operation with our sister organisation, the Estonian Investment Agency. For further information please check their web page at www.eia.ee



ESTAG provides funding for R&D institutions

The overall mission of ESTAG is to support innovative entrepreneurship in Estonia. That includes financing the projects of R&D institutions which are carried out in co-operation with an Estonian company.

Further details about our rates of financing and conditions are available on our English web page. Our specialists can also be contacted by phone: + 372 6 279 700.

ESTAG also hosts two of the 6th Framework Programme NCPs:

· Research and innovation (Innovation NCP)
· SME participation in research (SME NCP)

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project

The Estonian Genome Project

The best-known project in Estonia

The Estonian Genome Project: what is it?

The underlying idea of the Estonian Genome Project (EGP) is establishing the Gene Bank – databases including phenotype and genotype data of the Estonian population – with the aim of doing scientific research, and conducting genetic and health studies in order to find the genes that cause and influence common diseases.

It is intended to involve about 1 million individuals into the health and genetic database in the next 5-6 years.

Why in Estonia?

Firstly, Estonians are a representative droplet of the European gene pool and secondly, the population is large enough to provide sampling for common diseases. The country has well developed infrastructure and a nation-wide primary health care system; moreover, it boasts IT and data communications infrastructure as well as qualified staff and a nascent biotech industry.

Is there any law regulating data collection in Estonia?

The Estonian Parliament passed a special law titled the Human Genes Research Act (HGRA) on December 13, 2000 which establishes all the guidelines for the EGP. The copy of the act can be read at www.geenivaramu.ee.

The objective of the Act is to facilitate genetic research and regulate the establishment and maintenance of the Gene Bank, and collection, processing and issuance of data. Pursuant to the Act, participation in the Project is voluntary and the gene donors' identity shall be kept confidential. The persons are protected from misuse of genetic data and discrimination against on the basis of the structure of their DNA and genetic risks arising therefrom. The Act will not apply to genetic testing performed, for example, in order to identify a person or diagnose an illness. It will not be possible to use the Gene Bank for performing genetic testing at the request, for example, of court or an investigative body.

Who administrates the EGP?

In accordance with the HGRA, a special non-profit Estonian Genome Project Foundation (EGPF) was established by the Estonian Government on 26 March 2001. The EGPF is the legal owner of the database. It has a supervising council of 9 members, 3 members being nominated from the Estonian Parliament, 3 members by the Estonian Government and 3 members from the Estonian Academy of Sciences. The EGPF has a 7-member ethical committee.

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eesti geenivaramu

Does the Government of Estonia support the EGP?

The Estonian Government has endorsed the EGP on a general understanding and belief that the EGP will have a highly significant impact on advancing the biomedical science in Estonia, will boost the country's nascent biotech industry and will facilitate implementation of information technology and genetic medicine in the public health system. In addition to its endorsements, the government has financially supported the initiation of the project.

How is the Project financed?

Financing of the EGP is based on the principles of public-private partnership between the Estonian Genome Project Foundation and EGeen Ltd (www.egeeninc.com). The EGPF is the owner of the database and acts as a privacy shelter. EGeen, the exclusive commercial licensee of the database, will finance the project to the benefit of both parties.

The EGPF and EGeen have signed an exclusive contract to carry out the project and to commercialize the emerging products and services. EGeen agrees to fund the project in return for exclusive access to the EGPF health database and sample collection (DNA, plasma). The EGPF collects the data and samples, extracts DNA and stores it all in the best possible conditions. According to the HGRA, DNA has to stay in Estonia, hence genotyping has to take place in Estonia as well as most of the drug/diagnostic target discovery and pharmacogenetic/clinical development.

Commercial access to the database is through EGeen that has a 25-year exclusive license for commercial access to all data emerging from the project. Pharmaceutical and biotechnology companies can benefit from the unique database in the form of various partnerships with EGeen, whereby concrete terms for fees will be worked out on a deal-by-deal basis.

What is the public's attitude like?

Several polls have been conducted whose results indicate that the Estonian people approve of the EGP. Only 5% of the population appears to be negative towards the project.

Has data collection started yet?

The Pilot Project started in three counties of Estonia – Tartu, Saare and Lääne-Viru – in September, and samples are brought into the special laboratory facility in Tartu. The data are collected by primary care physicians who have received relevant training. The Pilot Project will last about six months and its aim is to check data collection infrastructure and logistics.

The Main Project will start after the pilot study has been completed and analysed, most probably in the second half of 2003.

excellence in research

Estonian programme for centres of excellence in research

All over the world, the system of centres of excellence is developing, being a main generator of new ideas and innovation.

In 2001, the Ministry of Education initiated the Estonian Programme for Centres of Excellence in Research. The following aims were set up:

- to create the conditions for high-level research compatible with the strategy of research and development in Estonia;
- to establish the conditions for Estonian centres of excellence to join the international network according to the European Union's research policy;
- to encourage co-operation between the research groups working in the close or complementary areas;
- to create a mechanism for elaborating, developing and implementing innovative ideas.

The objectives and a set of criteria for the selection were proposed by the Science Competence Council, using largely the Finnish experience.

In December 2001, the Ministry of Education nominated five outstanding centres together with one centre with the earlier European recognition as units to bear the name "Estonian Centre of Excellence in Research" with additional special funding.

In nearest future in the second round of selection four more Centres of Excellence will be nominated.

Center of Excellence of Analytical Spectrometry

Is established in the National Institute of Chemical Physics (NICPB)

The Center consist of seven research groups:

- Solid State NMR Spectroscopy group (600 MHz)
- Liquid Phase High Resolution NMR Spectroscopy Group (200, 360, 500 MHz)
- Low Temperature Physics and Terahertz Spectroscopy Group
- Quantum, Computational and High energy Physics Group
- Mass Spectometry Group (MALDI,FTICR, GC, LC)
- Environmental Chemistry Technology Group
- Functional Genomics and Proteomics Group

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Estonian Biocentre (EBC)

The research and developmental work of EBC has been well integrated with that of the EU Framework programmes since 1994. Intensive collaboration with European scientists and with those from elsewhere, is a consequence of it. The links are even tighter now, when thanks to the project "Genemill", the EBC was, in 2000, selected as a **Centre of Excellence in Research in candidate countries under FP5.**

The main direction of research is biomedicine, more specifically, molecular medicine. We have attempted, to the best of our possibilities, to function as a "core facility" in initiating in Estonia technologies like cloning, DNA sequencing, developing of transgenic organisms etc.

It is worthwhile to mention several lines of activities in tumor biology: cell cycle control mechanisms, biology of tumor viruses, detection of gene defects in tumors, finding susceptibility genes etc.

R&D in DNA-chip technologies, genomic bioinformatics, population biology etc, is also in progress.

EBC is involved in technological preparation of the Estonian Gene Heritage programme and facilitate development in some other biotech directions, including those in the field of DNA vaccines and gene therapy.

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Institute of Physics of the University of Tartu

The Institute of Physics of the University of Tartu (IPUT), was in 2000 selected as one of the 34 **Centres of Excellence in Candidate Countries under FP5.**

The main directions of activities in IPUT are: materials science, fundamental theory of matter, laser physics and techniques of laser optics, environmental science and biophysics.

In progress are 7 projects, planned for the years 2002–2006, with project-focused financing from the state budget:

- Laser spectroscopy and applications of light-sensitive materials
- Nanostructured materials
- Biophysical elementary processes and their dynamics
- Environmental radioactivity and radiation dose in Estonia
- Theory of the fundamental structure of matter
- Laser physics and laser-optical technologies
- Fundamental phenomena in wide-gap materials and their application perspectives in technology

The Institute has a developed network of scientific contacts with tens of science centres in more than 20 countries, the closest ones entertained with Sweden, Germany, the USA, Finland, France, and Switzerland.

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excellence in research

Centre of Basic and Applied Ecology

The research of the Centre focuses on two major themes - material cycling and species diversity. These two themes are closely linked to bio-productivity, and because both utilise spatially organised data sets and analytical tools, their applications usually embrace important spatial dimensions.

The Centre has been formed on the basis of the following research groups:

- Department of Applied Ecology, Institute of Botany and Ecology, University of Tartu (UT)
- Department of Plant Ecology, Institute of Botany and Ecology, UT
- Department of Animal Ecology, Institute of Zoology and Hydrobiology, UT
- Department of Geography and Landscape Ecology, Institute of Geography, UT
- Department of Geoinformatics and Cartography, Institute of Geography, UT
- Department of Applied Geology, Institute of Geology, UT
- Group of Remote Sensing and Boundary-Layer Energetics, Tartu Observatory
- Group of Sustainable Forestry, Faculty of Forestry, Estonian Agricultural University

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The Centre of Cultural History and Folkloristics in Estonia

The Centre of Cultural History and Folkloristics in Estonia is based on the Estonian Literary Museum (ELM) but includes also researchers from University of Tartu (TU), Under and Tuglas Literature Centre (UTLC), as well as Estonian Academy of Music (EAM).

Estonian Literary Museum is related to several international organisations (International Council of Museums, International Federation of Libraries, International Council of Literary Museums). ELM has numerous connections with foreign and international research centres and organisations in Baltic and Nordic countries, in Germany , Canada USA and elsewhere.

The centre comprises four research units (personnel: 34 researches in total staff, 14 of them with PhD degree and 10 doctoral students):

- The context of cultural history in the Soviet era
- Research group for studying folk belief and narratives theory
- Research group in the theory of rhetoric and phraseology
- Research group for studying poetic and musical folklore.

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Centre of Behavioural and Health Sciences

The Centre of Behavioural and Health Sciences (CBHS) was established in 2001.

CBHS consists of Biostatistics and Health Care Research Group (RG) and Health Behaviour RG at the Department of Public Health of the UT(UT), Perception and Personality RG, Psychophysiology RG and Developmental and Educational Psychology RG at the UT Department of Psychology, Perception and Consciousness RG at the Institute of Law, Family and Welfare Studies RG at the UT Department of Sociology, Fitness RG and Nutrition and Exercise Physiology RG at the UT Faculty of Exercise and Sport Sciences, the Estonian-Swedish Institute of Suicidology and the General and Molecular Epidemiology RG at the Institute of Experimental and Clinical Medicine.

The main directions of research at CBHS are the processes of perception and cognition, the structure of personality and its biological and cultural underpinnings, the convergent influence of personality and environment on behaviour and health, child development and assessment and promotion of children's health, assessment of persistence of individual differences and their neurobiological modelling, the physiological, psychological and social determinants of health, and longitudinal and multilevel assessment of health impacts

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The Centre of Excellence for Gene and Environmental Technologies

The Centre of Excellence for Gene and Environmental Technologies (CGET) is organised on the basis of Institute of Molecular and Cell Biology, Centre for Technological Excellence (Departments of Gene and Environmental Technologies) and Institute of Zoology and Hydrobiology – all of Tartu University.

CGET consists of nine groups: Biotechnology Group, Cell Biology Group, Microbiology and Virology Group, Functional Genomics Group, Molecular Biology Group, Evolutionary Biology Group, Biochemistry Group, Genetics Group and Plant Physiology Group.

All projects of CGET are carried out in co-operation with numerous labs and research groups in Europe, the USA and elsewhere. In Estonia the Centre co-operates with Medical Faculty of University of Tartu, Estonian Biocentre, Tallinn Technical University and National Institute of Chemical Physics and Biophysics.

All other action plans of CGET will involve active participation on the European Union's FP6 to network with the best expertise in other countries, engagement in bi- and multilateral intergovernmental research projects and international research programmes.

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Contact data of all R&D and science-related institutions
http://www.etf.ee/taasutused/index_en.html

Estonian Research Information System
http://www.eris.ee

More about Estonia at
http://www.ee/welcome.html

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