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**Monitoring and analysis of policies
and public financing instruments
conducive to higher levels of R&D investments
The “POLICY MIX” Project**

Country Review Estonia

Submitted by:
Katrin Männik, Technopolis Belgium

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Introduction and Policy mix concept

The policy mix project

This report is one of the 31 country reviews produced as internal working papers for the research project “Monitoring and analysis of policies and public financing instruments conducive to higher levels of R&D investments” (Contract DG-RTD-2005-M-01-02, signed on 23 December 2005). This project is a research project conducted for DG Research, to serve as support for policy developments in Europe, notably in the framework of CREST activities. It does not form part of the ERAWATCH project, but the working documents are made available on ERAWATCH webpages for the purpose of steering a debate on the policy mix concept.

The “Policy Mix” project is run by a consortium of 7 partners:

- UNU-MERIT (The Netherlands), consortium leader
- Technopolis (The Netherlands)
- PREST – University of Manchester (United Kingdom)
- ZEW (Germany)
- Joanneum Research (Austria)
- Wiseguys Ltd. (United Kingdom)
- INTRASOFT International (Luxembourg).

Each country review is produced by an individual author, and provides expert’s view on the policy mix in the country. This report is not approved by the Commission or national authorities, and is produced under the responsibility of its author.

The role of country reviews is to provide an exploratory analysis of the current policy mixes in place in all countries and detect the most important areas of interactions between instruments as well as new modes of policy governance that are particularly adapted (or detrimental) for the building of policy mixes. They provide analytical material for the analysis of the policy mix concept and its implementation in Europe. This material will be used as background for further reports of the project and for the construction of a tool for policy-makers (to be made available in late 2007 and 2008).

The policy mix concept

The country reviews are based on the methodological framework produced by the consortium to frame the “policy mix” concept. They have been implemented on the basis of expert assessments derived from the analysis of National Innovation Systems characteristics and policy mix settings, using key information sources such as Trendchart and ERAWATCH reports, OECD reviews, and national sources, among which the National Reform Programmes.

In this work, the “policy mix for R&D” is defined by the consortium as: **“the combination of policy instruments, which interact to influence the quantity and quality of R&D investments in public and private sectors.”**

In this definition, policy instruments are: “all programmes, organisations, rules and regulations with an active involvement of the public sector, which intentionally or unintentionally affect R&D investments”. This usually involves some public funding, but not always, as e.g. regulatory changes affect R&D investments without the intervention of public funds.

Interactions refer to: “the fact that the influence of one policy instrument is modified by the co-existence of other policy instruments in the policy mix”.

Influences on R&D investments are: “influences on R&D investments are either direct (in this case we consider instruments from the field of R&D policy) or indirect (in that case we consider all policy instruments from any policy field which indirectly impact on R&D investments)”.

Structure of the report

The report is structured along the following questions.

First, in section 1, and in order to place the policy mix in context, the general challenges faced by the National Innovation System (NIS) are analysed by the expert. The view is here not restricted to the challenges with regard to raising R&D investments, but rather encompasses all the conditions that directly or indirectly affect the functioning of the NIS and R&D expenditures. These context conditions are very important for the discussion of the relevance of the policy mix later on.

Second, the stated main objectives and priorities of R&D policy in the country are spelled out in section 2, as well as their evolution over the last ca. five years. This discussion is based on White Papers and official documents, i.e. on published policy statements. The reality of these objectives compared to actual working of policy instruments will appear in section 5.

The third section provides an expert assessment and critical analysis of a possible gap or convergence between the NIS challenges and the main policy objectives and priorities stated before.

Section 4 presents the policy mix in place, following the above definition, i.e. policy instruments affecting R&D activities in the private and in the public sector, either directly for instruments from the R&D policy domain, but also indirectly for instruments outside the R&D domain which are of particular relevance to R&D activities. A typology of instruments is used, to categorise the R&D-specific and non-R&D specific instruments. A short description of each instrument is provided: aim, nature, target group, budget.

Then, section 5 discusses whether there is a gap between the main policy objectives and priorities stated in section 2, and the instruments in place. This is done by

comparing the set of objectives with the set of instruments at work. When individual evaluations of programmes or policy instruments are available, their results are used if they shed light on contribution of these instruments towards the policy objectives.

Section 6 discusses the orientation of the policy mix, indicating priorities amongst various possible routes to increase R&D investments. Policy instruments are categorised under 6 different routes according to their relevance, and this categorisation is followed by a discussion on the range of instruments affecting each route, missing instruments, routes that are not addressed by instruments, possible redundancies or overlaps, etc.

Section 7 provides another view on the policy mix, focusing on the relative importance of each types of instruments. The aim is to get a picture of the policy mix, the balance between (sets of) instruments, and the relative weight between them.

From section 8 onwards, the review turns to the crucial question of policy governance. That section discusses the emergence of the policy mix through examination of the following question: how did the set of R&D policy instruments arrive ? What is the rationale behind them, what were the driving force behind their establishment, and how is this evolving recently. A crucial question relates to the existence of some consideration of possible interactions when establishing new or suppressing existing instruments. The section tries to establish whether the policy design process is incremental or radical, analytical or non-analytical. From this, that section discusses if the policy mix is a “construct” or an “ex post” reality.

The next section, section 9, focuses on the governance of the system of R&D policy instruments take place. It examines the key question of interactions, i.e. whether there is a form of co-ordination between R&D policy and policy instruments from outside the R&D domain, and the existing mechanisms that favour or hinder such interactions.

The final section, section 10, deals with the core question of the policy mix concept: it endeavours to discuss interactions between policy instruments to affect R&D expenditure. The section discusses possible positive, neutral and negative effects of R&D policy instruments; both within the R&D policy domain, but also with instruments from other policy domains. In most cases, this takes the form of hypotheses rather than hard evidence.

Feedback welcome

Feedback on this report is gladly received. Individual country reports will not be updated but discussion on policy mixes is welcome during the timeframe of the study (2006-2008). Please send your comments to:

Claire Nauwelaers
UNU-MERIT
Coordinator of the “policy mix” project
c.nauwelaers@merit.unimaas.nl

1. National Innovation Systems Challenges

Estonia is economically one of the most remarkable countries among the new EU Member States with high growth rates of GDP amounting to 9.8% in 2005. Estonia has shown a rapid catch-up since the beginning of the 1990s. Following the 2005 European Innovation Scoreboard (EIS), Estonia along with Slovenia behaves relatively well in comparison with other new Member States keeping the 13th position in the EIS ranking. The main strengths of the Estonian Innovation System are considered to relate to the high ICT expenditures, innovation cooperation in SMEs and tertiary sector working population. However, Estonia's strengths are seen highly skewed with a very good performance on innovation and entrepreneurship and good performance in some innovation drivers, but poor performance in IPR, applications and knowledge creation (low level of new science and engineering graduates, lifelong learning, insufficient business R&D, etc.). Business R&D shows only 1/5 level of the EU average and the R&D field in Estonia is still too much public sector driven.

Multinational corporations in Estonia have supported much of the economic growth and technology upgrading of the country. The country is extensively linked to the neighbouring economies in the Northern Europe with the investing partners mostly originating from Sweden and Finland, both in manufacturing and services sectors. Despite the fact, foreign owned companies are more innovative in Estonia (based on the results from the Community Innovation Survey), the productivity increase in Estonia has generally been relatively moderate achieving only the level of 25% of the EU25 average in 2003. The majority of value added created in the manufacturing sector comes from other sectors than high-tech. The share of the low-tech manufacturing value added share is extremely high in the Estonian case (58%) in comparison with other Eastern cohesion countries in the EU. From the perspective of employment, only 16.4% of total and 25.9% of overall business R&D personnel are occupied in the high- or medium-high-technology sectors. Finally, only ¼ of the researchers in full time equivalents were active in business sectors in Estonia in 2004. By its nature, innovation mainly lies on the acquisition of machinery and equipment rather than radical innovation in Estonia.

The high share of multinational involvement in the Estonian economy has not yet proven its presence in terms of expected value added growth. The present time is the critical one for the Estonian government to motivate companies to make more strategic plans and invest in longer-term growth. To increase value added of industrial products and productivity, it is of great importance to place significantly more emphasis on the quantity and quality of research and development and innovation in Estonia. Estonian innovation potential does show an overall negative trend. EIS 2005 refers to the persisting problems of Estonia related to poor performance in knowledge creation, applications and IPR. Estonia is positioned among the countries of losing ground in innovation activities. Not only innovation indices but also international competitiveness reports give already today lower positions for Estonia (28th out of 60 countries in the World Competitiveness Yearbook in 2004 compared to the 22nd position in 2003). Is Estonia losing some of its competitive advantage?

Estonia has various advantages to become a successful "Baltic innovation tiger". The country shows high dynamics in economy. It is locating in the neighbourhood of the European leading innovation countries (Sweden, Finland, Denmark). The economy of

Estonia is extensively integrated into the industrial networks of the Nordic countries. The main challenge of Estonia lies in its ability to use these business links as generators for technology update and longer-term sustainable economic progress and to promote itself as a strong link in industrial, R&D and innovation international networks.

The following three broader aspects of the NIS are considered to support the implementation of the Estonian “innovation dream”.

1. **Systematically improving governance of R&D and innovation policies** (related to institutional development, cooperation between institutions, policy planning and implementation).
2. **Creating innovation friendly environment** through increased awareness of and competence on R&D and innovation management and entrepreneurship (targeted towards policy-makers, top managers, firms, students, academics, pupils and teachers, publicity, etc.), stronger general infrastructure (transport, IT, environment) and increasing the quantity and quality of R&D human resource.
3. **Finding the technology niches**, which are to be supported by various types of public measures targeting the R&D-competence building and infrastructure, knowledge and technology transfer, clustering (technology or industry based, between firms, R&D institutions or each other) and the creation and growth of innovative firms, international cooperation.

One of the main obstacles, which might impede the policy mix activities in Estonia starts from the lack of coordination between various significant public institutions linked to the R&D activities. In R&D and innovation policy-making and implementation, only two ministries – the Ministry of Economic Affairs and Communications and the Ministry of Education and Research have been involved. There is lack of coordination found with other policy areas such as environment, agriculture, defence, etc. Following the modern thinking of the innovation policy the cooperation with other ministries and institutions has to be considered as a compulsory issue to succeed in a longer-term. Regarding the role of the Research and Development Council, it has not achieved a strong governance power over the R&D and innovation policy as was expected in Estonia. Although, the Council is approving the strategic policy documents and annual activity plans for R&D and innovation, the policy-making capacity is provided by the two ministries.

Another governance issue is associated with its internal development through system evaluations and studies, systematic appraisal of the institutions themselves, foresight exercises, technical assistance in implementing a policy, which have to be under consideration of each relevant R&D and innovation policy institution in Estonia. The quality of the governance of innovation and knowledge policies in Estonia has been the main concern of the Ministry of Economic Affairs and Communications (see references to various types of studies in ch.8).

From the perspective of policy planning and implementation, a threat to overemphasise the significance of the high-tech industry as a target group of policy instruments in Estonia has been seen considering the specific geographical, economic and social features of Estonia. The question is most critically related to the policy-

planning phase where one could not copy automatically the measures from the most developed economies. Foresight studies are to be supportive tools to decide on the present and future technology needs. Technology programmes from another side would give an opportunity for a more effective cooperation between government institutions in Estonia. Deeper analysis of the various policy measures follows in the next sections (4, 6).

2. Objectives and priorities of R&D policy

The history of Estonian R&D and innovation policy started with the establishment of a Technology and Innovation Division under the Ministry of Economic Affairs at the beginning of 1999. Hence, the policy history is not very long. Since then, the division has been responsible for planning technology and innovation policy, managing technological development, and supervising the main funding agency (formerly the Innovation Foundation, the Technology Agency, now integrated into the Enterprise Estonia). At the same time, the role of the Ministry of Education and Research in formalising the R&D policy and the cooperation between the two ministries has been significantly improving. During the last eight years, the whole R&D and innovation policy, including the policy documents, the policy-making and implementation bodies, and the new programmes have been created and launched.

The quality of the governance of innovation and knowledge policies in Estonia has been the main concern of the Ministry of Economic Affairs and Communications in practice. The specific activities relate to the various types of evaluations¹, the training for key stakeholders in the National Innovation System², the development of national/regional policy documents, the institutional developments, etc. The first international evaluation of the Estonian Innovation System (Hernesniemi 2000) showed several weaknesses (and also some strengths) in the system and made some significant suggestions for improvements, which also strongly emphasised the need to achieve a consensus of technology and innovation policy in Estonia. The Ministry of Education and Research commissioned an assessment of the Estonian RTDI funding system in 2003³.

From the policy perspective, the guidelines and the financing plan of the Estonian R&D and innovation policy were formulated in the strategy paper “Knowledge-based Estonia” for 2002-2006 in 2001 (developed by the Ministry of Economic Affairs and Communications and the Ministry of Education and Research). The revision and development of the new strategy for 2007-2011 by the management of the latter ministry started in 2005. The first strategy document was prepared by a working group with participation of experts from the Ministry of Education, the Ministry of Economic Affairs, and the Estonian Academy of Sciences.

Another key strategic document is the Estonian National Development Plan, which considers innovation and R&D as a development engine of the Estonian economy. The NDP constitutes an essential operational programming document for support to RTDI in Estonia during the period 2004-2006, with the co-financing support of the EU Structural Funds. Some other complementary area-specific or more general documents have supported the RTDI activities in Estonia (the Estonian Enterprise Policy “Enterprising Estonia”, Agricultural Applied Research and Development, the Transport Sector Development Plan; Estonia’s Success 2014, “The Sustainable

1 See Hernesniemi 2000, Romanainen 2001, de Jager et al. 2002, Reid 2002, 2006, Monck 2002, Nedeva, Georghiou 2003, etc.

2 E.g. The FEU training cycle “Guidelines for the National Execution of Innovation and Technology Policies in View of EU Accession” for public and private sector representatives in Estonia organised by the Ministry of Economic Affairs in 2000-2001.

3 See Nedeva, Georghiou 2003.

Development – 21”, Social Agreement on Estonian Development 2003-2015, Action Plan for Growth and Jobs 2005-2007 for Implementation of the Lisbon Strategy, the Information Technology Action Plan 2006-2013).

The RTDI strategy for 2002-2006 is presently the basis for the organisation of RTDI on the state level. In order to contribute as much as possible, through RTDI, to the development of the Estonian economy, to improving the quality of life and increasing social wellbeing, the strategic objectives of Estonian RD&I are the following:

- updating pool of knowledge,
- increasing the competitiveness of enterprises.

Four main implementation activities are presented as follows:

- financing R&D,
- development of human capital,
- increasing the effectiveness of the national innovation system (incl. raising awareness and enhancing competency in RTDI, developing research and enterprise cooperation),
- international cooperation.

For the implementation of the stated objectives and the vision for the future, the key areas for Estonian RD&I are to be determined as:

- user-friendly information technologies and development of the information society;
- biomedicine;
- materials’ technologies.

The capacity of the traditional industrial sector to adopt and implement modern technologies will be increased. These objectives and activities were meant to increasing gross expenditure on R&D to 1.5% of GDP in 2006, as well as achieving a better balance between basic and applied research activities in government funding of R&D (no qualification of this target was proposed). The entire strategy aims to enhance private investments in cooperation with the research sector on RTDI in Estonia. The government financing strategy on RTDI for 2002-2006 is also presented in the document.

Within the framework of the Lisbon Strategy, the Heads of State and Government agreed that the level of R&D investments must increase to reach 3% of the GDP. According to the new strategy document for the years of 2007-2013 (the process is ongoing), the Estonian Government aims to achieve this objective by 2014.

The priority fields and activities will not be remarkably changed in the new strategy document. The strategy includes challenges for the RTDI public arrangement, the competitiveness of entrepreneurship and economy as a whole, the public sector and the RTDI policy design. The activities implemented during the next programming period are targeted towards the development of human resource, the enhancement of public sector RTDI arrangement, the growth of the firms’ innovation capacity and the

policy design according to the Estonian long-term development plans. In overall, the requirements for guaranteeing the more effective policy cycle from planning to implementation is more pronounced in the new forthcoming strategy document compared to the present strategic approach.

3. Coherence between NIS challenges and R&D objectives and priorities

Recently, the assessment of the design and implementation of Estonian RTDI policy predominantly focusing on the Estonian R&D strategy was carried out by Technopolis Consulting Group⁴. In accordance with the report despite a positive trend in RTDI, the outcome is in overall terms rather mixed. The general target in terms of absolute total expenditures on R&D has been surpassed. However, as GDP growth has been sustained, the outcome in terms of the GERD/GDP target is still significantly below the expected figure of 0,91% in 2004. In Exhibit 1, the actual and planned numbers for R&D development until 2006 are drawn.

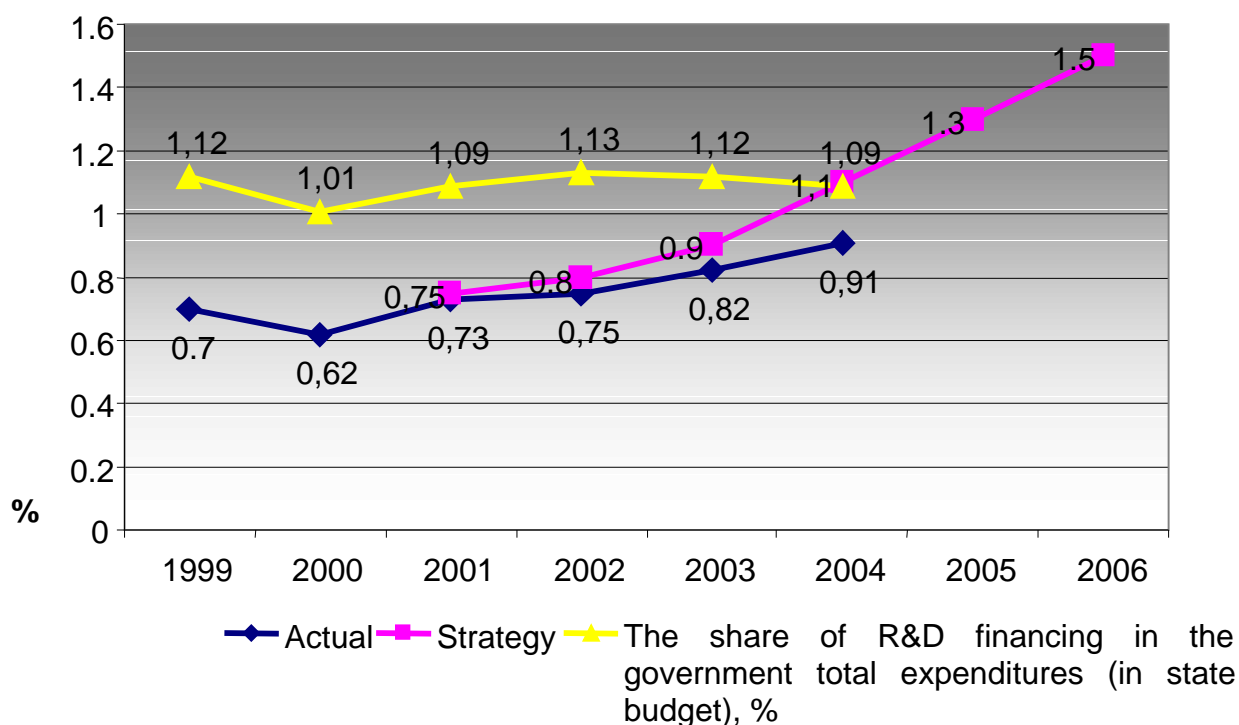


Exhibit 1: The share of R&D expenditures of GDP and government expenditures⁵

Taking into account the current trends, the 1.5% target is not going to be met by 2006. While business R&D shows rapid positive (e.g. the growth of 32% in 2003), the

⁴ See "Evaluation of the design and implementation of Estonian RTDI policy: implications for policy planning (2005). Final Report." Technopolis Consulting Group Belgium SPRL.

⁵ Source: The Estonian R&D and Innovation Strategy „Knowledge-based Estonia” for 2007-2013 (Draft version May 30, 2006).

expected rise in GOVERD has instead been replaced by a decline. There is clearly a significant “public funding gap” up to 2004.

If we consider the package of measures of the NDP/SPD (2002-2004), which is consistent with the R&D strategy for Estonia, one could easily also see a change in the policy focus during some years of the policy implementation. See Exhibit 2 where planned and actual outcomes of various policy themes are given. The major change is related to two policy themes: 1) strengthening knowledge base and 2) strengthening innovation system. The introduction of the R&D infrastructure programme (included under the first policy theme) in 2005 resulted in the reduced emphasis on developing technology and innovation infrastructure (technology and science parks in Tallinn and Tartu) and services (under the second policy issue).

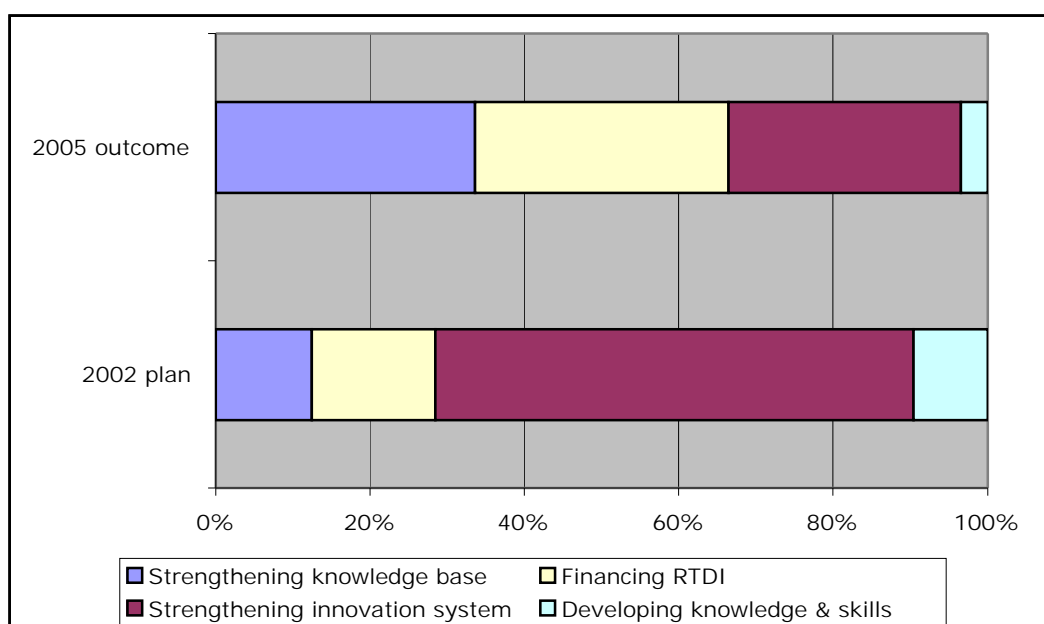


Exhibit 2. Focus of Estonian RTDI measure in the NDP/SPD for 2002-2004 (source: Technopolis Consulting Group Belgium SPRL).

Such a chaotic implementation of the policy is to a great extent caused by the missing technology or/and sector-specific strategies in Estonia. Hence, the first main policy implementation gap relate to the low capacity to develop the technology programmes in key technology areas. Despite identification of key areas in the strategy, mechanisms for prioritising research funding for R&D institutions were not clearly identified (beyond the centres of excellence) and the responsibility for pushing forward the analysis on the key technology fields was ambiguous.

The second gap is seen to appear on over-estimation of the R&D performers in Estonia. The strategy was clearly focusing on the development of the high-tech sectors in Estonia but at the same time also prioritising their integration with the traditional industries. The measures existing today are too narrowly built up on a small group of higher technology firms and explicit sectoral actions are not foreseen. Innovation approach is relatively narrow, which is also weakly associated with the organisational innovation. The latter aspect of innovation should be more systematically considered in the context of transition countries.

4. Composition of the policy mix for R&D

Choosing a narrower scope of R&D and innovation policy (measures directly influencing R&D and innovation), the instruments are well shown in the intervention logic of the EU SFs of the NDP/SPD for 2002-2004 (see Annex 1). On the exhibit, four types of action lines and respective schemes (measures) are presented, though not all of them were launched during the first programming period (see further analysis). The major implementer of the EU SFs in R&D and innovation field is the Ministry of Economic Affairs and Communications via the policy implementing agency, Enterprise Estonia. Considering the fact that the EU SFs give the major part of the R&D and innovation public support, the role of the Ministry of Education and Research has remained too modest during the first programming period. Taking into account the specific focus of the present study, we also add information about the other instruments outside the R&D domain, which are of particular relevance to R&D activities in Estonia presently and in the near future. The instruments directly or indirectly supporting R&D and innovation in Estonia are collected in Exhibit 3.

Exhibit 3: Policy mix for R&D in Estonia

Policy categories	Policy instruments: short description and target group
R&D Domain	
R&D policy generic	<p>The Estonian Science Foundation (ETF) financed by the Ministry of Education and Research provides first, research grants in Estonia. Every year over 2,000 professional researchers, as well as post-graduate and doctoral students at universities and research institutions, work on more than 650 ETF-funded projects (in all fields of basic and applied research). ETF uses state budget appropriations to award research grants on a competitive basis to individuals and to research groups. Once a year, the ETF announces a call for research project proposals by Estonian researchers or by foreign researchers working permanently in Estonia. The duration of a project may be up to four years. The 2005 ETF research grant budget was 91 million Estonian kroons (about 5.8 million euros).</p> <p>Secondly, ETF supports young researchers via various types of activities:</p> <ul style="list-style-type: none"> • Involving postgraduate and doctoral students in active research (ETF research grants can be used to cover a part of the costs necessary for training successful students and for paying scholarships to them, thereby fostering the participation of students in research groups led by experienced scholars, since 1999, the participation of students in ETF-funded projects has been growing steadily, as has the number of successfully defended Master's and PhD

theses);

- **Postdoctoral research grants** (in 2005, ETF became responsible for the task of funding postdoctoral research, the ETF was allocated 5.75 million EEK (approximately 370 thousand euros) to that end and 24 postdoctoral grants were awarded);
- **Awarding most promising young scholars** (My First Grant is a call for project proposals by young researchers of up to 35 years of age, from all fields of scholarship who have not been supported by the ETF previously, the aim of this scheme is to support good projects by young scholars who would find it hard to compete with renowned scientists, and thus help them to start their academic career, the scheme was first launched in 2002 and in 2005, 23 young scholars received their “first grant”)

Thirdly, **the ETF represents the Estonian research community at the international level**, including cooperation with European organisations (the European Science Foundation, EUROHORCs) and in bilateral agreements (the PARROT Programme, the Academy of Finland, the Russian Foundation for Basic Research, the Lithuanian State Foundation for Science and Studies, etc.). The ETF is actively involved in the ERA-NET scheme of the EU Framework Programme for Research.

Targeted financing provided by the Minister of Education and Research is delivered via recommendation of the Science Competence Council. Both basic and applied research is funded. Evaluated and registered research institutions may apply. The Science Competence Council organises the peer-reviewing of the submitted applications and advises the minister on opening the funding for new research themes and the continuation of funding for previously-approved ones. The funding period for approved research topics is up to 6 years, subject to periodical assessment of progress. All of the research topics that have been approved for targeted financing are assessed each year. 31 new research topics with a total budget of 32.5 million kroons (2.08 million euros) were approved for targeted financing in 2005. The targeted financing of 238 research topics is continued with 294.1 million kroons (18.8 million euros).

National R&D programmes launched and funded by the Ministry of Education and Research:

- The Estonian Language and the National Memory 2004-2008
- Collection and Conservation of Plant Genetic

Resources for Food and Agriculture for the Years 2002-2006

The aim of **the Estonian Language and the National Memory 2004-2008** is to provide resources for research on Estonian national heritage and the Estonian language. In addition, it supports broader research in language technology. The target group of the programme is all higher education institutions and other non-profit research organisations. Overall budget of the programme is 3,757,000 EUR.

The aim of **the Collection and Conservation of Plant Genetic Resources for Food and Agriculture for the Years 2002-2006** is the protection and conservation of varietal and population diversity of plant genetic resources for food and agriculture and ensuring sustainable development in accordance with the environmental strategy, global, regional and bilateral conventions and agreements to which Estonia has acceded. The target group of the programme is all higher education institutions and other non-profit research organisations. Overall budget of the programme is 733,386 EUR.

The Centre of Excellence of the Estonian Science Programme is presently managed by the Enterprise Estonia, since 2007 by the Ministry of Education and Research. The general objective of the programme is to increase the capability of research and development activities and innovation in Estonia, to improve the competitiveness of Estonia in the European research and innovation area, and to create and maintain top qualifications of research and development activities by developing a small number of centres of excellence in the areas considered a priority from the viewpoint of economic growth. The target group of the programme is research organisations. The budget allocated for 2005 was 6,390,000 EUR.

Research and development institutions' infrastructure development programme is presently managed by the Enterprise Estonia, since 2007 by the Ministry of Education and Research. The general objective of the Programme is to increase the capability of research and development activities and innovation in Estonia. This is done by developing an internationally competitive research and development infrastructure system providing comprehensive support to higher education, research and development activities and innovation in strong and strategically important areas of research and development.

	The budget allocations for 2005-2006: 14,700,000 EUR.
R&D policy sectoral	<p>Sectoral R&D policy is intended to implement in the new R&D Strategy for 2007-2013 in the following areas:</p> <ul style="list-style-type: none"> • information and communication technologies, • biotechnology, • material technologies.
R&D / Innovation policy – Linkage	<p>The Research and Development Financing Programme managed by the Enterprise Estonia aims to support the firms in Estonia which carry the R&D function and preferably in cooperation with R&D institutions. The support scheme is targeted towards product development in firms, research with a market potential undertaken in research and development institutions, and feasibility studies for projects. The budget allocation for 2001-2005: 18,348,846.5 EUR.</p> <p>The general objective of the Competence Centre Programme managed by Enterprise Estonia is to increase the competitiveness of enterprises in Estonia through a strategic cooperation between the research and enterprise sector. Through the programme, the establishment of small R&D institutions - the competence centres in a certain technology field or on a basis of various technology fields are supported. Competence centres are established and operated together by at least three enterprises and one R&D institution. Main characteristic of such centres is strong focus on applied research, which is needed for the product development of the founders of these centres. A competence centre has clear objectives and a research focus defined in the jointly prepared mid-term research programme. The budget allocation for 2003-2005: 9,110,000 EUR.</p>
R&D / Innovation policy – IPR	The objective of the SPINNO Programme managed by the Enterprise Estonia is to create a favourable entrepreneurial environment within the research and development institutions (R&D institutions) and applied higher education establishments of Estonia. It is also proposed to develop the potential for effective cooperation existing between enterprises and the institutions of Higher Education and to increase the benefits from research and development activities. The budget allocation for 2001-2005: 4,150,000 EUR.
R&D specific financial and fiscal policy	Estonia does not have any fiscal incentives for R&D.
R&D specific education policy	The aim of the sub-measure 1.1 in the NDP/SPD 2004-2006 is to develop human resources and the competitiveness in the labour market through the improvements of educational and training system, the creation of the environment suitable for a life-long learning and the supply of training. The sub-measure is managed by the Foundation Innove administered by the Ministry of Education and

	<p>Research. The public budget allocations planned for 2004-2006: 53,621,020 EUR.</p> <p>Archimedes Foundation is an independent body established by the Ministry of Education with an objective to coordinate and implement different EU programmes and projects in the field of training, education, research, technological development and innovation. Archimedes is managing the following educational programmes:</p> <ul style="list-style-type: none"> • Socrates National Contact Point • EU Youth Programme Contact Point • Centre of Higher Education Accreditation • Centre for Academic Mobility, <p>and the research programmes:</p> <ul style="list-style-type: none"> • EU R&D 6th Framework Programme Estonian National Contact Point • ERIS - Estonian Research Information System • COST - Estonian National Contact Point • eContent - Estonian National Contact Point • eTen - Estonian National Contact Point • Young Scientists - Estonian Contest for Young Scientists Young Scientists Association • Mobility Centre • Other projects. <p>Total annual budget for 2004: 5,752,816 EUR.</p>
R&D specific employment policy	Estonia does not have any employment incentives for R&D. However, the discussion around the topic is intense, particularly considering the mobility of researchers and engineers between business and science sectors, also regarding the brain-drain/brain-return from/to the country.
Finance Domain	
Financial and fiscal policy	<p>As a new activity in 2007, the development of the State Venture Capital Fund is on-going. The objective of the fund tends to cover the gap in financial resources (in the form of equity investments) in the seed/early stage phase of firms in innovation/R&D intensive sectors, i.e. after the phase covered by available grants and before the coming in operation of existing private investors.</p> <p>The Credit and Export Guarantee Fund KredEx was founded in 2001 by the Ministry of Economic Affairs and Communications with the aim to improve the financing of small enterprises in Estonia, decrease export-related credit risks, enable people to build or renovate their homes and promote energy efficiency in Estonia. For businesses KredEx provides: equity loans, business loan guarantees, guarantees for bank guarantees, leasing guarantees. For</p>

	<p>exporters KredEx provides: short-term credit risk guarantees, long-term credit risk guarantees, pre-shipment risk guarantees, investment guarantees.</p> <p>In accordance with the Income Tax Law, 0% corporate tax is applied for reinvestments in Estonia.</p>
Macroeconomic policy	<p>The document “Action Plan For Growth and Jobs 2005-2007” is considered to be the main macroeconomic policy document presently. The document was prepared in compliance with the European Commission initiatives within the framework of the Lisbon Strategy. The document Progress Report on the Action Plan For Growth and Jobs 2005-2007 published in 2006 gives an overview of the developments following the plans presented in 2005. One of the most relevant modifications compared to the plan is directly related to the goal of R&D activities. Total R&D expenditure to achieve 1.9% of GDP by year 2010 is considered rather ambitious due to the very fast economic growth. Complementary, the government has set more optimistic goals for productivity of reaching 68% of the EU average by 2008 and 80% by 2013. New estimates of women’s employment rate are 66.9% by 2008 and 68.3% by 2010. The employment rate of senior citizens to be achieved by 2008 was raised from 55% to 63.4%.</p>
Human Capital Domain	
Education policy	<p>The Estonian higher education policy is presented in the Estonian Higher Education Strategy for 2006-2015 (on-going process).</p> <p>Also other related documents are of great importance for R&D and innovation: Lifelong Learning Strategy 2005-2008, Development Plan for the Estonian Vocational Education and Training System 2005-2008.</p> <p>The Ministry of Education and Research is one of the partners working out the Information Policy Action Plan 2006 in cooperation with the Ministry of Economic Affairs and Communications and the Ministry of Defence.</p>
Employment policy	<p>The document “Action Plan For Growth and Jobs 2005-2007” is focusing on employment issues in the context of economic growth and technology development. See above.</p>
Innovation Domain	
Innovation policy generic	<p>The Innovation Awareness Programme managed by the Enterprise Estonia aims to increase the awareness of innovation as an important factor of economical growth and to reinforce knowledge and know-how on innovation methods and tools. Enhanced innovation awareness is instrumental for Estonian businesses in increasing their</p>

productivity, the results of which would widen their opportunities in expanding markets, strengthen products and services, as well as leading to successful company management. The target groups of the programme are: policy makers, opinion leaders and media, entrepreneurs, investors and top managers of the enterprises, technical staff, students, professors and academics, pupils and teachers, publicity. The budget for 2005: 11,781,300 Estonian kroons or 752,962.3 EUR.

The aim of the **Innovation Audit Programme** managed by the Enterprise Estonia is to map innovation potential of 100 Estonian firms. The innovation audit is an opportunity for the firms to plan further innovation activities. The budget allocation for 2005: 2,550,000 EEK or 162,974.7 EUR.

The aim of the **Business Incubation Programme** managed by the Enterprise Estonia is to support the development and provision of incubation services in the Estonian business incubations considering predominantly the needs of entrepreneurs with a high growth and innovation potential. The budget allocation for 2004-2008: 830,851 EUR.

International Cooperation Networks provided by the Enterprise Estonia are the following: the 6th Framework Programme (FP6), Estonian Innovation Relay Centre (ESTIRC), Pan-European cooperation network (EUREKA). The budget for 2005: 1,000,000 Estonian kroons or 63,911.65 EUR.

SME oriented programmes managed by the Enterprise Estonia:

The Export Planning Programme Estonia aims at supporting the drafting of companies' long-term export plans and financing their implementation. The programme enables companies to expand their export activities offering them appropriate training, consultation services and funding. The Export Planning Programme consists of two main stages: the drafting of an export plan and its implementation. A company participating in the programme compiles a long-term export development strategy, which includes the marketing activities required for achieving the strategic goals. The budget allocation for 2005: 51,650,025 Estonian kroons or 3,301,038.2 EUR.

The aim of the **Business Infrastructure Development Programme** is to improve the business environment of the existing enterprises, by supporting the establishment of necessary business infrastructure and industrial real estate

	<p>equipped with modern infrastructure. The budget allocation for 2005: 66,280,223 Estonian kroons or 4,236,078.3 EUR.</p> <p>The Start-up Support is divided into two types of grants characterised by different goal orientations:</p> <p>Growth Grant is envisaged for the start-up of enterprises that plan quick development. The aim is to support the creation and development of exporting and viable new enterprises. The maximum amount of a support grant is EEK 160,000 payable on the condition that the enterprise in question estimates at least EEK 500,000 as its average annual sales revenue for the next three years.</p> <p>Start-up Grant is envisaged for the start-up of small enterprises that do not necessarily need to have a large growth potential but anticipate a stable sales turnover and have an established market, thus contributing to the creation of jobs in a county. The maximum amount of the grant is EEK 50,000.</p> <p>The budget for Start-up support amounted to 26,531,144 EEK or 1,695,649.1 EUR in 2005.</p> <p>Through the Business Consulting Programme, small and medium-sized companies can purchase business consultations from professional consultants at affordable rates and then apply the know-how to raise their competitiveness. The budget of the programme amounted to 13,874,732 EEK or 886,756.99 EUR in 2005.</p> <p>The aim of the Training Programme is to support the in-service training and retraining of entrepreneurs and the persons working in the companies for maintaining or increasing the competitiveness of employees at the labour market, developing entrepreneurship, establishing the conditions for the creation of new jobs and increasing the capability of persons in the field of research and development activities and development of technology. The budget of the programme amounted to 36,657,455 EEK or 2,342,838.3 EUR in 2005.</p>
Innovation policy sectoral	<p>Information Policy Action Plan 2006 is defined by the Ministry of Economic Affairs and Communications in cooperation with the Ministry of Education and Research and the Ministry of Defence.</p> <p>A large number of initiatives supporting the development of ICT infrastructure are launched in Estonia. We presently list these activities: Tiger Leap National Programme, Tiger s Leap Plus, Estonian ID-card programme, X-Route, Public Internet Access Points, Single</p>

	Access Point to Government, Information Resources on the Internet, Kõula Tee (Village Road), project for developing data communication services in rural areas on the first level of government, Peatee (EEBone), Backbone Network for the Estonian Government Institutions. More detailed information on certain measure is available from European Tren Chart in Innovation. Country report for Estonia 2004-2005.
Other policies - industry	Estonia does not have any defined industrial policies.
Other policies - trade	Estonian trade policy belongs to the responsibility area of the Ministry of Economic Affairs and Communications. On May 1, 2004 Estonia became a full member of the European Union. Since then, it is a part of the EU common market that is subject to the EU common trade policy. Specific measures related to R&D and innovation do not exist.
Other policies - defence	The Ministry of Defence is one of the partners working out the Information Policy Action Plan 2006 in cooperation with the Ministry of Economic Affairs and Communications and the Ministry of Education and Research. In principle, defence related R&D is very small in the Estonian case.
Other policies – consumer protection	Specific measures related to R&D and innovation does not exist.
Other policies – health and safety	<p>The area of government of the Ministry of Social Affairs includes state social issues, the management of public health protection and medical care, employment, the labour market and working environment, social security, social insurance and social welfare, promotion of gender equality. During the recent years, remarkable developments have taken place in terms of the ICT promotion in healthcare system. The Development Plan for Health Information System for 2005-2008 is drafted by the Ministry of Social Affairs.</p> <p>The Estonian Genome Project (EGP) is carried out by the Estonian Genome Project Foundation (EGPF) with the goal to create a database of health, genealogy and genome data that would comprise a large part of the Estonian population. The Estonian Genome Project Foundation (EGPF) is a non-profit organisation founded by the Government of the Republic of Estonia in 2001. The database will make it possible to carry out research both in Estonia and outside to find links between genes, environmental factors and common diseases (cancer, diabetes, depression, cardiovascular diseases, etc) and to apply the information gained from research in making new discoveries in genomics and epidemiology, which eventually lead to increasing the efficiency of health care.</p>
Other policies -	The Estonian Environmental Action Plan 2004-2006 is

environment	<p>implementing the objectives presented in the Estonian Environment Strategy 2010. The document is relatively broad in terms of R&D and innovation.</p> <p>According to the Estonian National Strategy on Sustainable Development "Sustainable Estonia 21", the development task of Estonia for the near decades is to catch up with the EU quality of life, while preserving the Estonian cultural space, significantly increasing the coherence of the society and ensuring an ecological balance.</p>
Other policies – regional development	<p>TRIS Tartu Regional Innovation Strategy (http://tris.tartu.ee/) defines the main activities in the field of innovation in Southern Estonia. The City of Tartu and the Tartu Science Park are leading the TRIS project. In addition to Shannon and Uppsala, which are the partners of Tartu and South Estonia in the TRIS project, the region also cooperates with Tampere and Alborg.</p> <p>East, North and West Estonia are jointly developing a regional innovation strategy through the ERIS project (http://www.eesti-ris.info/). The process is ongoing.</p>
Other policies - competition	Specific measures related to R&D and innovation do not exist.
Other policies – social security	See above, other policies – health and safety.
Other policies - energy	<p>The Programme of Energy Sustainability primarily aims to sustain the quality of environment, moderate and rationale exploitation of land resources. The target group of the programme is relatively broad varying from the ministries, county governments and municipalities to single firms and population. The Ministry of Economic Affairs and Communications is responsible for the energy sector in Estonia.</p> <p>According to "Long-term Public Fuel and Energy Sector Development Plan until 2015", the fuel and energy sector is a strategic infrastructure of the state, which must ensure that Estonia has an uninterrupted supply of high-quality fuel, electric energy and heat at optimal prices. At the same time, the fuel and energy sector must be as efficient as possible and comply with the safety and environmental requirements. The sustainable fuel and energy sector is one of the bases for national security.</p>

5. Coherence between main policy objectives and priorities, and policy instruments

All policy instruments launched in R&D and innovation or related policies (e.g. education, environment, energy) follow field-specific strategy documents (e.g. The Estonian R&D Strategy “Knowledge-based Estonia”, Action Plan for Growth and Jobs 2005-2007, Estonian Higher Education Strategy for 2006-2015, etc.). In general terms, concerning the overall target of achieving the share of R&D expenditures of GDP 1.9% by 2010 is considered rather ambitious both in the independent assessment of the Estonian R&D Strategy for 2002-2006 and the Progress Report on the Action Plan for Growth and Jobs 2005-2007. See also ch.3. The share of R&D in the whole spectrum of innovation activities may achieve the lower level than expected in the beginning of 2000s. One may also suggest following other indicators rather than R&D investments and expenditures in detecting the whole innovation capacity among companies and R&D institutions in Estonia. In the new strategy document there are included a wider package of indicators to be monitored during the programme period as well as does the European Innovation Scoreboard.

Regarding the R&D and innovation policy programme since 2002 one could not point to a significant variation from main policy objectives, priorities or policy instruments. Specific programmes have been launched on a basis of the feasibility studies for finding the policy gaps within a range of R&D and innovation policy themes. However, some major shifts were seen in the policy package. First, a shift in focus of Estonian R&D and innovation measures more towards applied research than technology development and transfer was explicitly appeared (see Exhibit 2). Another concern relates to technology programmes in key technology areas which were not started with during the first programming period. One of the main challenges during the next strategy period 2007-2013 is taken by the government to concentrate more systematically on certain research and technology niches in key areas horizontally across on-going or newly opened programmes. This approach would avoid a fragmentation of funding within the policy programme in R&D and innovation field.

6. Policy mix instruments and target groups

Exhibit 4: Policy instruments and broad routes to increase R&D investments

Policy categories	Policy instruments	ROUTE 1: promote establishment of new indigenous R&D-performing firms	ROUTE 2: stimulate greater R&D investment in R&D-performing firms	ROUTE 3: stimulate R&D investments in firms non-performing R&D	ROUTE 4: attract R&D-performing firms from abroad	ROUTE 5: increasing extramural R&D carried out in cooperation with public sector	ROUTE 6: increase R&D in public sector
R&D Domain							
R&D policy generic	ETF research grants					X	XX
R&D policy generic	ETF support for young researchers						XX
R&D policy generic	ETF international co-operation						XX
R&D policy generic	Targeted financing						XX
R&D policy generic	The Estonian Language and the National Memory 2004-2008						XX
R&D policy generic	The Collection and Conservation of Plant Genetic Resources for Food and Agriculture for the Years 2002-2006						XX
R&D policy generic	Centre of Excellence of the Estonian Science Programme					X	XX
R&D policy generic	R&D institutions' infrastructure development programme	XX			XX	XX	XX
R&D / Innovation policy – Linkage	R&D Financing Programme		XX			X	X
R&D / Innovation policy – Linkage	Competence Centre Programme		XX		X	X	
R&D / Innovation	SPINNO Programme	XX				X	X

policy – IPR								
R&D specific education policy	The NDP/SPD sub-measure 1.1 “Educational system supporting the flexibility and employability of the labour force and providing opportunities of lifelong learning for all”						X	X
R&D specific education policy	Archimedes Foundation						X	X
Finance Domain								
Financial and fiscal policy	Venture Capital Fund (to be planned from 2007)	X	XX			X		
Financial and fiscal policy	Credit and Export Guarantee Fund KredEx	X	X	X				
Financial and fiscal policy	0% corporate tax on reinvestments		X	X				
Macroeconomic policy	Action Plan for Growth and Jobs 2005-2007	XX	XX	XX	X		XX	XX
Human Capital Domain								
Education policy	Estonian Higher Education Strategy for 2006-2015	X	X	X	X		X	X
Education policy	Lifelong Learning Strategy 2005-2008	X	X	X	X		X	X
Education policy	Development Plan for the Estonian Vocational Education and Training System 2005-2008	X	X	X	X		X	X
Education policy	Information Policy Action Plan 2006	X	X	X	X		X	X
Employment policy	Action Plan For Growth and Jobs 2005-2007	XX	XX	XX	X		XX	XX
Innovation								

Domain								
Innovation policy generic	Innovation Awareness Programme	X	XX	XX	X	XX	XX	
Innovation policy generic	Innovation Audit Programme		X	X				
Innovation policy generic	Business Incubation Programme			X				
Innovation policy generic	International Co-operation Networks (via Enterprise Estonia)			X	X	X	X	
Innovation policy generic	Export Planning Programme			X				
Innovation policy generic	Business Infrastructure Development Programme			X				
Innovation policy generic	Start-Up Programme			X				
Innovation policy generic	Business Consulting Programme			X				
Innovation policy generic	Training Programme			X				
Innovation policy sectoral	Information Policy Action Plan 2006	X	X	X	X	X	X	X
Innovation policy sectoral	Development of ICT infrastructure	X	X	X	X	X	X	X
Other policies - defence	Information Policy Action Plan 2006	X	X	X	X	X	X	X
Other policies – health and safety	Development Plan for Health Information System for 2005-2008	X	X	X	X	X	X	X
Other policies – health and safety	Estonian Genome Project							X
Other policies - environment	Estonian Environmental Action Plan 2004-2006	X	X	X	X	X	X	X
Other policies - environment	“Sustainable Estonia 21”	X	X	X	X	X	X	X

Other policies – regional development	TRIS Tartu Regional Innovation Strategy		X	X			X
Other policies - energy	Programme of Energy Sustainability	X	X	X	X	X	X
Other policies - energy	Long-term Public Fuel and Energy Sector Development Plan until 2015	X	X	X	X	X	X

7. Balance within R&D policy mix

The Exhibit 5 below indicates the importance of policy instruments according to the following dimensions:

- a) Overall contribution to increase private R&D expenditures.
- b) Impact on specific aspects of the NIS or R&D performers (if possible).
- c) Public attention/attention by policy makers.
- d) Volume of public funding involved.
- e) Beneficiary of a shift in public funding.

Table 5: Assessment of ‘importance’ of R&D policy instruments

Instruments	Funding (million EUR)	Criteria				
		a	b	c	d	e
ETF research grants	5.8 (2005)		X		XX	X
ETF support for young researchers (postdoctoral research grants)	0.37 (2005)		X		XX	
ETF international co-operation			X		XX	
Targeted financing	20.88 (2005)		X		XX	X
The Estonian Language and the National Memory 2004-2008	3.8 (2004-2008)		X		XX	
The Collection and Conservation of Plant Genetic Resources for Food and Agriculture for the Years 2002-2006	0.7 (2002-2006)		X		XX	
Centre of Excellence of the Estonian Science Programme	6.4 (2005)		X		XX	X
R&D institutions’ infrastructure development programme	14.7 (2005-2006)		X		X	XX
R&D Financing Programme	18.35 (2001-2005)	XX	X		X	
Competence Centre Programme	9.1 (2003-2005)	XX	X	XX	X	
SPINNO Programme	4.2 (2001-2005)	X	XX	XX	X	
The NDP/SPD sub-measure 1.1 “Educational system supporting the flexibility and employability of the labour force and providing opportunities of lifelong learning for all”	53.6 (2004-2006)			X	X	
Archimedes Foundation	5.8 (2004)			X	X	
Venture Capital Fund (to be planned from 2007)	XX	X	XX			
Credit and Export Guarantee Fund KredEx	X		X			
0% corporate tax on reinvestments				X		
Action Plan for Growth and Jobs 2005-2007				X	XX	
Estonian Higher Education Strategy for 2006-2015				X	XX	
Lifelong Learning Strategy 2005-2008				X	XX	

Development Plan for the Estonian Vocational Education and Training System 2005-2008				X	XX	
Information Policy Action Plan 2006				X	XX	
Innovation Awareness Programme	0.753 (2005)	XX	XX	X	X	
Innovation Audit Programme	0.163 (2005)	XX	XX			
Business Incubation Programme	0.831 (2005)	X	XX			
International Co-operation Networks (via Enterprise Estonia)	0.064 (2005)	X	X		X	
Export Planning Programme	3.3 (2005)	X				
Business Infrastructure Development Programme	4.2 (2005)	X				
Start-Up Programme	1.7 (2005)	X				
Business Consulting Programme	0.9 (2005)	X				
Training Programme	2.3 (2005)	X				
Development of ICT infrastructure				XX	XX	
Development Plan for Health Information System for 2005-2008				X	XX	
Estonian Genome Project				XX		
Estonian Environmental Action Plan 2004-2006				X	XX	
“Sustainable Estonia 21”				X	XX	
TRIS Tartu Regional Innovation Strategy				X	XX	
Programme of Energy Sustainability				X	XX	
Long-term Public Fuel and Energy Sector Development Plan until 2015				X	XX	

8. Emergence of R&D policy mix

The main strategy document giving guidelines for R&D and innovation policy in Estonia can be said to be the Estonian R&D and innovation strategy (presently for 2002-2006). The preparations for the Estonian R&D strategy began in 1998 and in the autumn of the same year, at the initiative of the Research and Development Council (TAN), and guided mainly by the Estonian Academy of Sciences, the first version of the strategy was completed, entitled “Knowledge-centred Estonia” (was approved by the Government on 26 January, 1999). Taking into account the basic principles of this document, the Ministry of Education, the Ministry of Economic Affairs and the Academy of Sciences compiled a new Estonian R&D strategy. In preparing the strategy document, account was taken of the changed economic situation both in Estonia and internationally, as well as of educational and economic policy orientations of RTDI in Estonia and the European Union. It was found out and presented to the public that the needs and opportunities of a society in planning its economic and social development, in conditions of limited resources, can only be unified when there are clearly defined objectives, opportunities and principles, and there are qualitative and quantitative targets aimed at implementing the objectives. By the strategy document, it was aimed to provide the public support for RTDI field in the coming years, and where the framework and extent of public sector support measures until 2006 were planned to be determined. From the European integration viewpoint the R&D strategy is an indicator for the European Union (EU) and international organisations regarding Estonia’s maturity and the accordance of its policy orientations to EU development priorities in moving towards a knowledge-based economy.

The NDP/SPD document for 2004-2006 is a more operational document and among other priorities the R&D and innovation schemes were described and in parallel most of them developed and launched in 2003-2005. Therefore, the history of the programmes is still very short. The analysis of the relevant sub-measure (Promotion of Research, Technology Development and Innovation) was already more detailed than that of inserted into the field-specific strategy document in 2001. It also used the framework of the European Innovation Scoreboard for the comparison with other EU Member States. The part of the document associated with R&D and innovation was managed by the Ministry of Economic Affairs, discussed widely with various interest groups in support of the Ministry of Finance and the Ministry of Education and Research. However, the cooperation with the latter one should have been more intense during the programming. The vast majority of the funding today comes from the EU SFs , which in turn determines the rules of the game.

Complementary to strategy documents, any single programme launched in R&D and innovation policy has passed first the feasibility study, in most of cases carried out by foreign experts (see de Jager *et al.* 2001, de Jager *et al.* 2002, Reid 2002, etc).

9. Governance of the policy mix

The highest responsibility for the RTDI policy in Estonia lies with the Government and the Parliament – *Riigikogu*. The Parliament's role in the RTDI policy is mainly related to the approval of the national budget for the RTDI activities, as well as the Estonian R&D Strategy (updated every three years).

In practise, two ministries are carrying the core role of the Estonian RTDI policy system – the Ministry of Education and Research, and the Ministry of Economic Affairs and Communications. The ministries, as well as the Government have advisory bodies for RTDI policy – the Research and Development Council for the Cabinet itself, and two subcommittees for each ministry – Research policy subcommittee for the Ministry of Education and Research and Innovation policy subcommittee for the Ministry of Economic Affairs and Communications. In addition to that, both ministries have implementing agencies or advisory bodies for the implementation of specific policy instruments – Enterprise Estonia and KREDEX under the Ministry of Economic Affairs and Communications, and Estonian Science Foundation, Scientific Competence Council and Foundation Innove by the Ministry of Education and Research. Archimedes Foundation is created with the aim by the Government for the implementation of the European Union research instruments like Framework Programmes.

In addition to governmental bodies in the system, some non-profit institutions such as the Estonian Chamber of Commerce and Industry, the Association of Estonian Information Technology and Telecommunications Companies, the Estonian Employers' Confederation are more active attempting to influence the RTDI policy path in Estonia.

Enterprise Estonia is presently one of the largest institutions within the national support system for entrepreneurship and RTDI in Estonia providing financing products, advice, partnership opportunities and training for entrepreneurs, research and development institutions and the public and third sectors. Enterprise Estonia is also one of the main institutions responsible for the implementation of EU structural funds in Estonia.

The role of other ministries in planning and implementing the R&D and innovation policy is minimal. There have been difficulties in the effective cooperation with other ministries: Finance, Agriculture, Defence, etc. The Research and Development Council was supposed to act as a negotiator in R&D and innovation strategic questions, particularly after its reorganisation, but it has not performed this role sufficiently.

10. Interactions between policy objectives and instruments

The major part of the R&D and innovation measures are launched during the last 3-4 years, the impact on the R&D expenditure is too early to assess. Nevertheless, some mid-term programme-specific evaluations (for the R&D financing programme, SPINNO programme) have been experienced or presently ongoing. Only assessing the immediate results of the programmes, the interaction effects could be argued to be positive and reciprocal, already after the application process of the Calls for programmes. For example, calling the Competence Centre programme by the Enterprise Estonia gave also clients for the R&D financing scheme. Even if the applications are not responding to the programme quality criteria or due to high competition not passing the application procedure, those institutions/group of institutions might be immediately eligible for another programmes. Planning process itself might result in capacity building of the programme clients.

During the first programming period of the NDP/SPD, the cooperation at programme level was to say relatively weak between the policy-makers of enterprise and R&D and innovation policies, even both of the policy areas performed in the same ministry. Now during the last two years, the interactions have intensified and particularly valuable are the joint actions in planning policy measures (such as Inno Awareness, Innovation audit programmes, Technology parks and incubations). Hence, the enterprise and R&D and innovation policies are not two or three different issues in respect of the economic development. The role of small and medium sized enterprises in the Estonian economy is too high to forget them. Enterprise policy intentionally is growing the entrepreneurship and innovation aware and capable firms for R&D and innovation programmes.

On the other hand, education policy is expected to interact more strongly and to give an input to R&D and innovation policy. Presently, and to a great extent due to absence of technology- or sector-specific policies, the joint events are rare between these two fields in Estonia.

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Annex 1. The NDP/SPD RTDI measure intervention logic

