



RIS LATVIA
THE LATVIAN INNOVATION SYSTEM

Strategy and Action Plan

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Table of Contents

	Foreword	3
1	The RIS Latvia Project	6
	1.1 Objectives	6
	1.2 Organisation	7
	1.3 Project Phases	7
	1.4 Implementation	7
2	RIS Latvia Studies	9
	2.1 The Innovation Capacity of Companies	9
	2.2 R&D Capacity	11
	2.3 Innovation-supporting Organisations	12
	2.4 Financial Support	14
3	From the RIS Project to the Latvian Innovation System	16
	3.1 An integrated approach to innovation process management	16
	3.2 Logical framework of the strategy	19
	3.3 Overall goals of the innovation strategy	20
	3.4 Macro innovation processes – the main routes to achieving the goals	22
	3.4.1 Entrepreneurship motivation and commercialisation of ideas	22
	3.4.2 Innovation processes in companies	23
	3.4.3 Creating societal value out of R&D	23
	3.4.4 Innovation policy development	24
	3.5 Micro innovation processes and horizontal programmes	25
	3.6 Prioritised activities	27
	3.6.1 Selection of priorities	27
	3.6.2 C4 - Entrepreneurship motivation programme	29
	3.6.3 C5 - Grant scheme Innovation Assistant (bridging universities and industry)	30
	3.6.4 C6 and C10 - Technology transfer office	31
	3.6.5 C7 - SAP Support for technology incubators	31
	3.6.6 C8 - Improvement of NIP (action plan measures') co-ordination	32
	3.6.7 C9 - Grant scheme to support proposal design for EU programmes to NGOs and SMEs	32
4	Summary and outlook	33

Foreword

This document is an outcome of the “Strategies for the promotion of knowledge-based business in Latvia” project carried out within the framework of the EU research and technological development programme “Promotion of innovation and encouragement of SME participation”. The project lasted for 32 months – from April 2002 to November 2004. At European level Latvia can be considered as a single region, so project activities covered the whole territory of Latvia.

The project was financed by the European Commission as a part of the 5th Framework Programme for Research and Technological Development of the European Union, and co-financed by Latvia’s Ministry of Economy, Ministry of Education and Science, the Latvian Investment and Development Agency and the Development Council of Riga Region.

The project belongs to the category of so-called “political” projects. The main target groups of the project were decision makers at State, regional and company levels. The project was intended to raise awareness of the role of innovation in sustainable development, and to initiate activities that will stimulate the growth of the knowledge-based economy.

Similar projects were realised in more than 100 European regions and they have proved to be an effective tool for regional development. There exists a network of innovating regions in Europe (IRE) where at least one RIS (Regional Innovation Strategy) or RITTS (Regional Innovation Technology Transfer Strategy) project has been realised. Since the RIS project was implemented, Latvia has become a member of the IRE network.

The European Council held a special meeting in Lisbon on 23-24 March 2000 to agree a new strategic

goal² for the European Union in order to strengthen employment, economic reform and social cohesion as part of a knowledge-based economy. The strategic goal for the European Union for the next decade is to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion. Achieving this goal requires an overall strategy aimed at:

- preparation of the transition to a knowledge-based economy and society by better policies for the information society and R&D, as well as stepping up the process of structural reform for competitiveness and innovation, and by completing the internal market
- modernising the European social model, investing in people and combating social exclusion
- sustaining a healthy economic outlook and favourable growth prospects by applying an appropriate macro-economic policy mix.

To meet the strategic goal, a set of practical measures for implementation were suggested. They include recommendations to foster the development of an information society, increase investment in research, establish a European Research and Innovation Area, encourage innovation processes, and create a friendly environment for starting up and developing innovative businesses, especially SMEs.

The RIS Latvia project had an influence on the implementation of such measures in Latvia and thus advanced the achievement of the strategic goal of the Lisbon Summit.

² Lisbon European Council: Presidency Conclusions, 2000. http://europa.eu.int/comm/off/index_en.htm



In the new global economy, the competitiveness of the EU depends on its abilities to take full advantage of its own natural and knowledge resources, as well as of the creative energy of the entrepreneurs who develop and generate new products. Therefore, a great deal of attention must be paid to ensuring the effective utilisation of shared resources, and to maximising the collaboration between scientists, entrepreneurs and state administrations at all levels and in all regions. It is clear that the innovative capacity of EU member states must be enhanced in order to reach much more dynamic rates of economic development, thereby achieving the goals of the Lisbon strategy.

Over the past few years, the Ministry of Economics has developed two policy documents with the objective of establishing an effective national innovation system in Latvia. To ensure that innovative activity in Latvia could be a smooth process, the National Innovation Programme for 2003-2006 was developed with the key objective of increasing the national capacity for innovation. The Ministry of Economics, in co-operation with other ministries and organisations and the Unified Economic Strategy and Development Council, then developed the Unified Strategy for the National Economy. The Strategy shows our vision for the future and how to achieve it with purposeful action in the long term, through to 2030. For example, innovative enterprises only make up 19% of the total in Latvia, whereas in the EU's older member states, this proportion reaches 45% of all enterprises. Taking a long-term view, an obvious aim is to promote an increase in the number of innovative enterprises in Latvia to reach the average EU ratio. The Ministry of Economics believes this is one of priorities in improving the National Innovation System.

This year, Latvia acceded to the European Union and this historic event has generated new challenges for

the development of our national economy. There are challenges for our enterprises too: on the one hand, increasing competition, on the other, new partnership opportunities and a more extensive market. State administration structures also face challenges, because issues involving the creation and development of a knowledge-based economy in a unified European research and innovation space cannot be postponed, and requires immediate, committed and strategically appropriate action.

In recent years, Latvia has achieved a stable rate of increase in annual GDP (6-7%), one of the best indicators within the European Union. But this achievement must be strengthened by a policy to develop a sustainable, knowledge-driven economy in the long term. This must be based on a complete and effectively functioning innovation system with its main goal the transformation of workforce-intensive production into knowledge-intensive production. The implementation of this policy requires the participation of all parts of the community, from company decision-makers to employees.

The Ministry of Economics values highly the European Commission's Project RIS Latvia contribution to the establishment of the National Innovation system in Latvia, which was initiated to formulate a regional innovation strategy for Latvia, as a rapidly developing EU region. The project successfully integrated Latvia's experience with that of other European Union member states. Results obtained from the project will promote the implementation of a development strategy for a unified national economy in which promising directions for development are the further improvement of the innovation system, and the establishment of a society open to innovation.

Juris Lujans
Minister for Economics



Competitive and sustainable national economic development, the improvement of welfare and development of social cohesion should form national policy bases in every country. Unfortunately, very often the political and economic solutions to these issues are considered separately, so creating disagreement between politicians and society. An Innovation Development Strategy, which must be worked out at national and regional levels, is frequently mentioned as an important strategic document linking political and economic development. Today, when Latvia has recently joined the European Union, it is extremely important to analyse our existing situation compared to other European Union member states and, taking into account their experiences, create our own regional innovation strategy for the coming years.

With the support of the European Commission, more than 100 European regions have developed their regional innovation strategies. They have united within the so-called Network of Innovating Regions in Europe – IRE, with the aim of sharing experience, know-how, best practice and methodology for strategy development. Now Latvia is joining this network, because the European Union RIS LATVIA project has been completed.



A national innovation system, with education and research as integral parts, is a foundation stone for national economic development. Successfully progressing such strategies is one of the keys to implementing the European Union's Lisbon Strategy. Thanks to the opportunities available through information technology, scientists from Latvia's higher educational establishments and research institutions are already contributing to the global flow of knowledge. There is still a gap, however, between science and manufacturing, and links between the creators of new knowledge and its users in practice are not good enough. On the one hand, it is obvious that scientists do not get involved in knowledge transfer processes actively enough, but

A politically and economically important document for innovation development in Latvia has already been developed and was approved by the Cabinet of Ministers in 2003 – the National Innovation Programme and Action Plan. The other essential document is the Regional Innovation Strategy that is part of this publication and forms the final outcome of the European Union RIS LATVIA project - mentioned above. Our co-operation partners from Germany and Sweden have been directly involved in creating the document, and I am sure it will give new inspiration to civil servants in Latvian ministries and regional administrative bodies to plan for innovative development and to foster innovative activities at both national and regional levels.

It is worth mentioning that, during the project's implementation phase, almost all Latvian institutions involved in the innovation process: the Latvian Future Development Commission of the Education, Culture and Science Committee of the Saeima, the Council for the Economy, the Latvian Academy of Sciences, universities, industrial associations, employees of all regional local authorities in Latvia, etc. – took part in discussions on the project's results. The interesting discussions emanating from the project give assurance that vitally important work has been accomplished within the project to further the development of an innovative society and a knowledge-based economy in Latvia.

Janis Krūmiņš

Advisor to the Deputy Prime Minister of the Republic of Latvia, RIS LATVIA, Chairman of the Steering Committee

on the other hand, industrial enterprises are not active and they lack the capabilities to acquire new technologies and their application. Within this context, the project – RIS LATVIA, which was supported by the European Commission, should be considered a significant achievement. Research carried out during the project's implementation phase points clearly, not just to existing problems in the research and industrial sectors, but to the activities and actions needed to overcome barriers and problems. The final outcome of the project – Regional Innovation Strategy in Latvia – is a document soundly based on statistical data and is certain to be widely used to foster international co-operation with Latvian scientists, and to implement the results of scientific research as effectively as possible for Latvia's further economic development.

Dr. Valdis Egle

State Secretary, Ministry of Education and Science

I. The RIS Latvia Project

Knowledge, technology and innovation are playing extremely important roles in modern economies and it is likely they are even more important in the new member states, which are heavily dependent on local resources and traditional industries. Economic growth, employment and prosperity in Latvia depend strongly on the ability to develop a knowledge-based economy. Revitalisation of traditional industries and the creation or foundation of new high-tech sectors will help Latvia reach average EU-level prosperity in the coming years, strengthen the country's position further and help it maintain its position as one of the most rapidly growing regions. The RIS project is an important step on the road to the realisation of this target.

The project involved analyses of the existing situation in Latvia, the study of barriers hindering the development of a knowledge-based economy, and encouraging the transfer of knowledge from other innovative regions of the EU to Latvia. The recommendations of RIS Latvia are based on the

I.1 Objectives

The Project's ultimate objective was to develop a regional innovation strategy in Latvia using RITTS/RIS project schemes and methodologies.

The goal of the project was to create a policy and action framework enabling the increase of the number of knowledge-based SMEs in Latvia, and to improve their capacity to adopt new technologies and their competitiveness. To achieve this, a coherent innovation strategy was developed in co-operation with other innovative regions in Europe. During the analysis of the local situation, factors were revealed that hinder the development of SMEs and a set of measures were worked out to improve the situation. Some concrete actions were initiated and a monitoring system was established to oversee the measures. A broad spectrum of key persons and decision-makers was involved in initiating discussions and raising awareness on the importance of innovation. It will take some time for the effects of RIS Latvia to be translated into a stronger economy.

The project activities covered the whole territory of Latvia as, on the European scale, Latvia can be considered to be a single region. Part of the activities

actual needs and competitive advantages of Latvia's business and R&D community.

The RIS Latvia project offered a unique opportunity to further strengthen Latvia's competitive position. Growing and internationally active SMEs in traditional industries, centres of excellence, higher competence in intermediary organisations, as well as a more active role for the government represent a major step forward. The needs, obstacles, strengths and weaknesses of various sectors and regions were assessed during the RIS project, after which practical action plans were designed for some of these sectors with the aim of stimulating innovation. These action plans were then incorporated into a broader national innovation strategy.

The target groups of the project were enterprises, associations, embassies, government institutions, politicians, regional government institutions, innovation support structures and R&D institutions.

were carried out in the Riga region where ~60% of economic potential is concentrated. However, special attention was paid to achieving progress in Latvia's less developed and remote regions.

The RIS Latvia Strategic Goal and project objectives were discussed in detail and their final version accepted at the second meeting of the Steering Committee:

To facilitate growth (a) of knowledge sectors and their innovation potential and (b) the intellectualisation of traditional sectors with the aim of increasing competitiveness in manufacturing and service industries.

The implementation was supported by adaptation of best EU practices and experiences as well as proven methods. Special attention was paid to interdisciplinary technology transfer: 1) contribution of knowledge sectors (IT, automation, new materials, bio-pharmaceuticals, finance etc.) to the growth of traditional industries, 2) promotion of the value of collaborative networks and clusters, 3) skills demand-supply issues and 4) creation of an environment conducive to innovation.

1.2 Organisation

The RIS Latvia project was realised by a consortium consisting of the Latvian Investment and Development Agency (Co-ordinator), the Latvian Technological Centre, and the Development Council of Riga Region. Experienced EU partners – the Stockholm Economic Development Agency and Innovations-Management GmbH (IMG) from Rhineland Pfalz are contributing their EU experience and assistance to transfer best practices to Latvia. The experienced process consultant Inno GmbH provided extensive knowledge of methodology, training and practical guidance on project work. At the very beginning of the project, the external partners expressed their desire to promote the development of innovation policy in Latvia. This involved analyses of the existing situation and preconditions, removing barriers and encouraging the transfer of EU knowledge. The recommendations of RIS Latvia were based on actual needs and the competitive advantages of Latvia's business and R&D community.

Activities all over Latvia were carried out in co-operation with key industrial associations, development departments of local governments, Riga and regional universities and high schools, regional development offices, regional offices of the Latvian Chamber of Commerce and Industry as well as Business Advisory Centres. There were contacts with all the economically most important and industrially

developed cities - Daugavpils, Liepaja, Rezekne, Valmiera and Ventspils - the natural regional centres of economic development in Latvia.

The practical work was carried out by Latvian partners, taking into account the experiences of partner regions and the recommendations of the process consultant. The project was realised under the control and guidance of the Steering Committee which formed the basis for building a regional consensus. The Steering Committee included representatives of regional government, universities, financial entities, leading industries and partner regions (see Appendix I). The Project Management Unit, representing all partners, and the Project Management Team, representing local partners, were in charge of carrying out the project under the directions of the Steering Committee. Their tasks were to co-ordinate the implementation of the project on a day-to-day basis, to launch and co-ordinate information gathering and studies, to organise and initiate the process of consensus building, to organise public events, to maintain and establish links with the European Commission and other RITTS/RIS regions. The Project Management Unit took part in trans-regional meetings and other network activities organised by the RITTS/RIS network secretariat. Some tasks linked with the implementation of the project were carried out by local experts.

1.3 Project Phases

The project lasted for 32 months – from April 1, 2002 until November 30, 2004. The work was divided in three consecutive phases.

Stage 0 – the definition stage, which took 12 months. During this stage the project organisational structure was set up and participants agreed on the activity schedule for stages 1 and 2. Consensus was built among various interest groups and regional players, essential to the initiation and implementation of activities.

Stage 1 also lasting 12 months, was the information gathering and assessment phase. Four

studies were carried out: (1) an analysis of regional firms' needs, (2) a survey of the innovation capacity of Latvian knowledge resources, (3) a study of the availability of innovation-supporting services and (4) an analysis of innovation-financing organisations.

Stage 2 (duration 8 months) was concerned with establishing regional priorities through regional debates and the validation of stage 1 results. Here, implementation of some priority actions was started and an innovation evaluation and monitoring system set-up.

1.4 Implementation

The project realisation required extensive and diverse activities, including organisation of various events, popularisation of the project via public relations, performance of studies, consensus building and launching pilot activities. Short, medium and long-term planning was

carried out continuously. The planning and analysis of action plans for separate stages was conducted by the Steering Committee. To ensure the achievement of long and medium term plans, day to day activities were co-ordinated by the Project Management Unit.

In general the range of RIS Latvia project activities was more extensive and in-depth, and the amount of work done was greater than initially expected and than in similar projects. This was because no such special projects on innovation, or specific studies on innovation issues had ever been carried out in Latvia before.

THE TABLE ENUMERATES PROJECT ACTIVITIES:³

Activity	Number
Regional seminars and conferences	14
Steering group meetings	7
Project Management Unit meetings	7
Project Management Team meetings	40
Focus and discussion group meetings	13
Number of experience-increasing study trips	5
Articles in mass media on innovation issues	39
On-camera interviews on TV; radio	10
Issues of RIS Latvia Informative Newsletter, (2000 copies)	6
Presentations at Dialogue events, seminars and conferences on innovation	34

Additional attention was given to coordination and cooperation with the Council of the National Innovation Programme and the Council for the

National Economy, as well as the Parliamentary Sub-committee for the Future. As a result, a joint three-Council meeting took place in April 2004, and RIS project analysis outcomes and policy recommendations were presented and discussed.

Information exchange with IRE Network partners took place on a regular basis. IRE Network activities were discussed during Project Management Unit meetings and informative materials disseminated during seminars and other meetings.

One of the key outcomes of the RIS Latvia project was regional consensus building. This consisted of active dialogues with all parties involved in innovation activity target groups. The major activities included discussions on Steering Committee meetings, regional meetings, provision of information, communication with the media, expert panel discussions and other events. These key elements played a very important role in several ways:

- keeping different social groups informed about project activities and outcomes
- receiving feedback from the public and private sectors to validate methodologies, studies, analyses and suggested actions
- adjusting policy proposals and support measures to local needs and circumstances

Regional seminars took place throughout the project. The results of studies were discussed during focus-group seminars and expert panels to validate proposed actions and measures.

³ Stages 0 and 1 only

2 RIS Latvia Studies

During Stage 1 of the RIS Latvia project, four innovation-related analyses were carried out:

1. **Companies' needs and situation regarding innovation** - analysis of the innovation-related needs of Latvian companies
2. **Innovation capacity of R&D-institutions** - analysis of the innovation capacity of Latvian knowledge resources
3. **Availability of innovation-supporting services** - analysis of the availability of innovation-supporting services
4. **Financing innovation** - analysis of innovation financing organisations

However, the analyses were also interlinked in many ways. Example of this linkage are close connection between companies' needs and the availability of innovation-supporting services. In the needs analysis, the companies' views of the innovation-supporting system were examined and in the availability analysis, the organisations providing this support were examined. The evaluation and validation of the outcomes of these analyses can be performed only by mutual comparisons. Mutual comparisons were performed gradually in the different modules and the results were finally summarised in the Stage 1 synthesis report to highlight gaps and mismatches within the innovation system as a whole.



Each analysis was a stand-alone action casting light on a specific element of the innovation-fostering process in Latvia, and resulted in an in-depth description of the current situation.

To facilitate the understanding of the RIS Latvia project as a whole the interrelations between the different analyses are presented in the diagram of the study framework above.

2.1 The Innovation Capacity of Companies

SMEs are the backbone of the European economy. They are the targets of a large number of support initiatives at local, regional, national and European levels. A key issue is always the strengthening of the competitiveness of these companies, which constitute an extremely heterogeneous group ranging from knowledge-based high-tech firms to traditional companies active only in their local market.

Regardless of the difficulty of finding commonalities between SMEs, the RIS project tried to explore the

specific situation of SMEs in Latvia with respect to innovation. The target group was mainly manufacturing companies in high-tech as well as low-tech sectors. Key questions that the RIS project tried to answer were:

- What do the companies consider to be their key issues to achieve growth over the next few years?
- For which innovation-supporting services do Latvian companies express the most critical needs?

- Which innovation supporting competencies and services are available in the region and which players provide which services?
- To what extent are public innovation-supporting players utilised to resolve companies' needs and key issues?
- Is there potential for these players to take a more prominent role in the innovation processes at companies? Are there barriers preventing this? For example, do the companies actually know about the service and are services living up to companies' expectations?

The following are the main barriers to innovation-based growth identified at the surveyed companies:

- **Many companies lack basic management competence**

A company needs a fundamental understanding of growth mechanisms and business to be able to access and integrate knowledge that will lead to innovation. Indications of the existence of such understanding is the number of employees with higher education, the existence of business and marketing plans, the understanding of competitive advantages etc.

- **Companies lack insight on internal barriers to growth**

It is human to blame others although the problem can often be found in oneself. Companies are no exception to this.

- **Companies are not aware of the innovation-supporting resources available and they work in isolation**

In today's business climate no one can do everything alone. The ability to access external competencies is crucial for success.

- **When companies rely on external partners, they are not satisfied with the quality of work performed by the partner**

Companies' low interaction with external organisations (except for suppliers and customers) can at least partially be explained by the non-existence of organisations providing relevant and high-quality services.

A company must be run professionally. This holds true for management as well as for production. The RIS survey reveals, though, that many smaller companies lack basic management competence and tools. Strong indicators for this are the lack of written

business plans and marketing plans in up to 50 % of the surveyed companies.

The lack of marketing strategies and strategic thinking is further indicated by the fact that most companies rely on reactive marketing activities (waiting for customers to call) and the very low implementation of formal management and quality assurance systems such as ISO 900x.

A consequence of the lack of management competence is a lack of insight into and understanding of the internal barriers to growth of the company. The survey showed clearly that companies tend to state that external factors such as competition and finance-related barriers are posing the most significant problems for their growth.

It is remarkable that, with the exception of the top three barriers, everything else causes only marginal problems. The barrier-profile is typical for non-innovative companies acting in a mature market where price is the dominant competitiveness preference of the client – the companies face many competitors. These companies also tend to have very low profit margins - they need cash to invest. The company managers do not perceive their situation incorrectly, but they are applying the same constraints to growth that the company would have if they tried to grow with the same assets and strategies that they have today – this is obviously very difficult – innovation is a prerequisite for growth.

The ability to draw upon external competencies for day-to-day business is becoming more and more important for small companies. In research terms this is referred to as a company's networking competence. In certain areas of Europe, such as northern Italy, this competence is extremely well developed, in other areas less so. To maintain the competitiveness of Latvian SMEs it is no longer a question of whether this competence can be developed, but of how quickly it can be developed. Unless smaller companies learn to collaborate with other companies, R&D-players and external service providers it is only a question of time before their existing competitive edge vanishes.

This is further accentuated by the source of innovation for companies. Most companies claim to be the origin of innovation themselves.

One reason for the isolation of companies is the lack of knowledge about existing organisations which might provide development (innovation) support.

It is interesting that virtually all of the organisations that are used by these companies are either private

players or an industry association. This indicates a severe lack of competent “doers” among the public and semi-public innovation-supporting agencies. This seems to hold true in particular for technology-related services where the lack seems extraordinary. Today companies are likely to rely completely on machinery suppliers and customers for technology development and technology-related trouble shooting.

2.2 R&D Capacity

The successful production and commercialisation of research results has been one of the main targets of the European economy for some decades now. The feeling that European research knowledge is more successfully exploited in other countries such as the US and Japan, has created a number of policy reactions from the European side. In 1995 the “Green Paper on Innovation in Europe” pointed out several factors influencing the competitiveness of the European economy. One of them was the development of more and closer links among the producers (i.e. universities and research centres) of research, and the final users (i.e. enterprises). The need for a more open policy by European research institutions was highlighted, and several routes of action were proposed, including changes in the patent system, redirection of public and private funds towards innovation, and the use of economic intelligence tools to acquire data, knowledge and comparisons between European countries as well as with the U.S. and Japan. The situation described above also applies to Latvia, only in a much more extreme version. Some facts justifying this statement:

Latvia’s innovation system is small, with only about 4000 personnel (roughly the equivalent of the R&D institute “Forschungszentrum Karlsruhe in Germany”). Therefore, to generate a critical mass of R&D with this small base, Latvia will need to focus its R&D efforts in a few key areas.

R&D personnel are ageing and not being replaced by new, younger staff. This is true both of R&D personnel as well as university professors in scientific disciplines. The innovation system is not generating enough new science and engineering graduates to renew the rapidly ageing existing staff. Furthermore, Latvia is generating new science and engineering graduates at a rate less than half of the rate of the EU as a whole and less than a third of the rate of Ireland and Finland.

Government R&D spending is small, both as a percentage of GDP (0.4%), in absolute terms, and

One additional reason for the low utilisation of public organisations as innovation support is probably the dissatisfaction of companies with the quality of services provided. Only in a few cases do the services providers succeed in achieving 50% customer satisfaction. This can be compared to a number of Swedish regions, where companies’ satisfaction with support services seldom drops below 60% and usually lies above 80%.

relative to other countries. For example, countries like Finland and Denmark, with only twice Latvia’s population, generate 100 times more R&D spending. Government R&D policy papers refer to five priority areas – ICT, electronics, material sciences, pharmaceuticals/biotechnology, and wood chemistry. But actual government spending bears no relation to these stated government priorities.

Private spending on R&D is low. At the same time, Government R&D spending is not designed either to catalyse private R&D spending or to allocate public resources to research areas and topics that might be of use to the private sector.

Bearing this fundamental weakness of the innovation system in mind, the RIS Latvia study on the R&D (innovation) system went into details on the performance of Latvian R&D institutions as drivers of innovation. It covered areas such as 1) the R&D institutions interaction with companies, 2) activities regarding patenting and licensing, and 3) R&D institutions as a source of new companies. A number of barriers to R&D institutions being drivers were identified, as were some likely reasons for this failure.

The study identified the following key barriers to R&D institutions being drivers for innovation and economic growth:

- **The needs-orientation of applied research performed is low**

Needs-orientation is measured by the intensity of interaction with industry, based upon the assumption that a high level of interaction is also an indication of high needs-orientation.

- **The transfer competence of R&D institutions is low**

Transfer competence is strongly related to needs-orientation but not identical. It is not uncommon for R&D institutions to carry out research that is relevant to industry, but the competence in delivering the results to companies is lacking.

- **There is a lack of incentives and entrepreneurial culture**

Lack of motivation is a major barrier for researchers to interact with companies. Academic merit systems that do not encourage industrial experience are one explanation for this.

Most R&D institutions claim that they are performing services that are directed towards companies. Mainly, these services involve consulting and contract research.

When analysing the responses to the questionnaire, it becomes painfully obvious that, with one or two exceptions, the applied R&D activities carried out at Latvian R&D institutions are very far away from the needs of the companies. The main indicator for this is the low level of income from various joint activities with companies.

Even more alarming than the low income per employee is the lack of confidence of Latvian R&D institutions that local companies could become clients in the future. The analysis of SMEs' needs for innovation support shows clearly that R&D institutions are close to insignificant as partners to companies.

2.3 Innovation-supporting Organisations

Knowledge about innovation-supporting services in Latvia is low. This holds true for both the quantity of the services that are available to support innovation in companies and for their quality – and actual delivery of services to the target group.

Innovation activities in Latvian companies are growing and will hopefully show even faster growth in the near future. Thus, the need for innovation-supporting services will grow accordingly. Outsourcing some innovation process activities is relevant for the majority of SMEs. The innovation process includes a number of diverse activities, which require specific skills as well as resources that, in most cases, cannot be maintained by a single organisation. Thus, the ability for a company to be innovative also depends on available external innovation-supporting services in the market. That is why knowledge of the available innovation-supporting services is so important, especially when it concerns an economy in which innovation activities relate directly to competitiveness. The overall objective of the analysis was to create an overall picture of innovation-supporting services in Latvia. This included:

- **What kinds of services are available?**
Although there are a number of services which

This is an indication of a lack of needs-orientation in the services provided, but also of a lack of understanding of how to work with companies. The company survey showed that a majority of responding companies (about 60% of the surveyed 300) claimed that a lack of information on what R&D institutions can provide forms the biggest barrier to more active collaboration with those institutions. Further significant barriers are the cost of services, lack of pro-activity and a low level of professionalism in the R&D institutions.

Currently, there are no real incentives for researchers to work with companies. As in most countries, the academic merit system favours academic achievement, not industrial experience. This, combined with the fact that R&D institutions form a closed system, virtually isolated from the outside world in terms of exchange of personnel, contributes strongly to the lack of needs-orientation of services, and the lack of understanding of how to work with companies. Worse, though, is that the absence of incentives and the lack of “new blood” (80% of employees are aged 46 or more) in the R&D system is effectively preventing change.

by their nature can support innovation and business development in general, the analysis covered only a particular spectrum of services, divided into 4 key functional groups – R&D, business development, marketing and finance-related services. The analysis did not include those financial services that can be used to fund innovation – this was covered in a separate research project. In this analysis finance-related services included only information about development programmes and support in preparing project applications for those programmes.

- **What is the amount of services that are available?**

The amount of innovation-supporting services available was evaluated on a case-by-case basis and not as an absolute market situation. The key market players were identified as innovation-supporting service providers and quantity was estimated by the available variety and number of services in the offer from these groups.

- **What strategies do organisations use to promote their services to the market?**

This included several aspects: (a) the target

group – to which the services are available – are they a central part of the marketing within the organisations; (b) promotion of the services, which include service providers' strengths that they can build competitive advantage on, marketing tools used, as well as challenges organisations face in the selling process, including competition in the market; (c) the outlook for further service development, including networks, cooperation partners used in service preparation and delivery, quality concerns about services provided, and plans for the introduction of new services in the future.

The main findings of this analysis were:

- **Innovation-service suppliers lack needs-orientation**

Naturally, services should address a need and equally, services must be of high quality. Otherwise the organisation providing the services will soon be out of business, or only waste resources trying to provide something no one wants.

- **The service sector is reactive and lacks specialisation**

If companies do not know what is available in the market, they will not be able to seek any services.

- **The service sector is not innovative**

Innovation-supporting organisations must continuously update their service portfolio, otherwise companies will not be interested in it.

- **Sector isolation within innovation support prevents delivery of holistic services**

Co-operation among organisations is a key to success. Co-operation reduces confusion among companies, enables better use of resources and enables the delivery of holistic solutions to companies' problems.

A general impression from the analysis is that the level of existing innovation support is low, both in terms of quantity and quality. Service providers state that clients do not demand services, e.g. because they do not have the money to pay for it, because they do not understand the service, or because they are simply unaware of the service's existence. Companies, on the other hand, do express a requirement for services and a readiness to invest time and, in many cases, funds in all service areas (technology/research, markets, business and finance). The problems are lack of marketing skills within the service providers and a low understanding of companies' requirements.

Currently, innovation-supporting services available to Latvian companies are enough to meet demand (which is very low). However, it is likely that demand will rise in the near future and lead to a shortage of resources. Today, there is no preparedness to meet increasing demand.

Although current supply seems to meet demand it is questionable that the services provided are needs-oriented. By comparing companies' willingness to invest in services with the number of service providers of that particular service, it is possible to get an indication of whether demand is met by supply (although of course a small number of larger service providers can satisfy the requirements of many companies).

Today, a major challenge to overcome is companies' low awareness of innovation-supporting services, as well as the low level of utilisation of these services by companies. It has already been stated that in many cases the reason for the low satisfaction of companies with services provided is the lack of needs-orientation and the low quality of services.

One reason for the low awareness of services is the marketing approaches chosen. The preferred ways of marketing, in particular at governmental and other non-profit service providers, are through the Internet and at conferences. Pro-active tactics such as direct sales are considered less important. Experience from e.g. Sweden shows that it is crucial that service providers take an active approach to marketing.

A reason for low satisfaction with the quality of services is the low level of specialisation of services provided. Typically innovation service providers offer generalised packages trying to sell to all companies regardless of sector. This may be reasonable if the service is accountancy but not if it concerns something as complex as innovation. There is a need for sector specialists (such as specialised technology service providers) who are very familiar with the traits of a specific industry and are able to deliver high-quality services of real value to companies.

Due to lack of demand and mechanisms to secure needs-orientation, it seems that innovation-service providers are not developing at sufficient speed. Only 21% of the organisations plan to introduce new services related to innovation in the near future.

The lack of dynamism of innovation-service providers in terms of new services is also caused by the relative isolation of their organisations. It is clear that there is only limited networking between different organisation types and that none of them have successfully networked with higher education/research organisations.

2.4 Financial Support

A professional innovation-supporting infrastructure is one of the key dimensions of favourable framework conditions. A vast number of empirical analyses have illustrated that innovation-oriented companies rate access to growth capital as a prime factor when judging a location for their business, access to qualified personnel, image and closeness to business partners being others.

The extent to which the existing system meets the expectations and needs of businesses has been mapped into the analysis of the availability of financial services and resources. In particular, the analysis covered: services and resources available (e.g. amount of seed capital, amount of public grants/support schemes), how much companies know about the offers available (transparency), and how well individual players providing services are inter-connected in order to provide companies with systemic solutions.

The main findings of the analysis are:

- Many SMEs are not aware of financial support schemes and even fewer use them
- There is a lack of appropriate financial instruments to support innovation-based growth as well as a lack of competence among financiers
- National grant schemes are inefficient and insufficient, but EU structural funds may change things substantially
- Venture Capital (VC) activities are undeveloped

The majority of higher education expenditure in universities is financed by state budget funds. These funds are allocated to established departments largely on the basis of historically established norms (based on numbers of students and past allocations). Public research funds are allocated and distributed mainly to academic science by a system in which industry is not consulted. This allocation system contributes to making university research unresponsive to industry demands. This limits the average ability to attract additional funding from non-public sources, and to support commercially viable applied research.

Local scientists generally have no resources and motivation to continue research beyond the point at which it is reasonable to expect publication in a

scientific journal. Government support in the form of pre-commercialisation funding may cover gaps such as when the private sector is reluctant to assess the value of such publication in terms of commercial return.

Many companies have a very low awareness of what financiers can offer. For example, 49.7% of respondents had never heard of the Latvian Guarantee Agency and 40.7% knew nothing about other EU SME support programs. Overall, slightly more than 1/3 of entrepreneurs were also not aware of the National SME Development Programme, of rural development loans, state participation in organising exports/support for participation in international trade fairs and exhibitions, or SME development lending programmes. Additionally, knowledge of individual organisations is low.

Many companies state that funding of growth is a major problem, but they are also unhappy with the conditions sought by financiers.

The problems companies mention in accessing funding for growth is probably not the fault of the financing institutions. A majority of reports on the subject suggest that SMEs throughout the country under-perform because of unprofessional book-keeping and undeveloped auditing systems. Frequently, even licensed auditors include in their reports conclusions that favour them getting their fees. Frequently the quality of business plans drawn up by companies is low and the information included does not meet the needs of risk estimation. This, in turn, discourages financial institutions from providing long-term and low cost loans or grants to SMEs.

Latvia possesses several SME grant schemes oriented towards innovative development. These are characterised by the following:

1. Existing grant schemes only partly cover innovation process stages, thus do not provide stable innovation process financing. Particular stages are missing, subsequently, technology transfer cannot, and simply does not happen.
2. At present, the most significant financing is provided to the science sector; however, there are no grant schemes related to technology transfer, or connection between them is very weak. The involvement of industry is low.
3. Because of the limited availability of resources,

grant schemes cannot provide aid to innovation process improvement and upgrading the technology base. Existing resources enable the maintenance of particular innovation components but not the extension of them.

4. In absolute figures, grant schemes provide small or insignificant support to the innovation process which, according to worldwide experience, is capital-intensive.
5. No grant schemes exist for training and for the adoption of practical methods.

In addition to national schemes, Latvia's accession to the EU will open the door to structural funds programmes, which will gradually substitute previous EU pre-accession funding programs (Phare, SAPARD, ISPA). During 2004-2006 total financing planned to be available within these 6 programmes will exceed 620million EUR.

The majority of financing (more than 300million EUR) will be available from ERDF, the rest – from European Social, as well as European Agriculture and Fisheries funds. The main priorities are infrastructure development, investment in human resources and competitive business activity.

Distribution of EU financing for the priorities set has been established by the Latvian National Development Plan. Financing availability for innovative enterprise development has been identified as a problem, therefore, the EU financing target programme "Facilitation of business environment and innovation" includes a special element "Improvement of financing availability for entrepreneurship". Overall 25% or 39million EUR of

this target programme's financing will be allocated to improvement of financing availability.

The Private equity sector is at very early stage of development in Latvia and is mainly located in Riga. Traditions and knowledge among entrepreneurs is low which causes a low degree of trust in transferring control to equity funds, so reducing investment.

All VC Funds see three Baltic States as a single market, and are not focused on particular sectors because of the small market size. Among the three Baltic States, Latvia has the lowest number of implemented investment projects supported by VC funding. Riga, with its central location and developed financial market, possesses natural preconditions to becoming a location for VC fund management companies.

There is only one exit mode for VCFs: the sale of shares to local or foreign strategic investors, and this limits VCF activities in Latvia. Two other exit modes (IPO and buy-back) still remain very restricted and inefficient in Latvia. VCF offerings in Latvia are wide enough, but, for various reasons, VCFs are interested in investing in large projects during their expansion stage (usually more than 0.5million LVL), which prevents new and small enterprises' access to risk finance. VCF development is limited by undeveloped consultancy skills and lack of an intermediary sector.

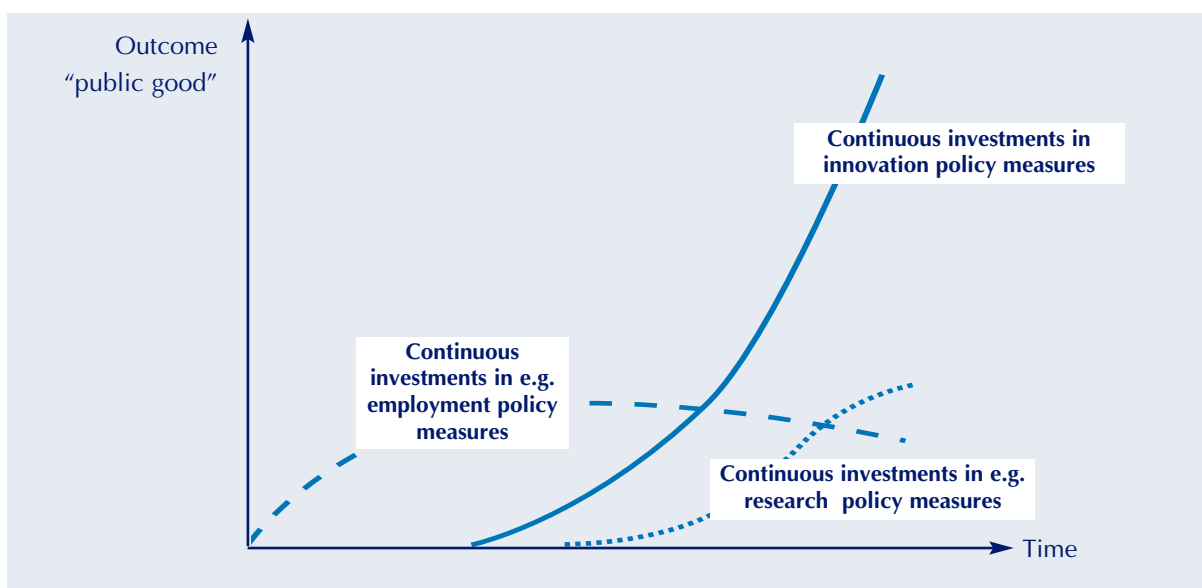
After joining the EU, rapid growth of the national economy will continue and produce increasing demand for seed capital and start-up financing. The new state aid programme for risk finance will partly cover this equity gap.

3. From the RIS Project to the Latvian Innovation System

Innovation is a cornerstone of the “Lisbon strategy” launched by the European Council in March 2000, and emphasised by subsequent European Councils, in particular at Barcelona in 2002. The R&D investment objectives set at Barcelona arose from the recognition that strengthening our R&D and innovation systems are essential to realising the Lisbon strategic goal. Its achievement is put at risk by the large and growing gap in R&D investment between the EU and the US. This gap reached more than 120 billion EUR in 2000, 80% of which was due to lower R&D investment by business in Europe.⁴

The role of R&D as a driving force for a competitive and dynamic knowledge-based economy is linked to the economy’s capacity to turn new knowledge into technological innovation. Although many enterprises

recognise the increased importance of investing in R&D, they will do so only to the extent that they can exploit results effectively, and expect sufficient returns to balance the risk inherent in such investment. To achieve this, a wide range of policy areas must be mobilised in a coherent manner. Innovation policy is consequently a policy area spanning many other areas such as research, transportation, employment, taxation etc. Public investment in innovation policy and in the implementation of innovation policy measures is therefore highly prioritised. Investing in the development of innovation policy will also bring improvement to the other policy areas. It will also be possible to formulate holistic strategies taking all relevant policy areas into account. The following figure illustrates the comparatively large potential in innovation policy.



3.1 An integrated approach to innovation process management

An innovation system can be defined as: **a set of measures initiated by institutions of government, society and the private sector to promote implementation, facilitation, creation, accumulation and exchange of new knowledge, which is necessary for the productive development**

of society. A NATIONAL INNOVATION SYSTEM is the system, which has emerged or has been created in a particular country, ensuring efficient dissemination of knowledge and skills in society and facilitates well-balanced intellectual and economic development. An innovation system comprises

⁴ However, while recognising that research is a major contributor to innovation, and the importance of the recent Communication “More research for Europe, towards 3% of GDP”, it should be emphasised that there are many other forms of innovation. Innovation can be incremental or radical, it can result from technology transfer or through the development of new business concepts, and it can be technological, organisational or presentational.

- 1) research (education, science and creativity),
- 2) entrepreneurship,
- 3) financial system and
- 4) legislation.

An innovation system consists of all components influencing development, dissemination and utilisation of innovations as well as all players, private and public, that generate, disseminate and utilise new knowledge and new technology to create new products, services and processes, thus achieving sustainable growth. This calls for efficient collaboration between science, industry and public administration.

Innovation process: “the business process that includes all those activities and knowledge which try to generate new ideas and convert them into successful products and services in the market.”

Innovation is defined as a process, where new ideas and technologies from scientific, technical, social, culture or other spheres are transformed into a competitive product or service demanded by the market.

Technological innovation: “the innovation produced as a consequence of the application of scientific and technological knowledge.”

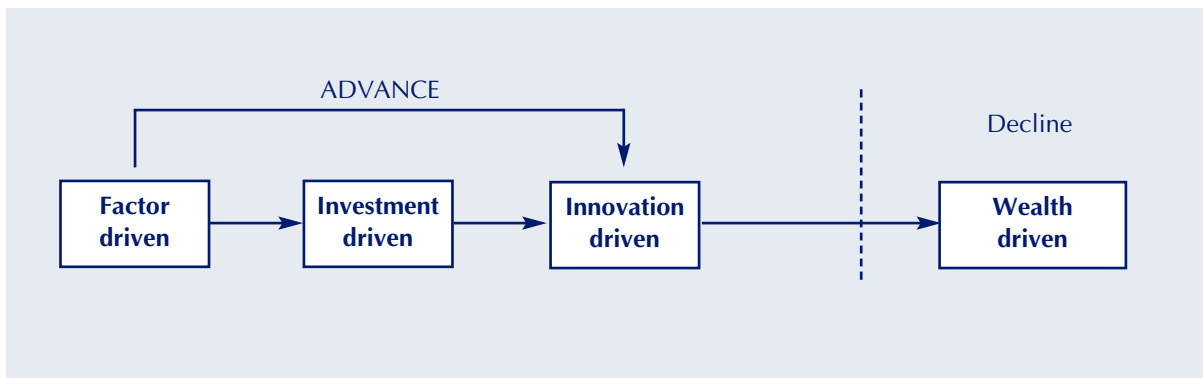
A large number of studies, including the RIS Latvia analyses, have showed that Latvia faces a dual problem regarding companies’ abilities to innovate:

1. Lack of competence internally prevents companies from implementing successful growth (innovation) strategies
2. The innovation-supporting system, including the R&D system, is, at best, under-developed

Apart from the fundamental weaknesses of the Latvian R&D system such as outdated equipment and declining funding, the main barrier for turning R&D institutions into drivers of innovation-based economic growth is the lack of incentives to work with industry. With a few exceptions, the Latvian R&D system finds itself in a dangerous vicious circle. There is as good as no inflow of personnel from the outside world, only a circulation of ageing researchers and professors between the institutions and faculties. The academic system only favours academic merit and the national R&D grant mechanisms preserve old and obsolete structures instead of being drivers of change. Nevertheless, Latvian researchers have achieved outstanding results in a few research areas; it is difficult to disagree with the recent World Bank report⁵ stating that the academic world in Latvia has become a stagnant but safe dwelling for researchers lacking any interest in interacting with potential users of their research.

At the same time, Latvian industry is to a large extent uncompetitive on the global market, moreover, is not well situated to be transformed by foreign direct investment. In actual fact, to achieve its aim of sustainable and rapid further growth, Latvia cannot only follow a path through the investment-driven stage because:

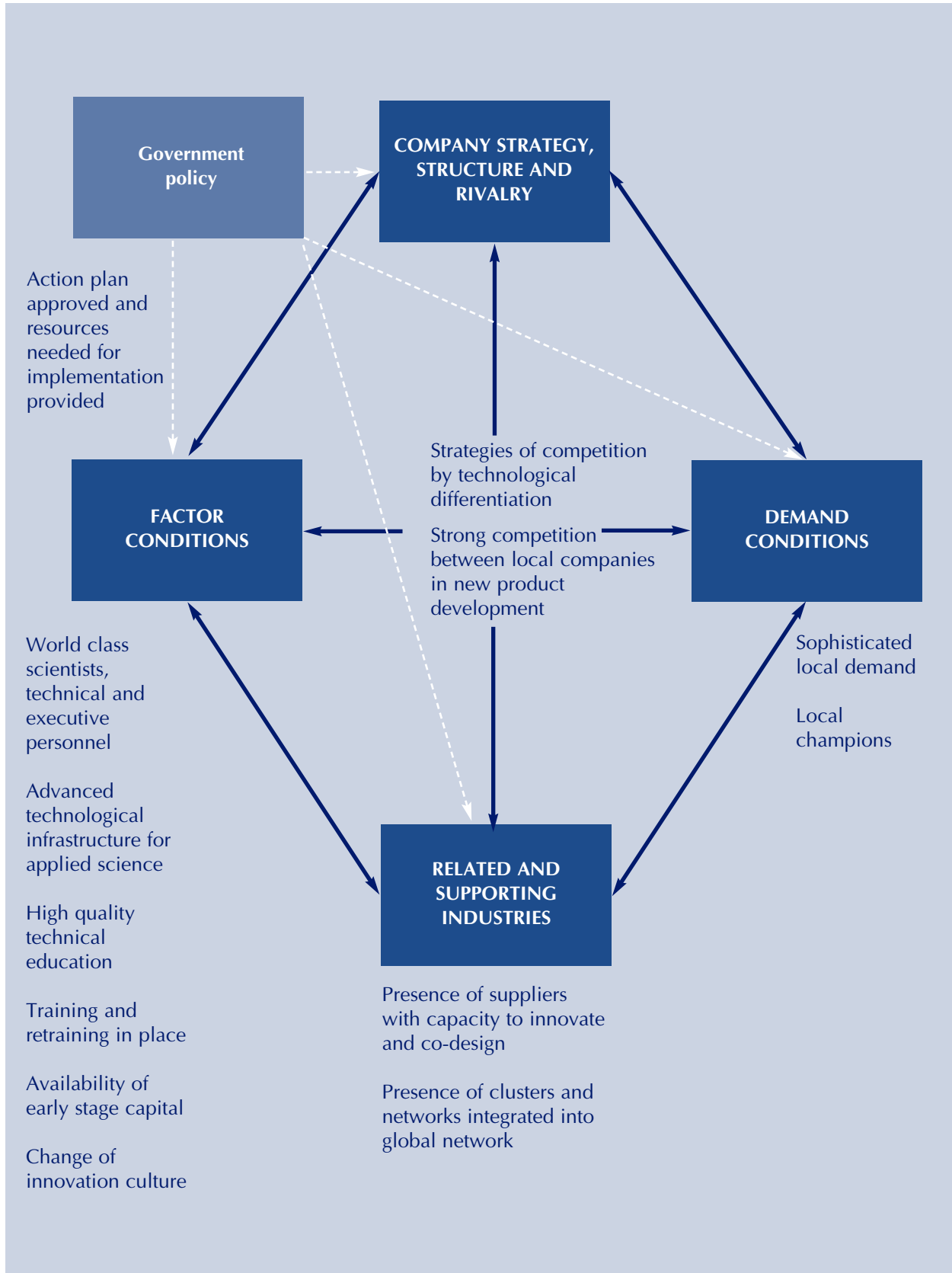
- Latvia is a small country with a small market
- the level of wages exceeds that which can be supported through mass contract manufacture (e.g. China, India)
- the dominance of natural and low-tech industries disallows competition with advanced manufacturing
- Latvia has lost critical research mass and quality in technical education



⁵ Watkins A., Agapitova N. Creating a 21st Century National Innovation System for a 21st Century Latvian Economy. World Bank, 2003

Despite some less positive developments in recent years (in particular the decline of R&D resources) Latvia must set off on the road to an innovation-driven economy. To achieve this it is important that public policy strives to optimise

the conditions for innovation and the knowledge-based growth of companies. A variant of Porter's well-known diamond shows how different factors interplay in the knowledge-driven economy (figure below)



The purpose of the integrated innovation strategy is to motivate and suggest activities that will increase the share of the knowledge-based economy in Latvia. This can be done by investing in higher education and research, improving the utilisation of R&D potential and creating a favourable environment for innovative entrepreneurship. The objectives are to increase the number of knowledge-based start up businesses, support the innovation potential of existing companies, and encourage the cooperation between enterprises and R&D institutions, and to improve information and knowledge management in SMEs.

This innovation strategy recognises the need to accelerate, or even launch, long-term macro-innovation processes. It also recognises the need to take a holistic view of this "process management". It will not be enough simply to inject money in projects aiming at e.g. joint technology development projects between companies and universities. Parallel activities to raise motivation, develop competence and adapt legal and regulatory frameworks are equally as important as the provision of financial means. In short, the four fundamental ingredients are:

1. Motivation *"we want to do this, it is good for us!"*

Motivation includes such elements as:

- Recognising threats
- Recognising the consequences of inaction
- Recognising the benefits of action

2. Competence *"we are able to do this, we know the game"*

Competence includes:

- Understanding the scope of the challenge
- Having the internal know-how to solve problems
- Knowing where to access external resources

3. Resources *"we have the means to do it"*

This includes:

- Internal resources in terms of people and budget
- The means to pay external resources
- Access to technical infrastructure and information

4. Power *"we are allowed to do it and even encouraged to by society"*

This includes:

- Favourable legislation and regulations
- Positive cultural context
- Friendly environment

These ingredients are necessary for success, regardless of which process is being managed. Depending upon the topic and situation, these "ingredients" should be added successively, or more or less simultaneously. A typical approach would be to start off the process by motivating e.g., a group of researchers to commercialise an invention. The second step would be to raise competence to the level required to manage the commercialisation process. That is followed by the supply of sufficient funds/resources to carry through the commercialisation. Parallel to this, it is necessary to influence regulations affecting the process and the ruling opinions that influence it. The same logic may apply to the transfer of knowledge to existing companies, as another example.

3.2 Logical framework of the strategy

The table below shows the logical framework of the innovation strategy. The basis of the strategy is the National Innovation Programme. The logical framework begins with a vision for the Latvian economy "to be globally competitive....based on knowledge and innovation". The time frame for realising the vision could be 15-25 years.

The main aim on the road to realising the vision is to increase national innovation capacity. This, in turn, relies on the achievement of three sub-goals:

1. Formation of a harmonised and coordinated environment, favourable to innovation
2. Creation of a basis for the sustainable development and growth of innovative enterprises

3. Fostering the setting up of a unique and competitive structure for the national economy

The macro innovation processes (see section 3.4) are placed relative to these sub-goals. For each of the macro processes there are operational objectives (or micro processes as in section 3.5). At the bottom of the table there is a list of possible measures, or programmes, that form the concrete action lines of the innovation strategy. Not all of the listed measures are of high priority, but some others are already up and running. In section 3.5 the measures that are considered to be the most urgent, based upon a review of existing programmes, and on the findings of the RIS project and other analyses, are described in more detail.

Vision		Latvia's is a globally competitive economy					
Aim		To facilitate the increase of					
Sub-goals	Formation of a harmonised and coordinated environment, favourable to innovation			Creation of a basis for sustainable			
Main Processes	1. Innovation policy development			2a. Innovation processes in companies			
Operating objectives	1.1 Efficient and effective policy planning	1.2 Integration in international networks	1.3. Monitoring of outcomes	2a.1 Motivation of entrepreneurs to develop their companies	2a.2 Strengthening internal innovation competence	2a.3 Ability to integrate external resources	
Measures	Foresight Co-ordination Regional planning Innovation dialogue groups	Participation in EC policy making Programme for design and co-funding of participation in EC-programmes	Innovation scoreboard, R&D survey International benchmarking	Awareness programme	Global supply chain programme Marketing promotion programme Consultant grant scheme Self-assessment tool Staff training programme Management training (MBA) Production efficiency programme	IRC FP 6 Innovation assistants Innovation prototypes Market oriented research programme Exhibitions and trade mission grants	

3.3 Overall goals of the innovation strategy

The overall goal of the innovation strategy is to lead Latvia onto the road of becoming a knowledge-based, internationally competitive economy. The RIS project and many other studies have highlighted the imminent need to design and carry out activities required to achieve the following overarching goals

1. Creating societal value out of applied R&D

The key to wealth is in new knowledge and new knowledge can be found mainly in the research community. Latvia must increase its capabilities to better exploit the commercial potential of R&D carried out in universities, research institutes and private companies.

2. Creating an entrepreneurial climate in society

Measured in newly established companies per 1000 inhabitants, Latvia is underperforming compared to countries in similar situations.

Therefore, the development of an entrepreneurial society must be fostered. The idea of becoming an entrepreneur must be attractive to individuals in the academic sector as well as to people in the private and public sectors.

3. High innovation capability of companies

Existing companies must become competitive in the global market. This can only be achieved by increasing those companies' capability to innovate. This includes the competence to develop new ideas, the competence to turn these ideas into products and the competence to sell the products on the global market.

4. Effective public support to innovation

Public support measures to foster innovation and transfer of knowledge must be introduced. This includes measures aimed at improving planning

based on knowledge and innovation national innovation capacity.

development and growth of innovative enterprises

Formation of a harmonised and coordinated environment, favourable to innovation

2b. Entrepreneurship and commercialisation of ideas

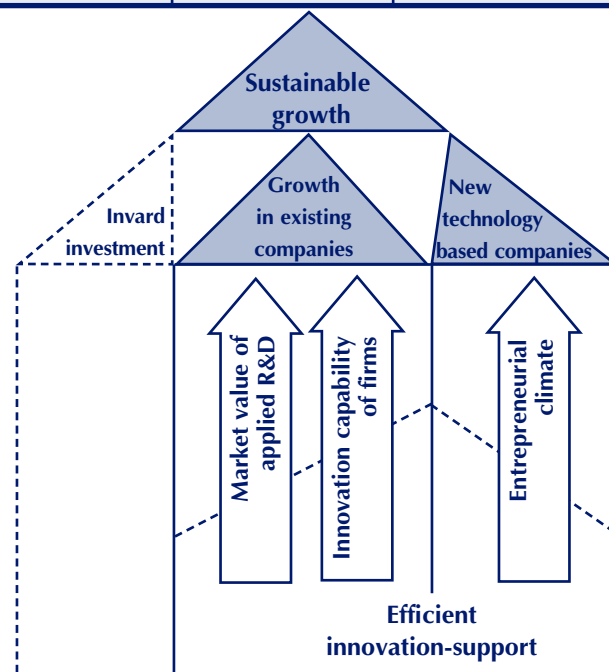
3. Creating market value out of R&D

	2b.1 Efficient start-up process	2b.2 Motivation of people to set up companies	2b.3 Creating societal acceptance	3.1 Motivation of researchers to interact with industry	3.2 Relevance & quality of R&D to industry	3.3 Transfer-ability of R&D
	Risk finance programme CONNECT Technology Incubator programme Pre-seed and seed fund	Entrepreneurship motivation programme (EMP) Latvian School of Entrepreneurship	Awareness programme (primary schools) Lobbying and PR programme Best practice studies Networking	Change of R&D institutes' financing system	Programme to create industrial networks around universities (clusters) Market-oriented R&D programme National programme to upgrade R&D equipment (business sales, sharing) Centres of excellence IRC, FP6, EUREKA	Liaison offices Tech. Transfer office Best practice cases Young researchers programme IPR policy and legislation

procedures via the design of specific programmes for monitoring and evaluation.

There is also a fifth, transversal goal, namely the continuous adaptation and development of public innovation-related policy, including legislation and regulations relevant to innovation. This goal is, however, an integrated part of all the other processes and the development of this process will look very different depending on which area is being addressed. The goals of the innovation strategy are illustrated in the following figure:

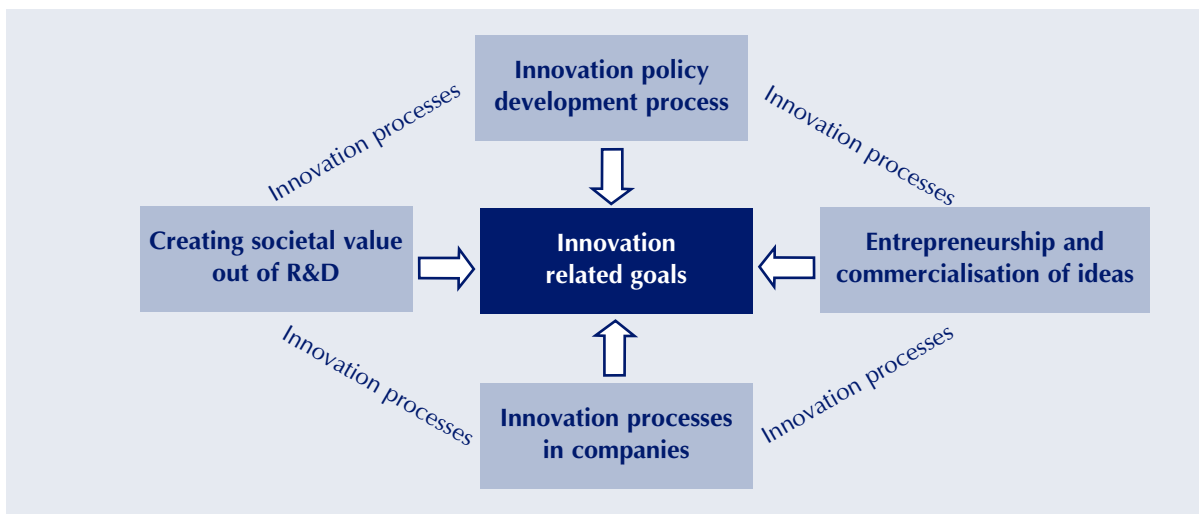
These goals are fundamental to achieving growth of the national economy. On the other hand, the measures needed to achieve the goals are under-developed, which constitutes a major challenge for Latvia. There are many weak points in the Latvian innovation system and consequently, many barriers to growth.



3.4 Macro innovation processes – the main routes to achieving the goals

The achievement of these goals implies that a number of what we call “Macro Innovation Processes” (MIP) must be mastered. If this can be done, it should be possible to register significant positive development of the Latvian innovation system with regard to the goals above described. The following figure illustrates these processes:

types of organisations (e.g. universities, enterprises and public sector-players) active within the processes. As it is Latvia’s goal to achieve growth in existing companies and in the number of new, knowledge-based companies being established, the innovation system is the means to achieving this goal.



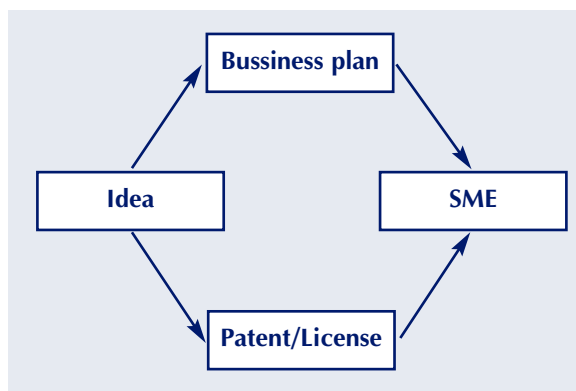
The RIS project has proved that management of these processes are the weak points of the Latvian innovation system. At the same time, these processes are, unfortunately, extremely complex and difficult to manage. This is made clear by the fact that most countries of the world, even the US, are struggling with measures aiming at mastering the processes, albeit at a different level than the Latvian experience.

The recognition that state intervention cannot directly create growth is essential. A consequence of this is that we recognise the need to strengthen the innovation system in order to achieve economic development. The four macro-innovation processes described above are the pillars of Latvia’s innovation system and therefore the main platform for improvement activities. The following sections provide more detailed descriptions of the processes, followed by explanations of how the processes can be transformed into concrete programmes and projects.

Obviously, these processes are not isolated from each other, but intimately linked by the different

3.4.1 Entrepreneurship motivation and commercialisation of ideas

Economic growth is created by competitive companies. At this time, the competitiveness of companies is, to a significant degree, determined by how innovative they are. A key process of the innovation system is therefore the commercialisation of ideas of individuals and companies. It is assumed that ideas with a high knowledge content, i.e. possessing high-technology and innovativeness, will be able to create the highest added value. This, however, should not exclude the commercialisation of ideas with less technological content from the process.



As illustrated in the figure above, the commercialisation process can take two main routes⁶:

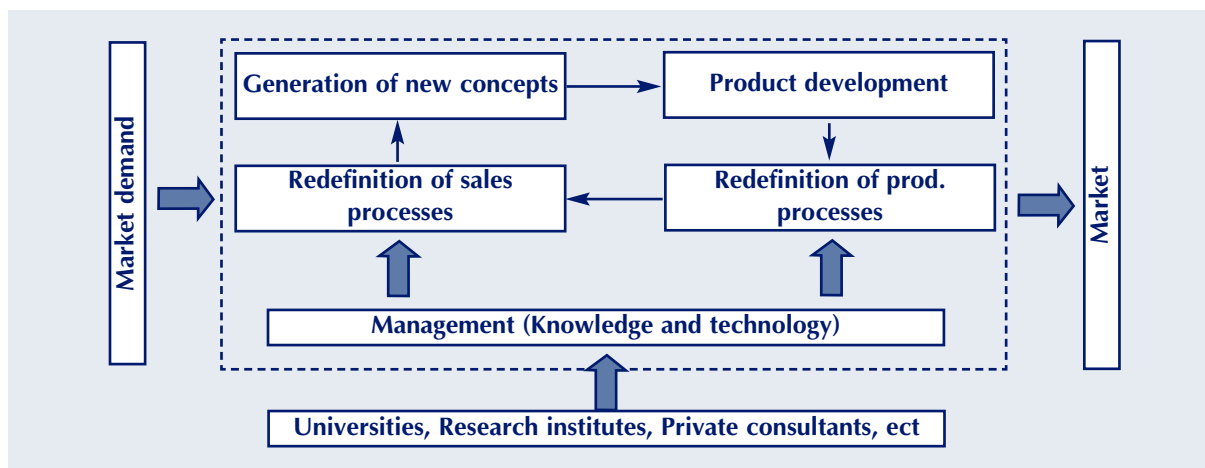
1. The development of a business plan and start of a new company
2. The licensing of an idea's intellectual property to an existing company

The innovation strategy recognises these two ways as the main processes to be supported by the public sector. Support will be directed both to the academic sector as well to the private. In this context, the private sector includes both companies and individuals.

3.4.2 Innovation processes in companies

The second main process focused on by the innovation strategy is the internal innovation process

within companies. The figure below illustrates it schematically:



The innovation strategy recognises the importance of providing support to companies in the critical phases of their innovation processes. Such critical phases can be found in all of the steps illustrated in the figure above. Examples of specific situations a company must be able to manage, and where capabilities are weak today are:

- 1. The detection and interpretation of market demand.** Many Latvian companies rely on very few customers and base their competitive strategy on price alone
- 2. Management of innovation.** Management skills of Latvian SMEs are low in general, but particularly so in the area of innovation. Competence in transforming new ideas into sellable products must be raised.

3. Integration of external competence. Many Latvian SMEs are lone fighters (wolves). The knowledge of what e.g. research institutes could offer is low and openness to co-operation with other companies is undeveloped.

4. Marketing and sales. Technology-oriented companies are generally weak when it comes to selling. In Latvia, with its small internal market, internationalisation is necessary if a company wants to grow. Today, SMEs' knowledge and resources for managing this is insufficient.

The innovation strategy will propose a number of individual programmes aimed at supporting companies and company managers in the above areas.

3.4.3 Creating societal value out of R&D

The third main process of the innovation strategy is the development of the Latvian R&D-system into a dynamic sector striving to achieve the highest possible societal output from the investment put into education and research. Important challenges to master are the renewal of

the R&D system in terms of values and incentive systems, and the establishment of mechanisms to achieve external influence on R&D-priorities. The following examples of long-term objectives indicate the types of measures that will be launched:

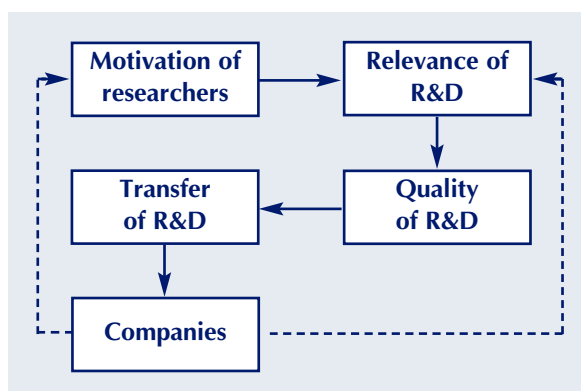
⁶ This is a simplified picture. In reality there are other ways to create value out of ideas. One other possible way (and a very common one) is the direct uptake of technology by large companies through collaboration with researchers.

1. Openness to collaboration with industry, with particular emphasis on SMEs.
2. Mechanisms for securing industry support in influencing the funding of large-scale applied R&D-programmes should be available.
3. Sound level of exchange of personnel between science and industry.
4. Motivate young researchers to become involved in R&D activities thus lowering the average age of professors and senior researchers.
5. A higher degree of integration into the international science community.

The incentive systems for researchers to co-operate with industry will be of particular importance in this context. This includes both the academic award system and the potential economic benefits from industry collaborations. Further, there will be a need for measures increasing the relevance and quality of Latvian applied R&D in relation to the needs of companies. The opportunity for companies to influence the content of applied R&D programmes is essential, but the technological content of those programmes must also be up-to-date with global trends. This is, however, not just the responsibility of the R&D community, but must be carried out in close co-operation with companies.

A key priority of the innovation strategy will be the promotion of activities fostering the adaptation of the R&D-system to the needs of companies. The schematic process diagram below illustrates this:

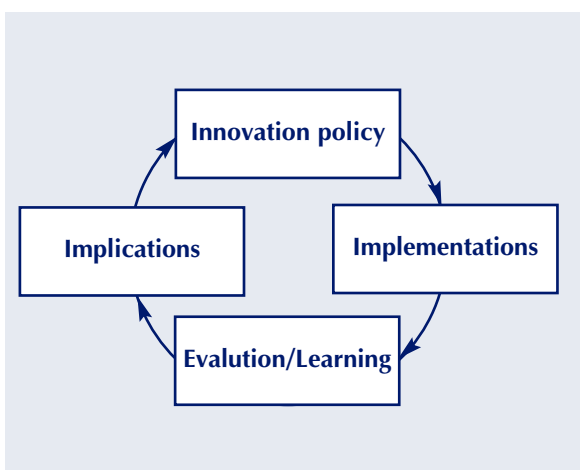
Finally, there is a need to establish and develop tools for the transfer of knowledge from science to industry. This includes the design of R&D programmes but also increasing the competence of researchers in dealing with companies, as well as the provision of more infrastructure like liaison offices, technology incubators and transfer centres etc.



3.4.4 Innovation policy development

The fourth process of the innovation strategy is the continuous development of Latvian innovation policy. This development process is illustrated by the figure below.

The figure shows that the process of policy development consists of a loop comprising four steps 1) the definition of innovation policy, 2) the implementation of policy, 3) the learning from implementation, 4) the drawing of conclusions and the adoption of conclusions into new innovation policy.



The following are key questions to be considered in the individual steps of the loop:

1. Innovation policy

- a. Policy rationale – Why do we act the way we do?
- b. Policy priorities – What and why are we investing in?
- c. Policy objectives – What do we want to achieve?
- d. Policy tools – Which are the foreseen ways to achieve the objectives

2. Implementation

- a. Who will implement what?

- b. What concrete results can be expected?
- c. Which resources are necessary?

3. Evaluation and learning

- a. In which way will the implementation of measures be evaluated? (How often? By whom?)
- b. How do we learn from these evaluations?
- c. How can good practice from elsewhere be identified and integrated?

4. Implications

- a. What do the experiences mean to us?
- b. What should be changed in the existing innovation policy?

A key challenge is the establishment of suitable partnerships for managing the process. The composition of the partnerships should be balanced in such a way that they represent the interests of the public sector as well as those of the private and academic sectors.

3.5 Micro innovation processes and horizontal programmes

Long-term macro innovation processes are moving through a number of sub-processes (or micro innovation processes) as shown in the following table.

It is recognised that many of these micro processes are linked to each other, and that many of them cannot and should not be carried out in isolation. An overview of the processes is given in the table.

presented. The number of programmes is relatively large and it is likely that some programmes will have overlapping content. Therefore a synergy analysis has been carried out to identify which of the programmes target which innovating processes. Grey shading indicates which macro process is influenced by the

		Macro innovation processes			
		Creating market value out of R&D	Entrepreneurship and commercialisation of ideas	Innovation processes in companies	Innovation policy development
Micro innovation processes	● Motivation of researchers to interact with industry	● Motivation of people (in particular students and researchers)	● Motivation of entrepreneurs to develop their companies	● Policy planning	
	● Relevance of R&D to industry	● Efficient start-up process (soft as well as hard measures)	● Ability to recognise market demands	● Monitoring of outcomes	
	● Quality of R&D	● Creating societal acceptance	● Strengthening internal innovation competence	● International networking and integration	
	● Transferability of R&D		● Ability to integrate external resources		

The table illustrates a number of horizontal programmes aimed at advancing micro-, and consequently macro innovation processes are

programme. If more than one field is grey, this indicates that potential synergy effects have been identified.



Innovation process

Process/Programme	Policy development	Entrepreneurship motivation & commerc.	Companies' innovation competence and capacity	Value of R&D
Policy planning				
Foresight				
Co-ordination				
Regional planning				
Innovation dialogue groups				
Innovation monitoring				
Innovation scoreboard				
R&D survey				
International benchmarking				
International networking and integration				
Participation in EC policy making				
Programme for design and co-funding of participation in EC-programmes				
Entrepreneurship motivation				
Entrepreneurship motivation programme (EMP)				
Latvian School of Entrepreneurship				
Support to start-ups				
Risk finance programme				
CONNECT				
Technology Incubator programme				
Pre-seed and seed fund				
Societal acceptance				
Awareness programme (primary schools)				
Lobbying and PR programme				
Best practice studies				
Networking				
Motivation of entrepreneurs				
Awareness programme				
Strengthening internal innovation capacity				
Global supply chain programme				
Marketing promotion programme				
Consultant grant scheme				
Self-assessment tool				
Staff training programme				
Management training (MBA)				
Production efficiency programme				

Integration of external resources				
IRC				
FP 6				
Innovation assistants				
Innovation prototypes				
Market-oriented research programme				
Exhibitions and trade mission grants				
Motivation for researchers to interact with industry				
Change of R&D institutes' financing system (Fraunhofer)				
Relevance of R&D				
Programme to create industrial networks around univ. (clusters)				
Market-oriented R&D programme				
Quality of R&D				
National programme to upgrade R&D equipment (business sales, sharing)				
IRC, FP6, EUREKA				
Centres of excellence				
Transferability of R&D				
Liaison offices				
Tech. Transfer office				
Best practice cases				
Young researchers programme				
IPR policy and legislation				

3.6 Prioritised activities

3.6.1 Selection of priorities

The list of prioritised measures presented in this section has been collated and finalised through the following process:

1. Analyses and desk research

The "National Programme on Innovation (2003-2006)" (approved by Latvia's Cabinet of Ministers) was used as the basis for the list of prioritised activities. The findings of the RIS Latvia project allowed the list to be expanded. The recommendations of other studies (e.g. A.Watkins, N.Agapitova "Creating a 21st Century National Innovation System for a 21st Century Latvian Economy") were also taken into account.

2. Analysis of existing measures and programmes

Starting with the unabridged list of measures proposed in section 3.5, a review of innovation-related

programmes in Latvia was performed with the aim of describing the position in publicly financed initiatives supporting innovation. The review resulted in the proposed measures being put into three groups:

- A Existing programmes (running for >1 year)
- B Up-coming programmes (newly started)
- C Not-yet-existing but important

3. Validation by a group of experts

The unabridged list of measures was sent to a group of selected experts from industry, sector associations, ministries, politicians, university administrators and prominent researchers. The experts were asked to prioritise the measures within the unabridged list. The outputs of steps 1-3 were weighted together. The first step was to group the measures according to the aforementioned three groups.

Table 1. List of selected state support programmes and policy measures
A Existing programmes (running for > 1 year)

- A1 Innovation policy efficiency analysis, monitoring, benchmarking, WB⁷ 1
- A2 SAP⁸ "Market orientated research", grant scheme, implemented by MoES
- A3 Grants to provide co-financing for participation in EU programmes and networks: IRC, 6th Framework, PAXIS, IRE, RIS+, ESTER, EUREKA etc.
- A4 SAP Support of the participation of commercial companies in international exhibitions and trade missions", grant scheme (former LEMAP – Cost Sharing Grant Scheme)

B Up-coming programmes (newly started)

- B1 SAP "Support to modernisation of the business infrastructure" incl. 3 sub-programmes
- B2 SAP grant scheme to promote best practice and success stories for technology development
- B3 SAP "Risk capital financing for small and medium sized enterprises", WB 9
- B4 SAP "Support for the development of new products and technologies", grant scheme (prototype development)
- B5 SAP "Support for consultancy services", grant scheme
- B6 SAP "Support for workforce professional skills improvement, re-training and further education", grant scheme

- B7 National programme to modernise scientific infrastructure (mainly research equipment)

C Not-yet-existing but important

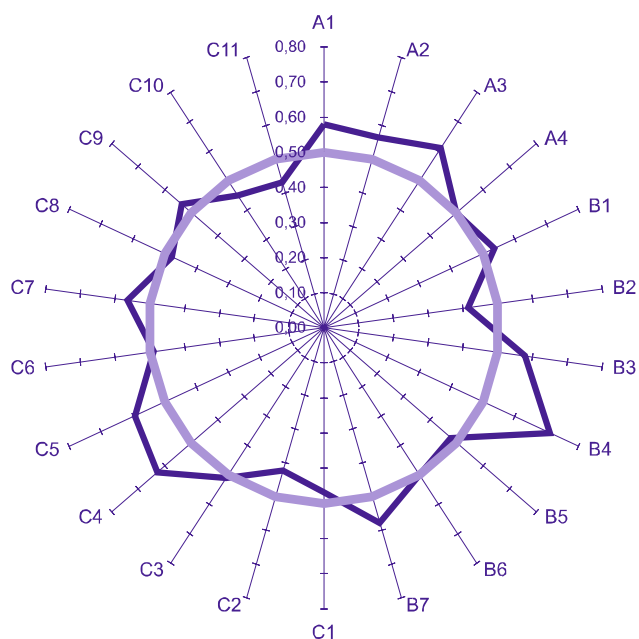
- C1 Foresight dialogue, strategic future planning initiative
- C2 Global supplier programme, WB 10 and 13
- C3 Centre of excellence programme, WB 2
- C4 Entrepreneurship motivation programme, WB 12
- C5 Grant scheme Innovation Assistant (bridging universities and industry)
- C6 Programme to promote Liaison offices in universities
- C7 SAP "Support to technology incubators", two linked grant schemes: 1) for private technology incubator operators, 2) for pre-seed and seed fund (s), WB 8
- C8 Improvement of NIP (action plan measures) co-ordination
- C9 Grant scheme to support proposal design for EU programmes to NGOs and SMEs
- C10 Technology Transfer programme, WB 3,4and 7
- C11 Commercialising IP programme (legal statement about ownership of intellectual property) WB 5 and 6

The experts were asked to rank the measures from 1 to 3 in line with the following degrees of priority:

- 1 Clear need to implement and provide funds immediately
- 2 Clear need to implement if funds are available
- 3 Priority, but will be implemented when funds are approved

On analysing the experts' rankings, a priority profile of the proposed measures emerges. This profile is illustrated in the following spider diagram. The ranking of the experts has been inverted and standardised so that each measure can have a value between one-third and 1, the closer to 1, the higher the priority of the measure. For reference, the median value of 2 is also shown in the diagram.

It should be noted that the priorities differ essentially for different sectors, as well as between traditional and high-tech sectors. The experts contributing to the exercise represented service provider experts, industry, university researchers and the public sector. It can be concluded that the priorities suggested by



⁷ WB = World bank recommendations and their No. in the report of A.Watkins, N. Agapitova "Creating a 21st Century National Innovation System for a 21st Century Latvian Economy"

⁸ State Aid Programme

industry differed a little from the overall average. There was a tendency, however, for industry experts to give lower priority scores in general.

Measures in group A (Existing programmes, i.e. running for > 1 year) were all stated to be important. Measure A4 belongs to the National External trade programme. The higher mark given by industry to measure A2 reflects the existing situation that funds are allocated and provided by the Latvian Science Council with no involvement from industry. A solution to this might be the gradual adoption of the Fraunhofer⁹ system in Latvia.

The highest ranked measures in group B (Up-coming programmes, i.e. newly started) were:

B1 (transfer of machinery and technologies to Latvia, upgrading of existing production lines) and B3 (risk capital) as well as B4 (new product development). Measure B2 was considered to be of lower priority.

In group C (Not-yet—existing but important programmes) the highest priority was given to measures C4, C5, C7 and C9; medium priority to C6 and C8. The remainder should be re-worked into more acceptable models with clearer outcomes, and should be discussed again in 2005

Based upon this the following measures have been selected as having high priority for the innovation strategy, and are therefore described in more detail in the next sections:

3.6.2 C4 - Entrepreneurship motivation programme

Introduction and operation

Latvia has serious problems with entrepreneurial spirit:

A dramatically low percentage of people see themselves as entrepreneurs;

- The lowest amount of SMEs among the EU member countries (18 SMEs per 1000 residents, compared to the EU average of 51)
- Low figure of newly established enterprises (7 693 in 2003)
- Low number of knowledge-intensive projects (employment in the medium- and high-tech sectors in Latvia is 23% of the average EU level, compared to Lithuania's 42%, and Estonia's 63%)

The Entrepreneurship Motivation Programme (hereafter: EMP or programme) is a set of actions, including competitions, teaching and consultancy that aim to improve the entrepreneurial spirit in Latvia. The programme will be outsourced to a syndicate. An open tender will be used to find the best syndicate to implement the programme, which is run regularly in 2 year cycles.

Goals and expected outcomes

The goals of the EMP are to:

- Promote self-employment and entrepreneurship as a career option
- Improve society's opinion of entrepreneurship
- Stimulate transformation of innovative business ideas (not high-tech) from all industries into high quality business plans and working companies
- Provide knowledge and interpersonal skills that are necessary to manage SMEs and to take on risk
- Ensure that the programme is long-term and cyclical, organisers are determined through tenders repeated every 2 years

The programme covers all industries with emphasis on projects with higher added value and higher productivity, not only high-tech. The expected outcomes of the programme are: 300 participants in first two years, 60 business plans elaborated in two years, 10 new companies established and 50 new jobs created during the first two years. More

⁹ The Fraunhofer-Gesellschaft undertakes applied research of direct utility to private and public enterprise and of wide benefit to society. Research of practical utility remains the focal objective of all activities, whether these involve contract research, pre-competitive research, consulting services or studies. Its services are solicited by customers and contractual partners in industry, the service sector and public administration. The Fraunhofer-Gesellschaft maintains over 80 research units at more than 40 different locations throughout Germany. A staff of some 12,700, predominantly qualified scientists and engineers, works with an annual research budget of over one billion EUR. Of this sum, more than 900 million EUR is generated through contract research. Two thirds of the Fraunhofer-Gesellschaft's contract research revenue is derived from contracts with industry and from publicly financed research projects. The remaining one third is contributed by the German federal and Länder governments, as a means of enabling the institutes to pursue more fundamental research in areas that are likely to become relevant to industry and society in five or ten years' time. See more at www.fraunhofer.de

individuals choose entrepreneurship or self-employment as their career. Latvia's trade balance will improve through exports. The programme will support the creation of an entrepreneurial environment, it will motivate innovative people to act and use their potential, hence improving the macro-economic situation of the country as a whole.

Responsible organisations and budget

Financing of the EMP will consist of:

- Contributions from financial partners
- National Innovation Programme/SME development programme co-financing
- EU social funds (not obligatory, but would be an advantage)

The maximum possible financing from government is 50% of the total cost, and cannot exceed 90 000LVL in two years. The successful syndicate must attract at least 50% of the necessary financing.

"In kind" assets (contribution in non-financial resources, e.g. equipment, premises etc.) cannot be more than 20% of the total cost and not exceed 40 000 LVL.

The main annual costs of the programme are estimated to be the following: monetary prizes to winners of competitions –16 000LVL, administrative costs – 31 100LVL, organisation of lectures – 24 500LVL, consultancy and evaluation costs - 15 000LVL. PR campaign costs depend upon the syndicate chosen, as do other expenses. Estimated total annual cost of the programme is about 95 000LVL, although, many expenses may be covered through "in kind" assets.

3.6.3 C5 - Grant scheme Innovation Assistant (bridging universities and industry)

This measure is a pilot action of the RIS Latvia project. A detailed description and plan of the scheme is available.

Introduction and operation

Academic staff and researchers in universities of Latvia in many cases are very "far away from industry"; meaning, that they teach students from study material no longer relevant to the needs of market. This situation has emerged since:

- Industry is not willing to hire academic staff with plainly theoretical or obsolete knowledge. Firstly, it is costly to adapt them to the needs of industry. Secondly, in many cases these people might be recruited by competitors, thus, the investment in educating them could have no return
- Academic staff is not motivated to seek employment in industry

As a result, university-industry collaboration is weak, they exist in two isolated worlds.

The Grant Scheme Innovation Assistant (hereafter: GS or programme) is a knowledge-based partnership resulting in higher competitiveness of SMEs (hereafter: companies) and higher innovation competence, deepening collaboration with universities, Colleges and R&D-organisations (hereafter: knowledge bases).

Goals and expected outcomes

At least 15 new products and innovation processes would be implemented through the programme within a year. 30-50 university graduates will be employed by companies each year and will see how their knowledge can be used in practice. The companies will increase their profitability, new projects and patents will be created.

Responsible organisations and budget

There are three key players in the GS: knowledge bases, companies and the coordinating body – the Latvian Investment and Development Agency.

An estimate of a 3 year budget for grants is presented in the table below. In total, enterprises receive 1,853,000EUR, in grants. Hence, the total budget reaches 3,706,000EUR in 3 years.

Table 2. Budget of grant scheme for 3 years

Grants	Amount, million EUR
Grants, total in three years	1.853
Co-financing from enterprises	1.853
Total programme budget	3.706

3.6.4. C6 and C10 - Technology transfer office

Introduction and operation

Acknowledged reasons for the difficulties in achieving a high level of interaction between SMEs and universities are:

- SMEs lack an entry point into the university system – companies do not know who to contact, and
- The lack of interdisciplinary relationships in the universities – researchers do not know which other competencies are available to solve the needs of companies

To overcome these problems, many regions and universities have established technology transfer or external relations offices. These are supposed to function as the entry point to the university competencies for e.g. SMEs. Additionally, technology transfer offices should co-ordinate different competencies within the university in order to offer more holistic services to companies.

These measures concerns financial support to the establishment of a technology transfer office in

Latvia. Institutions can apply for funding to operate this office by submitting an activity plan.

Goals and expected outcomes

The goals of this measure are to establish a functioning and well-integrated technology transfer office with contact points at all major Latvian universities and R&D institutions.

The operation of the technology transfer office shall lead to a significant increase in the contacts between SMEs and universities and also to a higher proportion of SMEs stating that they are satisfied with the services provided by universities.

Responsible organisation and budget

The Latvian Technological Centre can be responsible for the measure. Each successful applicant should budget for costs covering at least three employees plus additional expenses. The total budget requirement for the measure is estimated to be between 180 000-300 000 EUR annually.

3.6.5 C7 - SAP Support for technology incubators

Introduction and operation

An incubator is a legal entity with committed stakeholders and staff that induce trust among researchers, industry, investors and the public sector. The incubator is involved in the development of business ideas and companies in the pre-commercial or early-commercial stage, i.e. at stages where very few ordinary investors are prepared to invest because of the high risks. It has been shown that strong incubators offer functions necessary to increase both the number and the quality of knowledge-based enterprises.

The grant's primary purpose is to support an infrastructure contributing to lower risks and higher value creation for all parties in the commercialisation process. This can include pre-incubation advisory services and post-incubation services, but, primarily, the grant funds should be used to cover the incubator's staff costs, purchase of external services, part-funding of projects in companies and for competency development, marketing and networking.

Goals and expected outcomes

Incubators contribute to growth by increasing the number and quality of knowledge-intensive

companies. In the incubator, value is added to business ideas, which therefore become more interesting for external investors or to the market. Incubators therefore significantly improve the opportunities for research results to contribute societal benefits in terms of economic growth.

The overall goal of the scheme is therefore to increase the number of growth-oriented companies by supplying professional incubator environments.

Responsible organisation and budget

The organisation responsible for co-ordinating this scheme could be the Latvian Investment and Development Agency. The incubator activities funded by this scheme should run for three years. An incubator applying for funding should be ambitious for long-term development and also to increase private funding of activities. How this is to be achieved should be described in the application.

A single grant can be up to 70 000EUR annually. An equal amount of co-funding from appropriate sources is required. Private co-funding in money will be more highly valued than public funding, followed by co-funding in the form of working time and finally in-kind contributions such as equipment, office space etc.



3.6.6 C8 - Improvement of NIP (action plan measures') co-ordination

Introduction and operation

This is a soft measure intended to enhance the process of innovation policy development. It will mainly comprise a series of structured and intensive meetings, workshops and seminars. International networking and interaction with foreign experts to acquire external expertise is also a priority.

Goals and expected outcomes

The main goal of this measure is to secure a high quality and dynamic innovation policy development process in Latvia.

Responsible organisation and budget

The responsible organisations will be MoES and MoE. The Latvian Investment and Development Agency will be responsible for operating activities. The budget required for the measure is estimated to be 35 000EUR per annum.

3.6.7 C9 - Grant scheme to support proposal design for EU programmes to NGOs and SMEs

Introduction and operation

One of the main barriers for organisations, private, public sector and research, to developing and participating in EU-funded projects and programmes is related to financial issues. As a matter of fact financial constraints hinder involvement at all stages of a project, from design of the proposal, through the negotiation phase as well as during project implementation. The reasons for this are mainly:

- Project preparation costs are not eligible for reimbursement by the European Commission (although there are exceptions)
- Advance payments are not normally made
- Payments by the Commission are often made on a 6-monthly basis. This causes liquidity problems, in particular when one criterion for the eligibility of costs is that money has actually been paid out within the reported period.

The above leads to the conclusions that Latvia will not be able to maximise its return on the investment made in joining the European Union, and that Latvian organisations will slowly be isolated and find themselves outside international networks.

A grant scheme that provides funding for organisations aiming to design EU-programmes is therefore necessary. The scheme should, at an initial stage be limited to subsidising the design phase. Organisations will be offered the opportunity to apply to a supervising body for a grant. This body will check the quality of the project idea and also check its consistency with national and regional strategies.

Goals and expected outcomes

The goal of the scheme is to double the involvement of Latvian NGOs and SMEs in EU-funded programmes and projects within two years. Examples of programmes are trans-regional projects (formerly Interreg) within the next structural funding period, and certain sub-programmes within the 6th and 7th framework programmes for research and technological development.

Responsible organisation and budget

The Latvian Investment and Development Agency, LIDA will be responsible for co-ordinating the programme. The estimated budget for the grant scheme is 100 000 EUR per annum. It is assumed that each successful applicant will receive approximately 5 000 EUR

4. Summary and outlook

Innovation policy is not effective if it aims at individual and isolated goals, even if those goals are brilliant. On the contrary, innovation policy must be comprehensive, setting in to support the implementation of initiatives that develop both the integration-competence of companies and the delivery-competence of support organisations. A national, comprehensive and publicly co-funded programme aiming at increasing management competence of companies is necessary. When designing such a programme, a number of key considerations apply.

For example, companies must not be considered to be helpless beings unable to survive without the assistance of public support. Entrepreneurs are a force of nature – if they see a business-opportunity, they are generally unstoppable. The task of the innovation policy is therefore not to design programmes steering in detail what company managers should or should not do. Any programme should enable company managers to widen their horizons and recognise new opportunities for their businesses.

Companies should not be manipulated into change. A difficult task of public innovation support to companies is to decide what should and what should not receive financial support. There is a need to find areas which motivate public support without distorting competition. If money is too easily available (or provided without performance requirements), it will lead to companies a) become involved in projects that are not market-driven or not likely to lead to business and b) get used to the idea that public money is available for just about anything, even investments that should clearly be made by the company without any subsidies.

Collaboration and co-operation are the keys to success. Public support to companies should always incorporate a horizontal element of collaboration and co-operation. Collaboration should be fostered between companies, between companies and R&D-organisations and between companies and other support-providing organisations. Only by increasing interaction in the Latvian innovation system will it be possible to fully exploit the potential that is hidden in companies and in the R&D system. Public policy should aim at breaking this vicious circle. For example, an opening-up of the R&D community to other sectors of society is crucial for success. It may take ten years, but eventually it must be accepted and even encouraged that researchers work closely with

industry. The following is a list of policy-related recommendations based upon the findings of RIS:

1. The national system of R&D grants should be re-formed into a competitive grant award system as implemented by most western countries today. This will allow the Latvian government to integrate new criteria for the award of grants, such as collaboration with industry.
2. The education and research system needs vitalisation. This should be achieved by increasing the turnover of researchers within the system, i.e. the mobility of researchers between institutions and industry and between Latvian R&D institutions and foreign ones. It should also be achieved by increasing the number of motivated students in engineering and science faculties.
3. A revision of the effect of “professor’s privilege”, which gives rights to inventions to their inventor, should be carried out. In most European countries this privilege has been abolished and the American model of universities having the rights to IPR has been introduced.
4. Industry’s views on, and need for R&D should be the focus of R&D policy, not the R&D institutions. The top-down approach of the Soviet era when companies were passive receivers of new technology does not function in today’s global economy. Mechanisms ensuring needs-orientation and the integration of companies’ needs with those of researchers are necessary. Competency centres (Sweden, US, Austria and Australia) and applied research institutes (TNO Netherlands, Fraunhofer Germany) are examples of such mechanisms implemented in other countries.
5. Technology policy should not be limited to promoting R&D. A much broader focus is needed, with a stress on technology creation, including R&D and design and engineering skills, technology acquisition, and technology use. Non-R&D dimensions of technology development may be especially important for Latvia since most Latvian industries are not engaged in R&D, are far from the technological frontier, and do not require cutting-edge R&D to improve their competitive standing.¹⁰

¹⁰ This recommendation is adopted from the World Bank report “Creating a 21st Century National Innovation System for a 21st Century Latvian Economy”

6. The need for early stage funding for innovations stemming from academic research must be recognised. Latvian R&D holds large commercial potential but a lack of risk-willing capital is preventing its exploitation. Powerful mechanisms for the early stage funding of the utilisation of research results must be introduced. Many countries have recognised that financial bottle-necks may be significant barriers to growth and are currently experimenting with publicly-fed pre-seed funds, as well as with public-private partnerships in setting up seeding funds. There are examples from e.g. the UK and from Germany in the use of structural funds for this purpose. Latvia must develop such mechanisms as well, and as swiftly as possible.
7. In order to heavily invest in innovation, some framework conditions should remain stable. Amongst these factors are regulations on intellectual property rights and the strategies and services of support providers (with respect to financial support, technology support etc.). In many western European regions there is much unproductive activity in re-shuffling the support infrastructure. New organisations are created, mergers are conducted, players change their strategies, and new support schemes are launched at a pace which frustrates target group companies. It simply appears meaningless for them to invest in developing relationships with rapidly changing bodies and learn about support schemes which may become obsolete overnight.
8. In order to effectively and efficiently pursue strategic innovation targets, it is crucial that the organisation involved co-ordinates its various measures well, thus achieving all potential synergies, and avoiding redundancy and conflict. This does not mean that ideas should not be allowed to compete against each other, but that the organisation must run a communication system to secure effective interaction between relevant departments and entities. More difficult to achieve, but as important to reach as the integral quality of the innovation support system, is the inter-dependency between the co-operating organisations i.e. a unified approach.
9. Innovation processes not only require time, but also resources. In order to motivate leading organisations to participate in initiatives to acquire the financial resources that enable them to participate and to bring together the necessary competencies from different disciplines, it is crucial to have substantial financial means to foster this truer when needing to support competing ideas in parallel. For example, Swedish initiatives are often characterised by funding which does not have critical mass. This leads to un-proportionally high overhead costs, the risk of not attracting leading organisations/individuals as managers/mediators/receivers, high non-transparency due to fragmentation etc. The same holds true at an organisational level, too.
10. Quality management has become self-evident to many businesses. Until now, however, professional quality management has been less prominent in innovation-support services. It still provides organisations with a significant competitive edge. International best practice provides some insights into how this can be done. A satisfactory overall approach to ensuring quality in innovation systems is still lacking. This is an opportunity for Latvian to become an international leader.
11. One of the main preconditions for successful re-orientation of national economies towards knowledge-based economies is the implementation of a systemic approach. Based on this approach, it is essential to analyse the National innovation system as an aggregate of elements having definite interrelations; moreover, each element influences other elements. The State, as one of the elements of this system, has more complex influence on other elements, because it not only sets regulations for the system's overall activity or relations between all its components, but quite often also directly influences particular elements. The State exerts both direct and indirect influence on the system's activity by using legislative documents compulsory to all or part of system's components. Consequently, the State should strive to:
 1. Develop a package of measures: guarantees, micro-loans, consultancy, risk finance investment and advice, to increase the competitive strength of SMEs.
 2. Facilitate the long-term commitment of financial institutions. They should be providing new lending products with diversified risks for start-ups, according to development stage needs for finance, in combination with consultancy and finance management skills.

3. Strive to increase competence among finance institutions. For example, the lack of technology experts and insufficient experience of banks in risk evaluation and crediting of knowledge-intensive projects are barriers to the crediting of innovation.

12. Well designed tax incentives, carefully adapted to local companies' needs and circumstances, create motivation for enterprises to make additional investments in RTD. Effective state support to non-R&D may essentially contribute to an increase of innovation capacity and competitiveness. Therefore, government should tailor fiscal incentives to the strengths and weaknesses of national industries. Fiscal incentives by their nature are a policy tool to boost innovation expenditure throughout the

economy. Fiscal incentives or tax relief measures, which reward all expenditure on defined activities, are the simplest to implement, administer and operate, and the easiest for companies to understand and calculate.

The coming years will show how successful Latvia has been in implementing its innovation strategy. The structural funds programme is an outstanding opportunity for Latvia to put resources behind the words of the innovation strategy, but co-ordination is crucial. The task of transforming Latvia into a globally competitive economy based on knowledge and innovation is difficult but possible. To achieve the objectives set and overcome existing market failures requires patience and stubbornness – essential ingredients for success.

**Annex 1
STEERING COMMITTEE MEMBERS**

Nr.	Member	Position
1	Jānis Krūmiņš	Vice-President, JSC Euroholding, Former Minister of State for Administrative Reform and Local Government, Chairman of RIS Latvia Steering Committee
2	Inesis Feiferis	President, JSC Latvian Mortgage and Land Bank, Vice-Chairman of RIS Latvia Steering Committee
3	Indriķis Muižnieks	Vice Rector, Dean of Faculty of Biology, University of Latvia
4	Leonīds Ribickis	Vice Rector, Riga Technical University
5	Andris Deniņš	Director, JSC "Invest-Riga", Chairman of Business Consultants' Association
6	Baiba Rivža	Chairman, Council of Higher Education
7	Maris Ēlerts	Member of National Innovation Council, LIDA
8	Jānis Stabulnieks	Director, Latvian Technological Centre
9	Uldis Osis	Former Minister of Finance, President, Konsorts Ltd.
10	Kārlis Cerbulis	Representative - Baltic States, New Century Holding
11	Viktors Kulbergs	President, Autotorino Ltd Riga
12	Edgars Zalāns	Mayor, Kuldīga Municipal Council
13	Valdis Egle	Acting State Secretary, Ministry of Education and Science
14	Vita Liberte	Manager, Tax and Legal Department, Deloitte & Touch
15	Kaspars Gerhards	State Secretary, Ministry of Economy
16	Andris Ameriks	Chairman, Development Committee of the Riga City Council
17	Andris Vilks	Director, National Library
18	Valdis Lokenbahs	President, JSC "Dati Group"
19	Ivars Kalviņš	Director, Professor, Institute of Organic Synthesis, Member of Latvian Academy of Sciences
20	Lolita Bemhema	President, Spilva Ltd
21	Ilmārs Osmanis	President, Hansa Elektronika Ltd, Chairman of Latvian Electrical and Electronics Industry Association (Letera)

Co-opted during RIS Latvia project

22	Edvīns Bartkevičs	Mayor, Ogre Municipal Council, Chairman of Region Development Council
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Ceased activities in Steering Committee because of external issues

23	Richard Baerug	Former Vice-Rector of Vidzeme University College, Project manager, Inspiration Riga
24	Inga Goldberga	Former Director, Latgale Region Development Agency, Daugavpils City Council
25	Ivars Godmanis	Former Prime Minister and Member of Parliament
26	Tālis Tisenkopfs	Dean, Faculty of Sociology, University of Latvia

Associated members

27	Thomas Schwing	Managing Director, IMG Innovations-Management GmbH, Germany
28	Barbro Berg	Manager, Stockholm Economic Development Agency, Sweden