

EUROPEAN TREND CHART ON INNOVATION

Country Report:
Estonia

Covering period:
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**EUROPEAN COMMISSION, DIRECTORATE GENERAL ENTERPRISES
“INNOVATION AND SME” PROGRAMME**

The European Trend Chart on Innovation

Innovation is a priority of all Member States and of the European Commission. Throughout Europe, hundreds of policy measures and support schemes aiming at innovation have been implemented or are under preparation. The diversity of these measures and schemes reflects the diversity of the framework conditions, cultural preferences and political priorities in the Member States. The "First Action Plan for Innovation in Europe", launched by the European Commission in 1996, provided for the first time a common analytical and political framework for innovation policy in Europe.

Building upon the Action Plan, the "Trend Chart on Innovation in Europe" is a practical tool for innovation policy makers and scheme managers in Europe. Run by the "Innovation" directorate of DG Enterprises, it pursues the collection, regular updating and analysis of information on innovation policies at national and Community level, with a focus on innovation finance; setting up and development of innovative businesses; the protection of intellectual property rights and the transfer of technology between research and industry.

The Trend Chart serves the "open policy co-ordination approach" laid down by the Lisbon Council in March 2000. It supports policy makers and scheme managers in Europe with summarised information and statistics on innovation policies, performances and trends in the European Union. It is also a European forum for benchmarking and the exchange of "good practices" in the area of innovation policy.

The "Trend Chart" products

The Trend Chart on Innovation has been running since January 2000. It tracks innovation policy developments in all EU Member States, plus Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Iceland, Israel, Latvia, Liechtenstein, Lithuania, Norway, Poland, Romania, Slovak Republic and Slovenia. The Trend Chart web site (www.cordis.lu/trendchart) will provide access to the following services and publications as they become available:

- a database of policy measures across Europe;
- a "who is who?" of agencies and government departments involved in innovation;
- a series of country reports;
- a series of six-monthly trend reports;
- a number of benchmarking reports on specific themes;
- statistical reports such as the European Innovation Scoreboard;
- the six-monthly newsletters of the Trend Chart;
- the annual reports of the Trend Chart;
- and other publications.

The present report was prepared by the **Economist Intelligence Unit** (Vienna Office). The information contained in this report has not been validated in detail by the Member States or by the European Commission.

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EXECUTIVE SUMMARY

Estonia has the reputation of a relatively successful post-Soviet CEE nation. The cornerstones in transfer to market economy since regaining independence in 1991 have been stable currency, balanced state budget, liberal trade policy and rapid privatisation.

In late 1998/99 the economic development lost pace due to external shocks (financial crisis in Russia) and overheating in Estonian economy. Although the situation is now improving, there is an increasing awareness that the impulse received from resolute political, legislative, financial and other “organisational” decisions has been exhausted. In order to ensure further economic growth, the government now shifts focus to competition policy – i.e. those areas in economy that improve the productivity and quality of Estonian goods and services and will enable Estonian exporters to compete better in international markets. And while to date the main driver of technology transfers and business restructuring has been foreign investment through privatisation, the state’s role will now turn to creating favourable business climate, improving quality of human capital and developing an integrated support system for business in general.

All recent strategy documents, including coalition agreement, emphasise promoting innovation and R&D activities as key measures for sustainable growth in a small country with limited resources. The aim is to increase expenditures on R&D to 1.2% of GDP by the year 2002. One of the new Government’s first actions was to order an evaluation of the Estonian national innovation system and especially the effectiveness of the technology policy and the functioning of policy organisations.¹

So far R&D and innovation issues have only occasionally caught attention of the main strategic advisory body to the Government – Estonian Research and Development Council. In addition, support functions in this field and business development in general have been, during the last decade, scattered between various government agencies and structures lacking clear vision and uniform strategy. It was only in early 1999 that co-ordination of respective functions was concentrated in the newly established Technology and Innovation Division of the Ministry of Economy.

During last years two main conceptual documents related to innovation and R&D activities have been drafted and approved by the Government.

The Government approved the very first innovation policy statement, *Estonian State Innovation Programme* in June 1998. This was intended as a blueprint for innovation and technology policy to outline strategic policy targets and guidelines for policy implementation. It has two main aims – to increase the efficiency of public sector in supporting innovation and development of necessary infrastructure, and second, to support innovation in different sectors of economy and participation in international projects. However, as the recent Evaluation of Estonian Innovation System report points out, the document is more a list of optimistic hopes than a strategic document with clear priorities and measures to achieve them. The second weakness is implementation – although approved by the Government, politicians are not really tied to implementing the program. Neither has it ever received a budget. Thus it has mainly remained a reference document, providing profound information on indicators for Estonian innovation system, studies, resolutions and programmes in EU, outlining relevant framework and support possibilities for Estonia and assessing situation in different industries.

¹ Evaluation of Estonian Innovation System, study carried out on the request of the Estonian Minister of Economy by Hannu Hernesniemi, Finnish Economic Research Institute Etlatieto Ltd, financed by Phare within the framework of Support to European Integration Process in Estonia (No ES 9620.01.01)

Planned technology development financing in real terms, according to the Programme, was EEK 20 million in 1997 (EUR² 1.27 million), EEK 30 million (EUR 1.9 million) in 1998, EEK 50 million (EUR 3.2 million) in 1999, EEK 100 million (EUR 6.4 million) in 2000, EEK 140 million (EUR 8.9 million) in 2001 and EEK 180 million (EUR 11.5 million) in 2002. Although the targets are modest in international comparison, they have not been met. The financial backbone of the programme was broken by the Government's budget cutting in 1999.

A more important document in innovation policy context would be the *National Development Plan for the years 2000–2002*, formulated within the framework of EU Special Preparation Programme for Structural Funds extended to Estonia in 1999.

The document warns that the competitive edge based on cheap resources (labour) will soon be exhausted. Instead, encouragement of innovation and introduction of new technologies are listed among priorities for achieving sustainable economic growth and improving present low competitiveness of Estonian business sector. It also admits that due to disproportionate distribution of funds between basic research, applied research and technology transfer, and due to the low involvement of private sector, the Estonian innovation system in its present state fails to meet the economy's needs. The document lists insufficiently developed mechanisms for technology transfer, including lack of funding for start-ups and low efficiency of business support institutions, as main impediments to commercialisation of R&D results and technology upgrade.

The document clearly defines the long-term priorities in the field of R&D and innovation and recommends to increase public financing of innovation to match the extent of funding allocated to basic research by the year 2002 (approximately 0.6% of GDP). The priorities include development of a knowledge society with improved research potential and human skills; improvement of research quality; bringing the level of R&D financing to the EU average; development of the National Innovation System, including encouragement of greater contribution from private sector; support to innovative SMEs; adopting EU priorities, enhancing international co-operation.

The National Development Plan will be an evolving document, which serves as a basis for Estonia's negotiations with the EU on financial support to Estonia's social and economic development.

The most important recent development is the ongoing reform of institutional infrastructure supporting small and medium size business. The aim is to increase efficiency of the whole system by streamlining functions and responsibilities. The foundations to be reformed include the Innovation Foundation, now the basic source for public financing for R&D projects. During the reform the Innovation Foundation will be transformed into Estonian Technology Agency that will be responsible for formulating national innovation policy and co-ordinating and financing Estonian technology programs.

Strategic objectives for the year 2002 as formulated by the Ministry of Economy include improving the management and co-ordination of the national innovation system, diversifying the range and improving the quality of support instruments, promoting technology transfer activities, improving regional co-operation networks, stimulating participation in international R&D programmes. By that time GERD shall constitute 1.2% of GDP and BERD 0.3% of GDP.

² 1 EUR = 15.6466 EEK

0. Innovation Policy in Estonia

0.1. Overview

In 1998 Estonian GDP was EEK 73.2 billion in current prices (EUR 4.68 billion).

The level of investment in research and development in Estonia is currently very low by the EU standards. In 1998 Estonia's Gross Domestic Expenditure on Research and Development (GERD) amounted to EEK 387 million (EUR 24.7 million) according to the Statistical Office of Estonia. As a proportion of Gross Domestic Product this represented approximately 0.5%. R&D intensity in Estonia is 25% of the average in the OECD countries and in the EU countries. According to the National Development Plan GERD shall increase to 1.2% of GDP, i.e. approximately EEK 1 billion (EUR 63.9 million) where the state share would be 800 million. By the year 2010 GERD shall go up to 2.2% of GDP, which was the average intensity in the OECD and EU countries in 1995.

A more detailed analysis of GERD is presented in Table 1 below. An essential feature of R&D financing is that the government's share amounts to approximately 75% of the total. For comparison, in Finland 60% of R&D is financed by the private sector and 40% by the public sector. So, even though government spending is low in Estonia, it is private investment that lags the most. Companies do not invest in developing new products or production technology. Firms still mainly function as producers, not innovators. On the other hand, there is no comprehensive statistics on private R&D investments. The available statistics so far only cover firms whose main line of business is R&D activities. Thus nothing can be said on R&D intensity in different industries.

Table 1. Research and Development Financing by sources of funds, 1998*

	EEK '000	%
Total R&D	387,246	100
of this:		
Government	291,552	75.2
Productive Enterprises	32,455	8.38
Non-Profit Organisations	22,301	5.76
Own Funds of R&D Institutions	16,459	4.25
Foreign Funds	24,479	6.32

*the business enterprise sector is not covered by the R&D survey

Source: Statistical Office of Estonia, Yearbook 1999

Public investments are used for basic research and for applied research that does not lead to product and technology development by firms. In 1998 for example, according to the Estonian Statistical Office, share of basic research in total R&D expenditures was 48%, applied research 39.2% and innovative technology development 12.8%.

There is no reliable statistics on BERD. The discrepancy will be eliminated as in 1998 statistical surveys were also launched in enterprise sector and the first official data should become available in 2000 or 2001.

Table 2. Financial Institutions for Business Support

Funding Source	1999 Budget in DEM	Target Groups	Instruments
Innovation Foundation	4,250,000	innovative products/ service development	loans, grants, guarantees, equity investments
Investment and Trade Development Foundation	4,100,000	Exporting companies, foreign investors	Grants for organising and participating in events
Foundation for SME Credit	1,250,000	SMEs	Direct or mediated loans, loan guarantees
Export Credit and Guarantee Foundation	1,250,000	Export-oriented enterprises	Loans and guarantees for export
Regional Development Foundation	10,340,000	SMEs, local government, regional business support institutions	Grants, loans

Source: TUIIC

In 2000 of the Estonian population of 1.4 million 4,000 scientists and engineers are employed in R&D. This is a rather high level by international comparison. Comparing the number of researchers (in Estonia in year 1998) per 10,000 workers with respective OECD figures (from 1995) places Estonia in the “middle group” before the last Nordic country Denmark and ahead of Canada. If we take account of full-time researches only, the number was 2750 in 1998. With this Estonia still remains in the middle group.

However, as a closer analysis of these figures indicates, the qualification of research staff does not match the needs of Estonian firms (product development, productivity increase). There is a lack of researchers in engineering and computer science. Natural scientists are oriented towards basic research, agricultural scientists towards environment issues and farming, instead of developing new technology or products for food industry.

Number of students and graduates in engineering and computer sciences falls below the number corresponding to future needs of Estonia.

The innovation support system is not sufficiently developed yet. 16 Regional Entrepreneurship Centres, established with the support of international programmes, are in general focussed on consulting and advisory services and thus only partially fulfil the role of innovation support structure.

The majority of these entities have emerged around universities or research centres and have the following objectives: enhancing co-operation between R&D institutions and industry with the aim of creating new products and commercialising ideas; support for innovative small enterprises (spin-offs); subsidised facilities and promoting international co-operation. Today’s innovation support structures are geographically located in two biggest towns Tallinn and Tartu, where the major R&D activities and business have concentrated.

The number of domestic patent applications is very low in both absolute and relative terms compared to other countries. The number of Estonian patent applications per year has varied between 12 and 20. In order to reach the EU average 350 patent applications would be required per year.

Among the positive developments is the fact that Estonia has managed to attract a remarkable amount of foreign direct investment (FDI) per capita, only lagging behind Hungary of the CEE and FSU countries. In the record year 1998, FDI was 10% of GDP and nearly 20 times bigger than Estonian investments in R&D. In this light the Estonian Investment Agency is also an important agent in the Estonian innovation system.

0.2. Recent policy events

The March 1999 general election brought to power a centre right government headed by the same Prime Minister who launched the first set of radical reforms at the beginning of the last decade after Estonia regained independence in 1991. Rather than supporting direct intervention in industrial policy, the present Government emphasises increasing competitiveness and supporting innovative ideas and development of high value added goods and services. However, one of the first things the Government did, facing the need for fiscal tightening, was to reduce allocations to R&D in 1999 state budget as one of the easiest areas for such cuts.

The national innovation system has evolved through years without a clear strategy, units have been set up at different times for different purposes. This has led to overlapping in functions and general inefficiency of the whole system, including ineffective use of scarce resources. There has been no systematic approach for developing those structures nor for supporting technology transfer and R&D activities as a whole. The main driver of technology transfer has been FDI and the Government has seen its prime function in maintaining macroeconomic stability and providing favourable conditions for investors. Politicians have not fully realised the potential of innovation in ensuring sustainable growth, creating jobs, etc. This also explains the low level of R&D funding. Neither was there any pressure from industry, which has focussed on producing rather than developing new technologies and products.

It was not until 1998 that the first document emerged that had ambitions of becoming a strategy for state innovation and technology policy. The initiative came from academic circles and the result was an impressive and comprehensive document providing both analysis of the present situation and lists of possible priority areas. However, as politicians were not actively engaged, the document never received the necessary commitment nor financing. In addition it was regarded as something related to the previous government, reducing the document's status even further.

The major innovation policy statement by the New Government came at the end of 1999 in the form of the National Development Plan, formulated in the framework of the EU Special Preparatory Program for Structural Funds – SPP. Before that the Government appraised the situation on innovation support in Estonia by ordering an evaluation of the whole system from foreign experts. The document was prepared under the aegis of Phare by the Finnish Economic Research Institute and was ready in March 2000. It maps the present system, analyses strengths and weaknesses, and concludes with a set of recommendations for developing Estonian innovation infrastructure. This will serve as one of the main reference documents for new policy initiatives.

On the basis of that document the Government launched a reform of the present business and innovation support infrastructure. The reform received a formal backing from the Government on its April 18, 2000 session. The reform has launched an active debate in the society between all concerned parties and brought up many proposals and recommendations submitted to government agencies for consideration.

0.3. Innovation policy developments

The following long term priorities in the field of R&D and innovation are defined in the National Development Plan 2000–2002:

- develop knowledge society, improve the research potential and skills of the society;

- improve the quality of research in higher education, fundamental research and in strategically important areas;
- bring the financing of R&D in Estonia to the EU average, considerably increase state expenditures on applied research and technological development activities;
- develop the national innovation system, improve co-operation between R&D and the business sector, motivate and encourage the private sector to participate in R&D and innovation process;
- foster business activities, with emphasis on SMEs, in sectors generating high added value and innovative technology;
- align the priorities of R&D and innovation with the EU guidelines, actively participate in international co-operation, including in the EU R&D programmes.

The basic framework of the R&D support structure was set in the Organisation of Research and Development Act. In its original form the structure was very much copied from the respective system in Finland, however, the functions and responsibilities remained unclear. Now the emphasis has shifted to increasing the efficiency of the existing system through a thorough reform of the whole system.

The government admits its failure to balance on administrative level (Ministry of Economy, Ministry of Education) the influence of lobby groups, due to lack of resources for policy analysis and formulation. To address that problem the Government has set an aim to strengthen structures in these ministries responsible for R&D policy.

One of the first steps was to establish Technology and Innovation Division in the Ministry of Finance in spring 1999. The aim of the new division was to strengthen the grip of the Ministry on policy formulation (until then both policy formulation, funding and screening of projects was the responsibility of the Innovation Foundation, i.e. academics, not Ministry were formulating the policy) and form an efficient co-ordinating institution.

Reform of the business support infrastructure includes specifying the role and increasing the efficiency of the Research and Development Council, the main advisory body in these issues to the Government. The aim is to split the Council into two chambers, one to deal with science and the other with innovation and R&D issues. That would improve focus and enhance the status of innovation in particular, which up until today has received considerably less attention compared to science.

The reform involves all foundations supporting business and innovation (altogether nine foundations). The aim is to provide quality services to enterprises in a co-ordinated form. Amendments to respective legislation have been drafted.

One of the main lines of the reform is reorganising the present basic financing structure for R&D and innovation projects - the Innovation Foundation, criticised for low efficiency and limited scope - into Technology Agency. The aim of the transformation is to make the innovation support structure more transparent, better co-ordinated and to allow less possibilities for duplication of tasks. The Agency will have the following functions: participation in policy formulation; preparation, financing and co-ordination of technology programs in key areas; financing applied research and high-risk industrial R&D projects; financing and co-ordination of international technological co-operation; advising in technology transfer and implementation issues; increasing public awareness about R&D; promoting Estonian image, technologies and co-operation on international markets. The institution will be staffed by the end of year 2000.

The update of the National Development Plan section on support to technological development and innovation states also the importance of national technology programmes in accelerating development in key sectors. It supports the idea that Estonia should every year initiate 1–3

technology programmes, which focus on solving some specific problems or develop some areas of technology important to Estonia. The state and communities, specifying their needs, could be direct customers in some programmes. There are already successful examples of such projects.

It is also realised that covering 70% of R&D expenditures is a heavy burden for a small state, thus the Government intends to work out measures for promoting private investment. This includes motivating foreign investors to shift some of their R&D activities to Estonia to utilise local potential. The state in turn shall support the development of bridging structures like technology parks, innovation centres, etc. To date the development of these structures has been hindered by insecure financing basis. The situation has somewhat improved for the Tartu Science Park with launching the SPP pilot project in the framework of the EU Special Preparatory Program for Structural Funds in 1999. The project will be continued this year.

The Tartu Science Park has been developing quite successfully, and has now 34 R&D-based small companies as its tenants or associates. Tartu University has started a spin-off programme to support creation of enterprises from its R&D activities. The EU Innovation Relay Centre in Tartu mediates the knowledge on EU R&D programmes and events. As for Tallinn, several knowledge-based companies assembled around the state-owned *Küberneetika Ltd* are doing well, the assembly has some features of a technology park. The Tallinn Technical University Innovation Centre Foundation is, among other things, preparing a business plan for creating an incubation centre on the campus of the university for start-up firms.

One of the measures planned to encourage spin-offs is to reorganise the present research development department in Tartu University into a separate technology transfer firm that would generate the emergence of spin-offs by identifying industry demand and enhancing co-operation between university and industry, including necessary training. The new entity shall be ready and staffed by 2002.

In the future, while the Ministry of Economy will co-ordinate technology policy, the other key Ministry will be the Ministry of Education, responsible for science and education. A position of Deputy Chancellor in Science was created. The Ministry is also responsible for the reform of vocational education identified as one of the bottlenecks hindering economic development.

The Ministry of Economy has started work on new Innovation Strategy to replace the original document. The new strategy, according to the ministry, will focus around two axis – generating knowledge (education, advanced training etc.) and technology transfer, knowledge application. The new document will also include a financial plan that will be submitted to the parliament for approval. This should ensure wider political support to the document and eliminate the threat that change in government would undo all previous work.

0.4. Policy debate

Needs arising from the EU accession have an important role in stirring up the present debate on innovation policy in Estonia. Especially in the context of preparing the National Development Plan within the framework of the EU Special Preparatory Programme for the Structural Funds. Although there have been repeated calls from the President of Estonia to search for the Estonian “Nokia”, the more constructive and active debate has only been going on during the last year.

A recent evaluation of the Estonian Innovation System carried out by the Finnish Economic Research Institute highlights weaknesses, strengths, opportunities and threats in Estonian economic environment and R&D and innovation policy.

One of the main weaknesses is the low financing of R&D and innovation as this has not been among the priorities of politicians during the transition to market economy. Neither have the enterprises realised the importance of research and development. They see themselves as producers, while research is done in academic institutions. Connections between firms and universities are weak as well as connections between educational establishments and enterprises. Lack of quality workers is becoming an increasing impediment to economic development.

It is also the current situation in Estonian industries, where many firms are doing subcontracting work for foreign firms, which reduces the need for own R&D activities. Often production is shifting to less advanced products as is the case with firms that, for example, produced electronics for Soviet military sector. New markets have opened up in many sectors, including wood processing, where the strategy has simply been to utilise more actively the domestic raw-material base and employ cheap labour.

The present national innovation system is criticised as inefficient and sometimes even hindering or slowing technology development.

One of the strengths of Estonia is, however, that there are many people in the system who have wide international contacts and are well informed of technology policy issues and developments in the EU and OECD countries. Still there is need for experts with engineering and IT background.

In some areas of science like biotechnology there are serious ambitions to reach international levels. Many graduates can continue work abroad, there is a relatively high level of participation in EU projects, some foreign firms have started subcontracting research and testing services.

A relatively more important strength is the ability to attract foreign investment. However, in order to attract high-tech firms, more specialists are needed.

Threats include conflict of interests where a single person acts as a decision-maker or advisor, allocating funds, being at the same time at the receiving end through a position in a firm or university applying for this financing. It is also observed as a potential threat that due to low funding and sluggishness of the support system, Estonian innovators may sell their innovations to foreign firms, undermining domestic growth potential. Another threat is that scarce resources are invested in excessively ambitious projects in fashionable industries, neglecting nationally important “traditional” industries.

From this basis Estonia could go in many directions. One way would be to focus on strengthening those industries where Estonia is already successful, like food industry and wood processing. The other would be to integrate with strong industrial clusters of neighbouring countries such as being part of the Swedish and Finnish telecommunications clusters. Or Estonia could choose the same path as Israel or Ireland. A good starting point is the existing knowledge based firms and spin-offs within and around leading universities.

These were the issues raised in the evaluation report. Besides that, the Ministry of Economy is receiving numerous recommendations from different interest parties. As one of the central topics is funding, more recent debate has concentrated around establishing a state venture capital fund in line with SITRA fund in Finland that has proven very effective in supporting innovation.

0.5. Regional policy

In order to develop industry and business activities and improve competitiveness, the National Development Plan states the need to identify respective development opportunities for every region. From there it is important to further develop science-intensive and high technology

business activities in regions in the form of improving co-operation between R&D institutions and business development centres.

An example of the above-mentioned measures would be the pilot project launched in the framework of the EU Special Preparatory Program for Structural Funds – SPP. The aim of the project is to link the R&D potential of universities and the experience of the Tartu Science Park and its companies with the business community and educational institutions of Ida-Virumaa and South-Estonia. This will be achieved through creating an efficient information and co-operation network to support technology-intensive business activities in these regions. In case successful, same model could be expanded to other innovation support structures.

Within the framework of Phare 2000 a project (Carin) will be launched next year to create a centre of assistance for regional innovation.

The 16 Regional Entrepreneurship Centres currently in operation, were established with the support of international programmes, and are in general focussed on consulting and advisory services and thus only partially fulfil the role of innovation support structure. Today seven regional development programmes are functioning in defined target areas. Of these Programme for the Areas of Industrial Restructuring and to a lesser extent Programme for the Network Centres would be relevant to the present report.

Programme for the Areas of Industrial Restructuring targets declining industrial centres (with extensive decrease in industrial employment and high unemployment rates) together with their hinterlands and other regions with the equivalent problems (including former military settlements). The programme is primarily directed at raising the competitiveness of the economy, industrial modernisation, favouring new investments, development of technical infrastructure, retraining of labour force and increasing its mobility, and the improvement of the quality of the living environment.

The aim of the **Programme for the Network of Centres** is to develop a balanced network of centres. The programme is targeted at co-ordinating development of public administration, educational, research, cultural and development institutions and communications, promotion of activities contributing to innovation activities and specialisation of regions. The aim is also to achieve relocation of government institutions outside Tallinn, so that development of county centres offsets the disproportionate growth of the capital region.

Allocation of regional policy funds in 1994-1998 (EEK)

	1994	1995	1996	1997	1998
Development projects of national importance	600000	600000	-	-	-
Support to areas of Peipsi lake region	1000000	1000000	-	-	-
Support to small islands	500000	500000	-	-	-
Settlements programme of rural peripheries	15000000	25000000	7000000	5800000	-
Business support network	1300000	1780000	5000000	3900000	9500000
Development fund for County Governments	1500000	3000000	3000000	4800000	6000000
Studies in the field of regional development	-	-	-	700000	1000000
Harmonisation of regional politics for EU accession	-	-	-	-	500000
Estonian Regional Development Agency	-	-	-	600000	1000000
Peripheral areas programme	-	-	-	2200000	9000000
Islands programme	-	-	6000000	7000000	10000000
Community initiative support programme	-	-	1100000	2000000	3000000
Border regions' support programme	-	-	1000000	3000000	4000000
Ida-Viru programme	-	-	4000000	4000000	6000000
Monofunctional settlements programme	-	-	4000000	4000000	6000000
Suth-East Estonia programme	-	-	-	-	10000000
Setomaa programme	-	-	-	10000000	10000000
Regional development loan	-	13850000	9500000	12000000	15000000
Fund for local economic crises areas	-	-	-	-	24066000
Programme of social infrastructures	-	-	-	-	21367000
TOTAL	19900000	45730000	40600000	60000000	136433000

Source: Estonian Regional Development Agency

Note:

"-" no allocations for the programme in the given year

1. Fostering an innovation culture

1.1. Education and initial and further training

The share of education expenses in the GDP has been traditionally high in Estonia, but expenses incurred on vocational training constitute a mere 0.56% of the GDP. This slows down the vocational education reform, failing to halt the gap between labour market demand and supply from widening.

Compared to the EU, the social partners have not become sufficiently involved yet in analysing training needs.

The National Development Plan states that lack of qualified labour is increasingly becoming an impediment to economic growth. Therefore it is important to support:

- active labour market policies aimed at decreasing the share of inactive population and integrating risk groups into the labour market;
- improve the quality of education and the number of specialists with academic degrees;
- develop vocational and advanced training systems, introduce the principle of lifelong learning.

As a result of realisation that Estonia lacks specialists in computer sciences, a new College will open in autumn of 2000, providing vocational education in computer sciences.

1.2. Mobility of students, research workers and teachers

No specific measures have been announced in this category.

1.3. Raising the awareness of the larger public and involving those concerned

One measure in this field is the annual fair and conference Innovaatika, held in Tartu, that brings together universities, scientific, educational and development institutions innovative companies, institutions and organisations and covers topics in the fields of R&D, new ideas, inventions, know-how; technology transfer, innovative products, etc.

A similar activity is the "Technology Fair" held by Tallinn Technical University Innovation Centre that in this year will discuss R&D institutions, spin-offs and technology transfer and bring together German and Estonian firms.

There are also proposals to rename the Ministry of Economy to Ministry of Technology and Economy and the Ministry of Education to Ministry of Education and Science, to put emphasis on these fields and through that also increase public awareness.

1.4. Fostering innovative organisational and management practices in enterprises

To date the main transfer of know-how, including modern management practices, has occurred through foreign direct investment and subcontracting.

1.5. Public authorities and support to innovation policy makers

No specific measures have been announced in this category.

1.6. Promotion of clustering and co-operation for innovation

The evaluation of Estonian Innovation System points out that existing research institutes could provide good grounds for developing a network of state research institutions, which could strongly support the development of industries. There is a remarkable research institute concentration in the field of agriculture, for example, which could serve farming, food industry and forestry and forest industry technologies. This could be an element of cluster building, although Estonia has not explicitly defined this as a part of its industrial and competition policy. The Estonian State Innovation Programme, however, suggests that considering the small size of Estonia, more emphasis could be directed towards participating in international clusters, for example with Scandinavian countries.

2. Establishing a framework conducive to innovation

2.1. Competition

Rapid changes in economic development during the last decade have led to changes in industrial policy thinking in Estonia. Rather than talking about traditional industrial policy implemented through interventions in the product market and the direct subsidising and protection of individual sectors, today Estonia is moving towards competitiveness policy, which is rather focused on the creation of favourable conditions in the market. By supporting framework conditions and advanced factors of production (i.e. R&D, innovation, education and technical infrastructure) the aim will be to create advantages for the development of a competitive industry sector.

2.2. Protection of intellectual and industrial property

No specific measures have been announced in this category.

2.3. Administrative simplification

Estonian Government under the present Prime Minister is especially keen in extending the use of information and communication technology (ICT) for the delivery of Government services. A number of application forms and similar documents are available on internet.

2.4. Amelioration of legal and regulatory environments

No specific measures have been announced in this category

2.5. Innovation financing

So far there are two main financing bodies in the Estonian national innovation system – The Innovation Foundation and the Estonian Science Foundation. The present structure, however, is changing. By the end of year 2000 the reform of foundations will be completed.

The Finance Ministry is considering increasing R&D allocation in the year 2001 state budget by additional 100 million EEK. This would be a major step forward as this year the respective amount in state budget was 30 million EEK.

Now there is an active discussion around establishing state venture capital fund.

In practice, a very important source of innovation financing is the European Union. Estonia has been very successful at participating in projects, such as the Copernicus project, given the size of the country. Also, initial results from the 5th Framework Programme of the EU tell the same story. Phare has also supplied continuous financing possibilities.

2.6. Taxation

Comparatively simple and transparent taxation system is part of the quite favourable business environment in Estonia. Although the corporate income tax has been relatively low compared to other countries (26%), a remarkable recent development was that from January 1, 2000 it has been reduced to 0% on all revenues re-invested in the business.

3. Gearing research to innovation

The system is at present undergoing thorough upheaval.

3.1. Strategic vision of research and development

The Government strategies have stressed the need to prioritise development in food processing; textile industry; chemicals and biotechnology; wood processing, pulp and paper industry; machines and apparatuses; electrical appliances and electronics; construction materials and energy production.

3.2. Strengthening research carried out by companies

At present state companies mainly rely on international co-operation and respective EU projects.

3.3. Start-up of technology-based companies

This has been carried out by the Tartu Science Park and on pilot basis also by the Tallinn Technical University Innovation Centre Foundation. The state has participated as provider of funds.

3.4. Intensified co-operation between research, universities and companies

No specific measures have been announced in this category.

3.5. Strengthening of the ability of companies, particularly SMEs, to absorb technologies and know-how

No specific measures have been announced in this category.

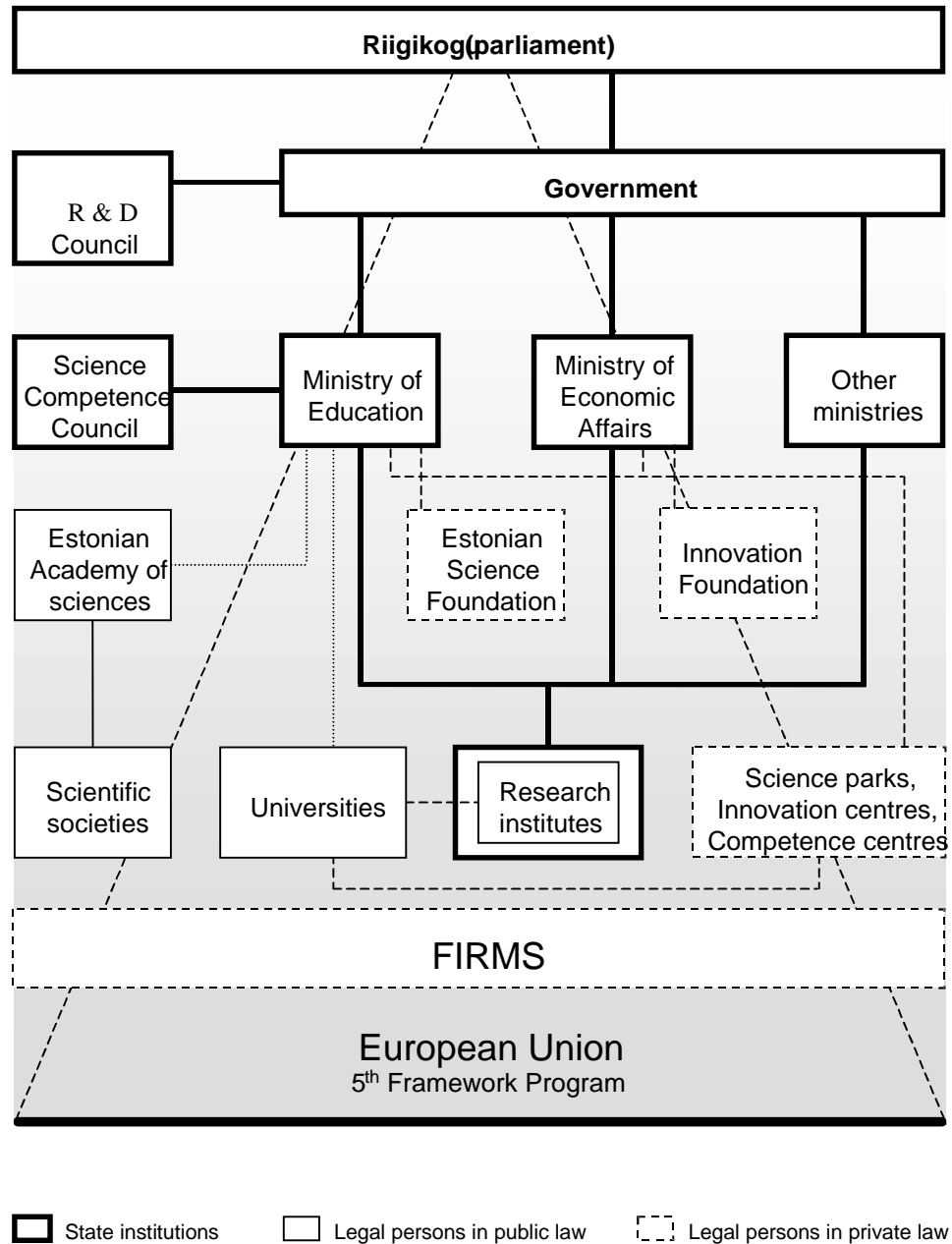
5. List of TREND CHART measures

Code	Title	Start/end dates	Action plan area(s)	Old/new/modified/extended etc.
ES_1	Joint Spin-off Programme	1999...	III.3,	first phase
ES_2	Project for developing and marketing navigation and LED traffic lights VTS	1995...	III.3	pilot project

6. Who is Who in Innovation

Figure 1 provides an overview of the organisation of the main actors in the Estonian innovation system.

Figure 1. R&D and innovation support structure in Estonia



A. Policy Support and Advisory Bodies

At the top of the innovation system is the Parliament, which adopts legislation and accepts, on annual basis, the state budget including allocations for the national innovation system. The government prepares laws and drafts the budget.

Research and Development Council

<http://www.tan.ee>

The Research and Development Council (RDC) is a high level advisory body providing strategic advice to the Government on research and development issues. The Chairman of the RDC is *ex officio* the Prime Minister and many other key ministers are also members of the body (Ministers of Education, Economy, Finance, Environment). Other members come from universities and from the Science Academy, the Science Foundation and the Innovation Foundation as well as from the business community.

Address and contact person:

Tiit Laasberg

Head of RDC Secretariat

Kohtu 6, 10130 Tallinn, Estonia

tel: (372) 6 311 072

fax: (372) 6 311 404

e-mail: laasberg@tan.ee

Estonian Academy of Sciences

<http://www.akadeemia.ee>

The Academy is comprised of distinguished academic scientists. Scientific societies act under it's supervision. The current role of the Academy is to give room for discussions and to work as an advisor.

Address and contact person:

Jüri Engelbrecht

President

Kohtu 6, 10130 Tallinn, Estonia

tel: (2) 644 2129

fax: (2) 645 2742

e-mail: je@ioc.ee

B. Government Departments and Ministries

Ministry of Economy

<http://www.mineco.ee>

Has *de jure* a central position in Estonian national innovation system by the Act of Government. However, only since the establishment of a new division called the Technology and Innovation Division under the Department of Industry in the beginning of 1999, has the Ministry realised this position.

The Ministry of Economy is responsible for planning technology policy, managing technology development and for supervising and controlling the technology development agency, i.e. the Innovation Foundation.

Address and contact person:

Kitty Kubo

Head of Technology and Innovation Division

Harju 11, 15072 Tallinn, Estonia

tel. 6 256 392

fax: 6 313 660

e-mail: kkubo@mineco.ee

Ministry of Education

<http://www.hm.ee/>

The ministry has a key position on the science and education side of the national innovation system. The financing of science and higher education is channelled through this ministry. The Ministry is assisted by the Estonian Academy of Science and the Science Competence Council (SCC). SCC assesses the scientific level of universities and research institutes. Their basic financing is based on this evaluation.

Address and contact person:

Rein Vaikmäe

Head of the Science and Higher Education Department

Tõnismägi 11, 15192 Tallinn, Estonia

tel. 6 281 311

e-mail: rein@hm.ee

Ministry of Finance

<http://www.fin.ee/>

The Ministry is the fiscal authority in the national innovation system. The main functions of the Ministry of Finance are planning and monitoring the implementation of the Government's macroeconomic, fiscal and economic reform policies.

Address and contact person:

Suur-Ameerika 1, 15006 Tallinn,

tel. (372) 6 113 558, fax: (372) 6 317 810, E-mail info@fin.ee

Aare Järvan

Chancellor

(372) 6 113 348

The Estonian Patent Office (under Ministry of Economy)

<http://www.epa.ee/index.htm>

Deals with issues related to Patents, Design, Trademarks and Copyright. The Office is involved in formulating domestic policy and drafting respective legislation. Provides a number of services including publications, databases, links, information etc.

Address:

Toompuiestee 7, 15041 Tallinn, Estonia

tel. 627 7900

fax: 645 1342

e-mail: Info@epa.ee ; Patendiamet@epa.ee

So far there are two main financing bodies in the Estonian national innovation system – the Innovation Foundation and the Estonian Science Foundation.

Innovation Foundation

<http://www.if.ee>

Responsible for delivering R&D financing on a project basis to firms, research institutes and research units in universities. It has also provided financial support to organisation fostering innovation – science parks, competence centres and innovation centres. Both foundations are legal entities under private law even though 100% financed by public sources.

Address and contact person:

Jüri Lichfeld

Head of the Innovation Foundation

Aedvilja 4, 10120 Tallinn, Estonia

tel: (2) 662 3732

fax: (2) 626 1059

e-mail: jlic@innov.edu.ee

Estonian Science Foundation

<http://www.etf.ee>

The Estonian Science Foundation (ESF) is an independent non-profit agency, it assembles and distributes state budget allocations for supporting research and development in the form of competitive grants. Provides grants to individual academic researchers.

Address and contact person:

Ene Ergma,

Chairman of the Council of the Estonian Science Foundation

Kohtu 6, 10130 Tallinn, Estonia

tel: (2) 645 1741

fax: (2) 645 0701

e-mail: etf@etf.ee

C. Non-Governmental Policy and Advisory Bodies

As the initiative to set up an innovation infrastructure came first from the academic circles, these have still remained among policy advisors to the Government. Both Tallinn Technical University Innovation Centre (TUIC) and Tartu Science Park have contributed to the drafts of strategy documents of Government technology policy.

Tartu Science Park

<http://www.park.tartu.ee>

Acts as incubator for start-ups providing a wide variety of services; promotes transfer of know-how to other regions in North-East and South-East of Estonia.

Address and contact person:

Enn Erme

Managing Director

185 Riia Street, 51014 Tartu, Estonia

tel: 372 (7) 428715

fax: 372 (7) 383041

e-mail: erme@park.tartu.ee

Tallinn Technical University Innovation Centre

<http://www.tuic.ee>

Was set up to promote commercialisation of innovative ideas of the Tallinn Technical University researchers.

Address and contact person

Raivo Tamkivi

Managing Director

Ehitajate tee 5, 19086 Tallinn, Estonia

tel. (372) 620 2013

fax: (372) 620 2020

e-mail: raivot@edu.ttu.ee

D. Independent Sector Research Bodies

There are four main universities: University of Tartu, Tallinn Technical University, Estonian Agricultural University and Tallinn Pedagogical University. The majority of scientific research is conducted in the first three universities mentioned above. There are also private universities that focus on higher professional education. State universities are legal entities in public law, which means that they have a high level of independence.

There are 14 research institutes within the universities: seven within Tallinn Technical University, four within Estonian Agriculture University, two within Tallinn Pedagogical University and one under Tartu University. A total of 20 research institutes work under different ministries: seven under the Ministry of Education, five under the Ministry of Agriculture, four under the Ministry of Environment, and two under the Ministry of Social Affairs. There is one institute operating under each of the Ministry of Economic Affairs and the Ministry of Culture. Research institutes operating under the ministries are state institutions, and research institutes connected to universities are legal entities in public law.

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Statistical Office of Estonia, *Statistical Yearbook of Estonia*, Tallinn 1999

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Raivo Tamkivi, *Innovation and Technology Transfer Support Systems – Lessons Learned in Estonia*

web sites of:

- Tartu Science Park <http://www.park.tartu.ee>
- Estonian Regional Development Fund, <http://www.erda.ee/>
- Tallinn Technical University Innovation Centre (TUIC) Foundation, <http://www.tuic.ee/>
- Estonian Innovation Foundation, <http://www.if.ee>
- Research and Development Council, <http://www.tan.ee>
- Ministry of Finance, <http://www.fin.ee/>
- Ministry of Education, <http://www.hm.ee/>
- Ministry of Economy, <http://www.mineco.ee/>

Interviews conducted with:

- Kitty Kubo, Head of Technology and Innovation Division, Ministry of Economy
- Raivo Tamkivi, Managing Director, Tallinn Technical University Innovation Centre Foundation
- Jüri Tümanok, Managing Director, R&D Centre EAK
- Paul Madalik, Specialist, Economic Development Department, Ministry of Economy

Key Policy Documents

Name:

Estonian State Innovation Programme, Approved by Estonian Government in June 1998

Published:

June 1998, goals and objectives are set for a five-year period and rolled on annually.

Produced by/primary agency responsible:

Produced in co-operation of Ministry of Finance and Tallinn Technical University

Presentation of Analysis – main national strengths/weaknesses, problems addressed

The document is the first of its kind and includes both analysis of the existing situation as well as strategic plans for enhancing competitiveness of Estonian goods and services in the future. It aims to define innovation policy priorities for the next few years and set to goals and activities for the implementation of the Programme. It has two main aims – first, to increase the efficiency of public sector in supporting innovation process and development of infrastructure and second, to support sectoral innovation programs and international co-operation projects.

The Programme draws heavily on relevant OECD and EU documents – Green Paper on Innovation, First Action Plan, etc., including sometimes direct translations.

It states that Estonian goods and services are not competitive on international markets due to inferior quality, and sets the development of the National Innovation System (NIS) as one of the main measures for addressing that weakness. The Programme also identifies EU accession as one of the key drivers in development.

After brief analysis of the situation in economy, R&D sector and education, noting limited resources, heavy dependence on foreign direct investments in technology transfer (also through subcontracting), considerable disproportion in the distribution of funding between basic research and technology transfer and inadequate preparation of qualified labour, the Programme lists activities for addressing the innovation backlog and possible sources of financing.

The Programme then describes measures for developing innovation infrastructure, outlining activities on state level, support structures at universities, legal issues, harmonisation of statistics and international co-operation.

Finally eight sub-programmes are specified as priority areas – food processing; textile industry; chemicals and biotechnology; wood processing, pulp and paper industry; machines and apparatuses; electrical appliances and electronics; construction materials and energy production.

The general criticism of the document is that it identifies a huge list of possible targets and objectives, leaving real priorities and ways to reach them ambiguous. Although it is an informative document, in its current format it is more a “shopping list” than a strategic document backing focussed approach.

The other major drawback was that the document, although adopted by Government, never received wide political support and a budget, and has thus remained mainly as a reference document.

Indicators – figures used, sources and benchmarks

Indicators used include GDP figures, proportion of R&D in GDP, export-import dynamics, investments statistics – including structure and dynamics, structure of R&D funding and different mechanisms for supporting innovation in various countries, patents, number of students. Some figures are compared to relevant numbers in EU or OECD countries.

Objectives, time horizon, relationship to EU Action Plan (if any)

The Programme is divided into two sections. The first – *Competitiveness and Measures for Improvement* includes analysis of economic situation, technological level, R&D activities and education. The second – *Implementation Related Issues* includes a variety of topics ranging from organisation, financing, necessary measures to sector specific goals.

Competitiveness and Measures for Improvement

- widen Estonia's export basis, increase emphasis on more advanced technology and innovation;
- increase investments in modern technology, improve quality of human capital;
- encourage foreign investors, who have engaged Estonian enterprises in subcontracting, to use local R&D potential by bringing some of their R&D activities to Estonia;
- ensure favourable environment for foreign investments that have been the main driver of technology transfer;
- motivate the private sector to increase investments in R&D activities;
- reduce present disproportion in of financing basic research, technology transfer and product development;
- increase state budget allocations for innovation;
- introduce regular survey of developments in labour market;
- develop national system of professional qualifications and certification;
- improve co-operation between the education system and employers;

Implementation Related Issues:

- co-ordinate implementation with the respective development plans and strategies for education, economy, energy sector, environment, IT, regional development, etc.;
- clarify the goals of innovation;
- improve co-operation between government agencies, R&D institutions and enterprises;
- develop technology watch system to improve access to latest developments;
- improve statistics on innovation;
- benchmark the competitiveness of industry especially in priority areas;
- increase the share of R&D financing in GDP;
- develop and support measures for technology transfer (technology parks; support to spin-off firms, etc.);
- prepare an analysis of development needs of SMEs;
- improve the quality of education (changes in curriculum, introduce new learning methods – for example distance learning, etc.);
- enhance mobility of students, R&D workers and specialists;
- increase public awareness of the potential of innovation;
- develop system for providing venture capital;
- develop tax policy enhancing innovation;
- prepare and adopt necessary legislation;
- ratify and implement European Convention on Patents;
- reduce red tape;
- spread information on good practices;
- promote international co-operation;
- prioritise development of food processing; textile industry; chemicals and biotechnology; wood processing, pulp and paper industry; machines and apparatuses; electrical appliances and electronics; construction materials and energy production.

Implementation approach

Implementation is a weak part of the Programme. Politicians are not really tied to implementing the Program. The management of the Programme is also very weak. Even though the Government approved the Programme, politicians have not really committed themselves to managing technology development. Thus the Programme was never implemented and has remained a reference document, providing profound information on indicators describing Estonian innovation system, studies, resolutions and programmes made in the EU, outlining relevant framework and support possibilities for Estonia, and assessing situation in various industries.

Name:

National Development Plan 2000–2002

Published:

September, 1999

Produced by/primary agency responsible:

Ministry of Economy

Presentation of Analysis – main national strengths/weaknesses, problems addressed

The National Development Plan was the first attempt to compile a thorough and comprehensive document on all sectors of economy. Nevertheless, it includes detailed chapters on industry and business development, including SME and R&D support. The document states enhancement of R&D as an important element in expanding the economy's productive capacity. The ICT sector is seen as a new rising industrial sector next to traditional ones, including important potential for developing high technology products in Estonia. The document warns that the competitive edge based on cheap resources (labour) will soon exhaust itself.

Encouragement of innovation and introduction of new technologies is listed among the four priorities for achieving sustainable economic growth and improving competitiveness of Estonian business sector.

However, due to disproportionate distribution of funds between basic research, applied research and technology transfer, compared to developed countries, and the low involvement of private sector, the Estonian R&D system in its present shape fails to meet the needs of the economy. The document lists insufficiently developed mechanisms for technology transfer including lack of funding for start-ups and low efficiency of business support institutions as main impediments to commercialisation of R&D results and upgrading of technology.

Strengths include successfully conducted structural reforms, favourable business climate, comparatively free access to foreign markets, flexibility, active participation in international activities, high education level.

The document defines clearly the long-term priorities in the field of R&D and innovation and recommends an increase in the state financing of innovation to match finances allocated for basic research by the year 2002 (approximately 0.6% of GDP). It states molecular biology and genetic engineering, IT, materials science and industrial technologies, laser technology, environmental and maritime sciences as strongest research competence areas in Estonia.

The priorities include development of knowledge society with improved research potential and human skills; improvement of research quality; bringing R&D financing level to the EU average; development of a national innovation system, including encouragement of greater contribution from private sector; support to innovative SMEs; adopting EU priorities, enhancing international co-operation.

The document notes that Estonia has swiftly adopted new IT technologies, which in turn has led to rapid development of ICT infrastructure and opened new opportunities for enterprises to enter international markets. However, the development of the ICT infrastructure is still insufficient. Lack of qualified specialists is another bottleneck identified in the document.

Indicators – figures used, sources and benchmarks

The document provides a whole set on statistics from various sectors of Estonian economy, including investments, exports, employment, education, etc. It also has a separate section on development gaps between Estonia and European Union.

As to R&D, the document notes that in R&D investments Estonia lags far behind even the least developed EU member states as well as the majority of Central and Eastern European countries. As to the smaller CEEC, the differences are smaller.

A comparison by sources of R&D funding shows that while in Estonia the share of public funds comprises approximately 70% of total funds, the respective figure in EUR11 is 26%. This reveals an urgent need to increase private sector engagement in R&D activities.

By international standards R&D expenses are relatively small – approximately 0.5% in GDP – despite the fact that the share of R&D expenses in GDP have almost doubled over the past five years.

However, the document notes, Estonia has been quick in adopting modern ICT technology – the penetration of computers, number of Internet connections and mobile phones has reached the average level of EU.

Objectives, time horizon, relationship to EU Action Plan (if any)

The National Development Plan was compiled within the framework of the EU Special Preparatory Programme for the Structural Funds (SPP) and will serve as basis for investment projects to be financed out of the EU pre-accession funds.

The objective of industry and business development strategy is to achieve sustainable growth through enhanced competitiveness of Estonian business sector.

The Industry Chapter of the National Development Plan defines the following measures for fostering innovation and introduction of new technologies:

- develop services of business support structures to promote innovative and technology-intensive business activities; this includes strengthening co-operation between business development centres and foundations for financing SME support; businesses should receive access to wide variety of high quality services at their location;
- develop product development competence centres in selected fields (mechanical engineering, electronics industry, food industry, wood processing) – aim at gearing R&D activities towards solving industrial development problems; choice of subject will be based on demand from industry and will have regional dimension;
- develop quality assessment infrastructure – first metrology, then testing and after that the necessary systems in accreditation, certification and inspection;
- develop technology watch system – to follow recent trends in technology and product development, provide information on market and competitors; forecast trends;
- improve information access for businesses – information about markets, co-operation partners, technologies, standards, legislation, financing, etc. It includes creating electronic information systems (for example SME-LINK project in co-operation with Sweden) which connects business-related databases in different institutions and provides various information related to trade, subcontracting, etc;
- develop regional co-operation networks between public and private sector institutions to support regional development. It will be carried out in the form of joint workshops, joint projects, etc. – similar to the ongoing SPP industrial pilot project;
- monitor business development and evaluate the efficiency of business policy – includes improving comparability of statistics with international standards;
- foster innovation and introduction of new technologies – through regional, sectoral and national programmes and international co-operation;

- diversify innovation support instruments – including wider mix of financial instruments;
- stimulate participation in international co-operation programmes;
- development and introduction of ICT – infrastructure (broadband network, improve national databases, develop support system for ICT business, testing pilot projects, etc.);
- stimulate investment, both domestic and FDI.

Implementation approach

The Plan includes an indicative financing plan for the period 2000–2002, cut down by priority areas and sources of funding.

The Plan was prepared on the basis of contributions from working groups in the ministries. Given the need for such document to be built on broad-based consensus, representatives of the social partners (employers, employees, research institutions etc.) were also involved in the working groups. The principle of partnership shall be equally important in implementing the Plan.

Funding for the Development Plan will come from both Estonian and EU sources –state budget, local budgets, loans, pre-accession funds and private sector. Co-operation with the latter is seen as a special priority.

The National Development Plan will be an evolving document, which serves as a basis for Estonia's negotiations with the EU on financial support to Estonia's social and economic development. Detailed operational programmes will be developed on the basis of the Development Plan.

<http://www.fin.ee/english/>

Name:

Foundations Reform Draft

Published:

April 2000 version

Produced by/primary agency responsible:

Ministry of Economy

Presentation of Analysis – main national strengths/weaknesses, problems addressed

In November 1999, the Government of Estonia assigned ministers of economy, finance and agriculture to work out reform proposals for restructuring nine foundations under five ministries to streamline institutional infrastructure supporting small and medium size business.

The aim is to bring institutional infrastructure in line with the EU structures, inter alia improving capability for channelling international support funds; end innovation activities doubling same activity of the private sector; increase transparency and access to information regarding SME support; and create synergies through merging management of target areas.

The document states that to date the main driver of technology transfer and business restructuring has been foreign investment, arriving through privatisation. As that phase is ending, the state's role shall now shift to improving the quality of human capital and developing an integrated support system for business.

The document analyses problems in four fields – management, operating expenses, administrative weakness and problems arising from changes in economic environment.

Shortcomings identified in the present infrastructure arise from its uncoordinated emergence and lack of clearly formulated strategies. Thus there is doubling both in functions of institutions as well as unnecessary competition with private sector. There is considerable weakness in administrative capacity both on central and regional level. In reality there is no functioning administrative system for co-ordinating technology development and innovation in Estonia. Often there is no link between on-going projects and programmes. Although access to capital is still restricted and an acute problem for SMEs, the commercial banking structure has now matured and should enable the state to cut the share of direct lending. Instead state structures should shift their focus to guarantees and complementary support measures. However, a need is stated to set up a separate new state venture capital fund outside the scope of the present reform.

Thus, the reform plan states, the goals that the Government wants to achieve through foundations, need to be revisited and clarified (on an ongoing basis) and the functioning of business support system re-assessed.

The analysis of shortcomings and needs was carried out by five working groups, concentrating on functions, organisation and budget; financial instruments; legal issues; EU integration and international co-operation; administration and logistics.

The proposed plan draws on recommendations put forth by the Ministry of Economy and engaged experts, although there was no consensus in the working groups on all measures suggested. However, the plan has received support from industry sectors.

The general recommendation is to structure the system as put forth on the Figure2, which is attached below.

The document then outlines findings and recommendations from all working groups, including a section analysing requirements and restrictions arising from agreements with

international bodies and concludes with a summary of the proposed reform. It states the need to introduce strategic planning and budgeting that should in turn derive on priorities and policies (industrial policy, export policy, SME support, etc.) clearly formulated in the National Development Plans.

Indicators – figures used, sources and benchmarks

The analysis of present support structures conducted by the working groups is included in the document. It draws attention to disproportionately high costs of reviewed foundations compared to other budgetary institutions and suggests areas of possible cost cuts. It provides in table format overview of relevant statistics (size of allocations, grants and loans issued, employment and rental costs, number of workers, project costs, etc.).

It also analyses various guarantee schemes and possible allocations, drawing on international expertise and reflects restrictions (for example regarding state subsidies) arising from agreements with international bodies (WTO, EU, OECD, etc.) and

Objectives, time horizon, relationship to EU Action Plan (if any)

According to officials at the Ministry of Economy, involved in the reform process, the aim is to complete the restructuring of institutions by the end of 2000 (the present draft does not explicitly state that date).

Main aspects of the reform:

- Reorganise (merge) the present institutions into two basic units – *Enterprise Development Foundation* (EDF) to include the present Estonian Investment and Trade Development Foundation, Estonian Regional Development Agency, Innovation Foundation and some functions of the Tourism Agency; and *Enterprise Guarantee Foundation* (EGF), to include present Export Credit and Guarantee Foundation, Foundation for SME Credits and Foundation “Estonian Home”;
- EDF will remain the base institution and provide support services (administration, IT, bookkeeping, etc.) also to other institutions, while Technology Agency under EDF's administration will become the main co-ordinating body; EDF will also set up three regional centres that will facilitate effective use of EU pre-accession funds and other international aid;
- EGF will gather together various state guarantees (to SME loans, export guarantees, guarantees to loans issued to young families, etc.) into one institution and focus in the future on generating new instruments as well as monitoring issued guarantees. EGF will outsource as many services as possible (commercial banks, insurance firms) and stop providing direct loans;
- Contrary to the recommendation of the Ministry of Finance, it was not considered practical to set up a Venture Capital Fund within the scope of the ongoing reform of foundations. However, the necessity of such instrument was recognised and strongly supported;
- In the future management of foundations shall be based on strategic plans compiled in line with priorities in the National Development Plan;
- The state will delegate the majority of financial services to commercial structures (banks, insurance firms) and reserve itself the right and responsibility to monitor the efficiency of guarantee schemes;
- The state shall find ways to bind start-up support with various training and re-training programmes.

Ensuring Favourable Economic Framework:

- maintain macro-economic stability;
- carry out structural reforms necessary for sustainable development of economy and for the ability of Estonian firms to compete on the EU market.
- implement swift structural reforms with emphasis on education reform and reducing structural unemployment (i.e. human capital issues)
- develop integrated support system for business to back industry, export, tourism and SME policies;
- in longterm economic strategies formulation pay more attention to increasing regional capacity as this is of prime importance in channelling EU pre-accession support and ensuring efficient use of these funds.

Implementation approach

The document in its present draft form states no concrete details on implementation. According to the interview with Kitty Kubo, Head of the Technology and Innovation Agency in the Ministry of Economy (the responsible ministry), the reform shall be completed and new structures in place by the end of year 2000. This is essential, as that would form the basis for allocations in year 2001 state budget.

Figure 2. Recommended structure of the new enterprise support system.

