Strategic Evaluation on Innovation and the knowledge based economy in relation to the Structural and Cohesion Funds, for the programming period 2007-2013

Contract n° 2005 CE.16.0.AT.015

A report to:

The European Commission
Directorate-General Regional Policy
Evaluation and additionality

Country Report: Finland

Version: Final

Report produced by:
Kimmo Viljamaa
Kimmo Halme

TECHNOPOLIS

In association with

ISMERI EUROPA

LACAVE, ALLEMAND & ASSOCIES CONSULTANTS

LOGO TECH Innovation & Development

7 July 2006

CONTENTS

Executive Summary

Finland can be regarded as one of the top countries in Europe in terms of innovation and knowledge economy. The production structure is increasingly concentrated in various knowledge-intensive industries within which international connections, education and R&D have grown in significance. The R&D expenditure accounted for 3.5 % of GDP in 2004, placing the country substantially above the 3 % Barcelona objective. Finland is also known internationally as a country with rather forward looking innovation policy making.

In general the Finnish public research system has been quite productive with high level of patenting per capita and a high number of scientific publications per capita. Spending on human resources has traditionally been high and according to some international indicators (e.g. PISA) the quality of basic education is also good. Especially the younger population is very well educated and the number of people with tertiary education is one of the highest in the world.

Despite an exemplary performance in most of the indicators related to RTDI and knowledge based economy, there are still many challenges ahead. Population ageing is forecasted to be one of the most severe of the EU25 countries and this poses challenges in terms of public expenditure but also in terms of lifelong learning. Another substantial challenge is the peripheral location of the country, which poses challenges to attract high quality experts from abroad. Low population density also poses specific challenges in the knowledge based economy that favours concentration of knowledge and people. In terms high technology RTDI and manufacturing, Finland is also relatively dependent on the ICT sector, which can also be a potential challenge in the future.

Most of the population in Finland has been concentrated in Southern and Western Finland. The capital region and a few other mid-size cities dominate the RTDI activities. However, the rather extensive network of universities and polytechnics has enabled the more peripheral regions also to build some local concentrations of expertise. This creation of regional knowledge centres has been further promoted through policy measures, including Structural Funds.

As a whole, regional policy has been increasingly seen as an integrated part of the national RTDI policy in Finland. The national strategy for innovation is taken into account in the Structural Funds programmes. The SF measures are also well co-ordinated with national policies and are typically part of the same strategies.

The Structural Funds related to RTDI play an important role in the policy mix since they are typically integrated into regional projects of domestic origin. Structural Funds have been an important additional source of funding for RTDI in the Objective 1 and 2 areas, as most of the national funding used to fund similar interventions has been concentrated in other areas, particularly in the biggest cities.

In general, the relative importance of Structural Funds support for research, technological development and innovation (RTDI) policies is quite modest compared to the national funding. The main result of SF interventions on innovation and

knowledge economy performance in Finland has been the ability to complement the existing national policy measures in specific fields (e.g. support for collaborative R&D) and provide a financial instrument for those regions that have fewer capabilities to make use of the national funding. This has especially been true in the Objective 1 areas, where the capacity for developing innovations has been lower in terms of infrastructure, services and critical mass.

From the national perspective, the most efficient measures in support of RTDI have been those that have helped to promote innovative activities of SMEs in the regions that would not have had enough capabilities or resources to do so. Also a creation of joint efforts in the regions where critical mass is difficult to attain has probably been able to speed up the rate of innovation. The funds have also been able to support R&D infrastructure and activities in the RTDI performing organisations such as polytechnics. This has been an important addition to R&D infrastructure especially in the regions, which do not have universities or government R&D laboratories.

There is also a need to further develop the availability of financing instruments related to R&D and investments for improved processes. The increased support for business incubators could also be justifiable as they substantially help early stage SMEs in networking and developing business competences that are critical for successful RTDI activities. There is also a further need to support the improvements of the RTDI infrastructure and RTDI collaborations in the more peripheral and less developed regions.

Based on the analysis the priorities for 2007-2013 should be on developing a working innovation environment with supporting the development of R&D organisations, related intermediaries and the development innovation networks between research and education sector and enterprises (especially SMEs). For regions with less developed innovation environments the emphasis should be on building capabilities of organisations and networks in order for them to facilitate the capacity of enterprises to innovate and to be able to network with knowledge centres in more developed regions nationally and internationally. For regions with more developed innovation environments the emphasis should be in making the existing innovation support infrastructure more effective in facilitating innovation activities especially in SMEs and to develop networking.

In order to promote technology transfer and better co-operation between universities, research centres and business (particularly SMEs) there is a need to support networking and especially to move to a more proactive approach to SMEs. Especially the support for various intermediaries should be developed.

There is also a need to further develop the co-ordination between various levels and between SF activities and the national innovation policy instruments. This is particularly important at this moment when there are many changes underway in the national innovation and regional policy instruments. Also the administration of SF activities should also be made more flexible in order to correspond better to the uncertainty and risks typical to RTDI activities.

1 Introduction

In March 2000, the EU Heads of State and government launched an ambitious political initiative for the European Union to become "the most competitive, dynamic, knowledge-based economy by year 2010". The agenda, which has become known as the 'Lisbon Strategy', has included a broad range of policies and regulatory measures to achieve this goal.

At the 2005 Spring Council of European Union, Heads of State and government concluded that all appropriate national and Community resources, including those of Cohesion Policy, should be mobilised in order to renew the basis of Europe's competitiveness, increase its growth potential and its productivity and strengthen social cohesion, placing the main emphasis on knowledge, innovation and the optimisation of human capital. In short, the Council recognised that while some progress has been made since 2000 in moving towards the goals enshrined in the Lisbon Strategy there remains a need to create "a new partnership for growth and jobs"[1]

In launching the discussion on the priorities for the new generation of cohesion policy programmes, the Commission published on 6 July 2005 draft Community Strategic Guidelines entitled "Cohesion Policy in Support of Growth and Jobs: Community Strategic Guidelines, 2007-2013". One of the specific guideline is to improve the knowledge and innovation for growth. More specific areas of interventions, which are proposed by the Commission, include: improve and increase investment in RTD, facilitate innovation and promote entrepreneurship, promote the information society for all, and improve access to finance.[2]

Innovation is an important factor in releasing the potential of the Lisbon agenda. The knowledge captured in new technologies and processes can drive growth and competitiveness and create new jobs. But knowledge must be treated as part of a wider framework in which business grow and operate. Developing knowledge-based economy requires adequate levels of investment in R&D, education, and ICT as well as creating a favourable environment for innovation.

Less developed areas of the Union are also confronted with this new competitiveness challenge. Increasing cohesion leads to improvements in living standards and the reduction of economic and social disparities, which depend to an important extent on increases in productivity. Increasing competitiveness implies economic change through the introduction of new technologies and new methods of production as well as the development of new skills. Innovation is at the heart of this process. Technological and organisational change and new demands generated by rising

[1] Communication to the Spring European Council (2005) "Working together for growth and jobs: A new start for the Lisbon Strategy", COM(2005) 141. Available at: http://www.europa.eu.int/growthandjobs/key/index_en.htm.

[2] Communication from the Commission (2005) "Cohesion Policy in Support of Growth and Jobs: Community Strategic Guidelines, 2007-2013", COM(2005) 0299. Available at: http://www.europa.eu.int/comm/regional_policy/sources/docoffic/2007/osc/index_en.htm.

income levels and factors which create new economic opportunities and therefore, contribute to the growth potential of these countries.

Structural Funds are the main Community instruments to promote economic and social cohesion. In the past and current programmes, they have contributed to enhance the research potential and innovation in businesses and to develop the information society, particularly in the less developed areas. Cohesion policy has also promoted the development of regional innovation strategies and other similar initiatives in the field of the information society.

The overall objective of the strategic evaluation study, as set out in the terms of reference, is that the study should provide conclusions and recommendations for the future of Structural Fund and Cohesion policy. In particular, the Strategic Evaluation will be used to prepare the negotiations with the Member States for 2007-13, to prepare the next operational programmes and to provide input into the 4th Economic and Social Cohesion Report.

In line with the tender specifications, this country report addresses the following issues:

An analysis of the current situation in the field of innovation and the knowledge-based economy at national and regional level. For the national level, performance is compared to the average performance for the EU25 Member States plus Romania and Bulgaria; and at regional level, where possible given available statistics, compared to a typology of EU regions;

Lessons from the past and current experience of implementing innovation and knowledge economy measures in the Structural Funds, both in terms of priorities and strategic approaches; as well as in terms of operational implementation;

Main needs and potential for innovation in the eligible regions drawing on available studies, strategy development and future and foresight studies; and

Recommendations on main investment priorities for Structural Funds over the programming period 2007-2013 and their implications for regional development.

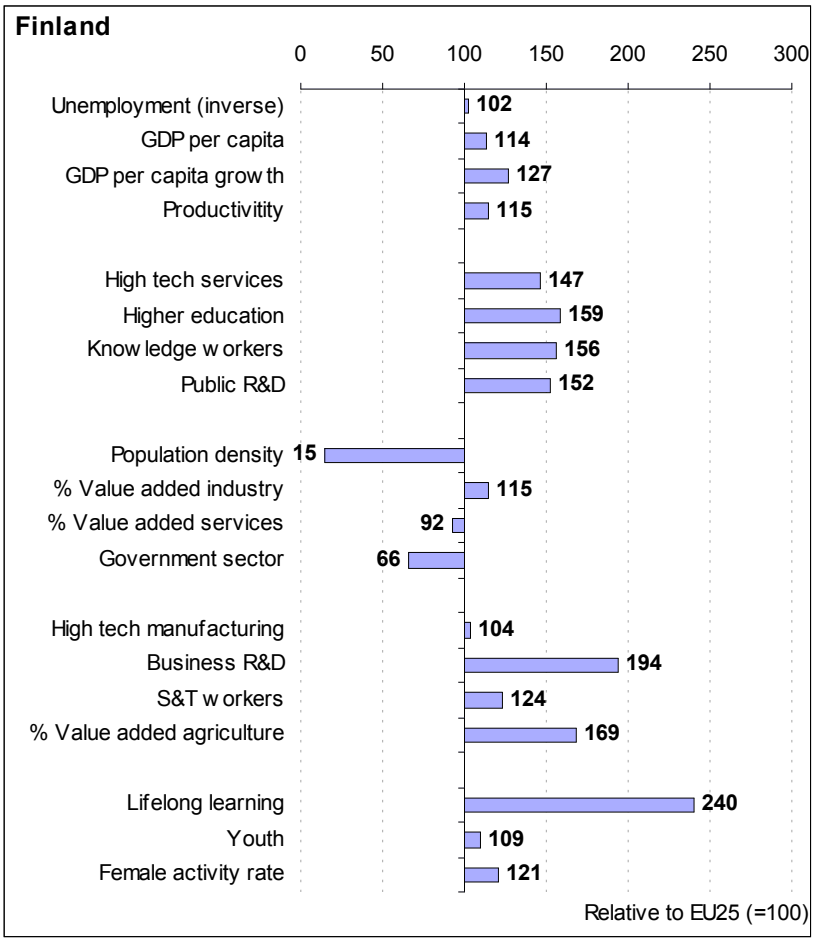
2 Investing in innovation and knowledge: a comparative overview of regional performance

This section provides a synthetic overview of the relative performance of the country, and where relevant main regions, with respect to the EU25 average for a number of selected key structural indicators of innovation and knowledge. The analysis aims to identify **main disparities and needs** at national, and wherever possible, regional level with a view to supporting the definition of priorities for future Structural Funds interventions (see sections 5 and 6 of this report).

2.1 Country overview: innovation and the knowledge economy

Exhibit 1 below provides a snapshot picture of the relative position of Finland compared to the EU-25 average for a series of key knowledge economy indicators.

Exhibit 1: Relative country performance for key knowledge economy indicators



Source: calculations of MERIT based on available Eurostat and national data from 2002-2003 depending on indicator. Detailed definitions and data for each indicator are provided in Appendix B.

The data presented in Exhibit 1 give a broad and objective impression of the main characteristic features of the Finnish Innovation System.

Finland is a relatively wealthy country with high growth in GDP. Finland is an open economy with exports consisting around 40% of GDP. The social security system is generous and this combined with moderately high salary levels and high taxation creates competitive pressures.

A very important factor in terms of innovation activities is the low population density and long distances. Because of this it is difficult to get critical mass for innovation and the cost of services and transportation is high. The innovation activities have concentrated in few bigger urban areas and firms in other parts of the country face challenges to connect with the innovation system.

The production structure in Finland is increasingly concentrated in various knowledge-intensive industries within which international connections, education and R&D have grown in significance. The electro-technical industry in particular has grown remarkably in the past 10-15 years. The relative role of manufacturing is bigger than in many other developed countries. The increasing competition from newly industrialised countries with low labour costs is therefore a specific challenge for the Finnish economy especially in the more traditional sectors. At the same time, the service sector is somewhat underrepresented compared to many other countries. The labour productivity is only moderate, which is mainly a result of weak labour productivity in the service sector. In the manufacturing sector, labour productivity has increased rapidly. Investment rate is relatively low in Finland and also the foreign investments in Finland are below the EU average.

Finland has a very high share of jobs in high tech services and somewhat also in high tech manufacturing. A substantial amount of new jobs generated during the past decade has been in these sectors. Despite numerous new jobs created after the recession of early 1990s the unemployment rate has remained a slightly above EU average (8.8 % in 2004). Much of this is explained by structural unemployment. Although the general level of education is high and the qualifications have generally met the needs of the industry there is still a remarkable share of low skill labour force suffering from long term unemployment. The rate of employment in Finland is quite low (67.2 % in 2004) despite high female activity rate.

R&D expenditure accounted for 3.5 % of GDP in 2004, placing the country substantially above the 3% Barcelona objective. The high level of R&D expenditure is especially a result of the high level of business R&D, which has been almost double the EU25 average. A substantial part of the business R&D comes from the ICT sector with phone manufacturer Nokia in the lead. The high level of R&D in high tech sectors somewhat shadows the fact that there are still many challenges in promoting R&D activities in more traditional sectors and SMEs. Despite public sector R&D being well over EU25 average, it is still lagging behind the private R&D levels and there have been discussions in Finland about the need to increase public R&D investments in the future. Finland has also one of the highest levels of STDI personnel per capita in the world. However, in many sectors there are difficulties to get foreign experts to move to Finland, which is increasingly seen as a problem in the future. Immigrants in general represent only about 1.7% of the population, which is

clearly below average. In terms of knowledge and innovation the situation is similar as foreign students only represent 6 % of all doctoral students, which is clearly lower than in countries like Belgium and the UK where it is over 25 %. Also the share of non-native higher qualified employees in Finland was below 1 % (2000) while the EU average was 3.8 %.

Public research system in general has been quite productive in Finland. The level of patenting per capita is the highest in EU, Finland being alongside Sweden and Germany. However this partly reflects the industrial structure of the country that is dominated by high technology machinery and electronics manufacturing. Also when looking at the number of scientific publications per capita, Finland is the 3rd most productive country after Sweden and Denmark and is well above the EU average. However, when looking at the productivity of scientific research the picture is more complex. In comparison to the number of researchers the production of patents and citations is not that high anymore.

One of the strong areas of Finland is the high intensity of interaction between different firms and between firms and research institutions. According to DG Research (1996) an average of 25 % of innovative EU firms co-operates with other firms, universities or public research centres but in Finland this figure is 70 %. This partly reflects the low barriers between different spheres of activity on one hand but can also be an indicator of successful policies to increase networking.

Spending on human resources has traditionally been high in Finland and according to some international indicators (e.g. PISA) the quality of basic education is also good. In higher education Finland shines. Especially the younger people are very well educated and the number of people with tertiary education is one of the highest in the world. Also the number of science and engineering degrees in Finland is one of the highest in the world being over 30% of all tertiary degrees. Although the general level of education in Finland is generally considered excellent, there have recently been discussions about the quality of tertiary education in the way that general level is good but Finland is lacking top educational institutions. Education sector has also had problems with tightening financial constraints.

To sum it up, despite high R&D and education figures, there are still many challenges in terms of innovation performance. Population ageing in Finland is forecasted to be more severe than in any other EU country except Italy and this poses challenges in terms of rising public expenditure but also in terms of lifelong learning. An increase in public sector productivity is needed and innovation is a tool to achieve this. Another substantial challenge in the globalising economy is to make sure that Finland can make itself attractive enough to high quality experts. Especially for foreign experts Finland has not been very attractive. This has been shown in difficulties in attracting foreign researchers and highly qualified labour. There are still weaknesses in commercialisation of R&D and entrepreneurship. Also innovation activities in traditional manufacturing and services are still underdeveloped.

In terms of industry, one of the great challenges for the future is the risk that is involved with the dominant role of the ICT sector. ICT is the one of the main export industries and the most remarkable source of private sector R&D. With decreasing prices and production moving elsewhere the future prospects are challenging and

there is a need to promote innovation activities in other sectors in order to balance the economic base.

2.2 Regional disparities and recent trends

In order to analyse and describe the knowledge economies at regional level in the EU, the approach adopted was to reduce and condense all relevant statistical information available for a majority of regions. The approach involved firstly reducing the information from a list of selected variables into a small number of factors by means of factor analysis. These factors are:

Public Knowledge (F1): human resources in science and technology combined with public R&D expenditures and employment in knowledge intensive services is the most important or common variables in this factor. Regions with large universities will rank high on this factor.

Urban Services (F2): The most important variables for this factor are value-added share of services, employment in government administrations and population density. A key observation is that academic centres do not necessary co-locate with administration centres.

Private Technology (F3) This factor is most strongly influenced by business R&D, occupation in S&T activities, and employment in high- and medium-high-tech manufacturing industries.

- Learning Families (F4). The most important variable in this factor is the share of the population below the age of 10. The Learning Families factor could also be interpreted as an institutional factor indicating a child-, learning- and participation- friendly environment, or even a 'knowledge-society-life-style' based on behavioural norms and values that are beneficial to a knowledge economy.

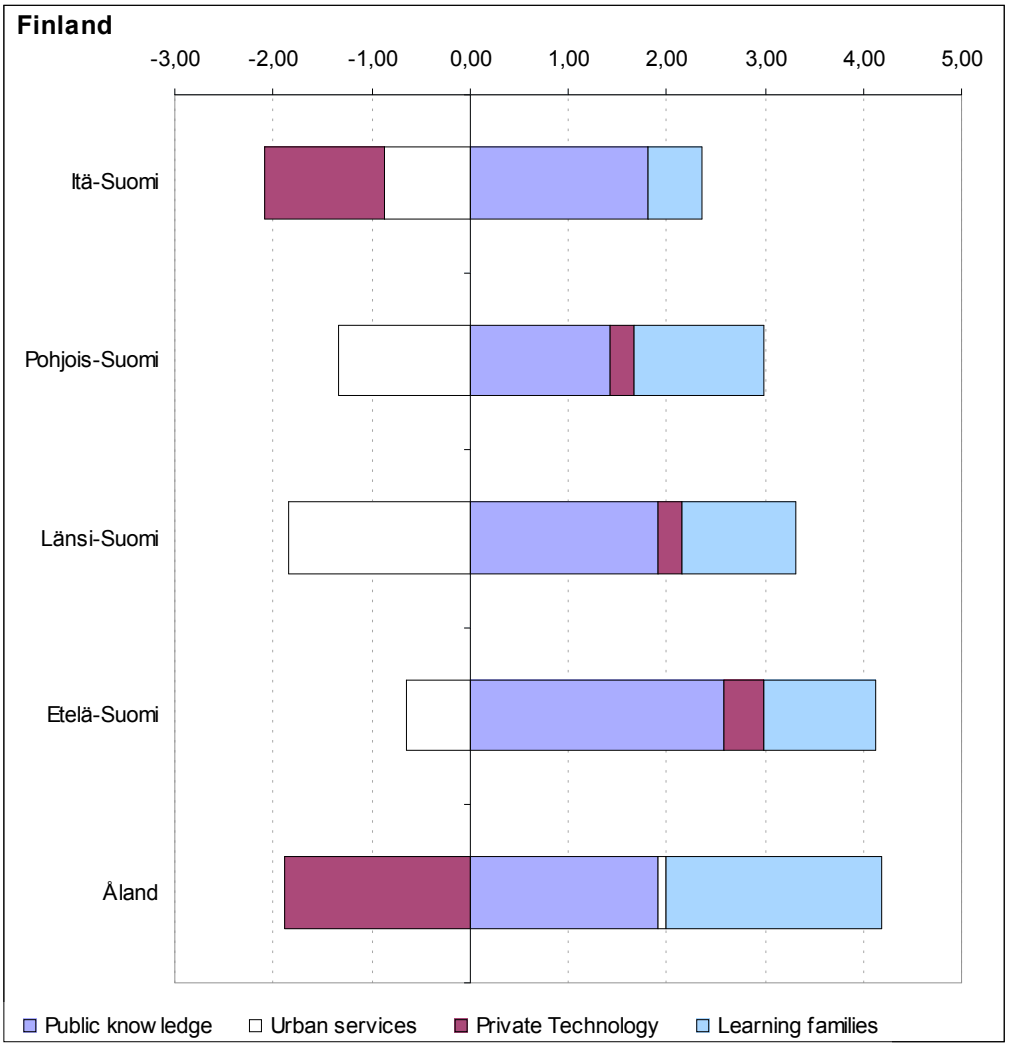
In a second step, the 200 plus EU27 regions were grouped into 11 types of regions (see appendix A) displaying similar characteristics by means of a cluster analysis. In the case of Finland the regions are grouped as follows:

- Etelä-Suomi (Southern Finland) and Länsi-Suomi (Western Finland) belong to the cluster described as "Nordic High-Tech Learning". These clusters are characterised by high business R&D intensity. The size of the government administration is the lowest in the score on Urban Services. Etelä-Suomi region also includes the Helsinki capital region and is more densely populated.
- Pohjois-Suomi (Northern Finland) also belongs to the cluster described as "Nordic High-Tech Learning" However, this region is very different in nature from Etelä-Suomi and Länsi-Suomi that are more densely populated and have many mid size urban regions. In contrast in Pohjois-Suomi the effect of the main centre in the region – Oulu – is statistically quite remarkable as it is the main agglomeration of both public and private R&D and education as well as a major centre of the ICT sector. The rest of the region mainly resembles in many ways the cluster description of "Rural industries" as being very sparsely populated and missing urban services as well as R&D activity.
- Itä-Suomi (Eastern Finland) belongs to the cluster "Rural Industries". Besides a low per capita GDP, regions in this cluster have in common a low score on both the factors Urban Services and Private Technology. Population density is very

low. The service sector is often very small. Agriculture and basic manufacturing industries are relatively large sectors. Especially the rural areas in this region suffer from emigration, ageing population and peripheral geographic location.

- Åland archipelago region belongs to the cluster "Nordic High-Tech Learning". However, in some respects it is closer to "Learning families" cluster despite high GDP and lifelong learning the level of R&D is relatively low.

Exhibit 2: Regional factor scores per region



Source: MERIT. The bars are stapled factor-scores showing the deviation (1=standard deviation) per factor from the average of 215 EU regions (0.00). The longer the bar, the bigger is deviation. Detailed regional scorecards can be found in Appendix B.

Itä-Suomi (Eastern Finland) region has a relatively high share of agriculture. The region has low population density and therefore it scores low in urban services. The GDP per capita is lower than EU25 average and the growth of GDP has also been the slowest of all Finnish regions. The region suffers from high unemployment and low productivity. Eastern Finland has relatively highly educated workforce that is mainly employed in the public sector. The level of public R&D is good but Itä-Suomi suffers from low level of high tech manufacturing and business R&D.

Pohjois-Suomi (Northern Finland) is a very sparsely populated region and in general scores very low in urban services. However as a whole the region seems to fare quite well. This mainly reflects the strong position of Oulu city area that has a strong concentration of high tech manufacturing and R&D especially in the ICT sector. As a result, the region scores well over EU25 average in business R&D, public R&D and high tech services. However, in high tech manufacturing and the number of S&T workers the region as a whole is quite on the average. The rest of the region is mostly rural, mainly service oriented and suffers from high unemployment and harsh climate and long distances.

Länsi-Suomi (Western Finland) region is more densely populated than Finland in average. The education level in the region is relatively high. The region is much industrialised and is strong in high-tech manufacturing and business R&D but is behind Finnish average in terms of public R&D activities. The GDP per capita is on the average compared to the EU25 average. Government sector is relatively small. The region consists of several mid size urban centres with relatively sparsely populated rural areas surrounding them.

Etelä-Suomi (Southern Finland) covers the southern part of Finland including the capital region and its surroundings. It is relatively densely populated by Finnish standards and includes the capital region. The region is very strong in terms of innovation activities. It enjoys high GDP and also above EU25 average GDP growth. The region has strong public and private R&D activity, the education level is one of the highest in all EU25 regions. There also many public high tech services and business services available. The biggest challenges for the region are a relatively high unemployment, average level of high tech manufacturing. For the capital region the specific challenges are how to manage with high population growth and relatively high living expenses compared to the rest of the country.

Åland archipelago region is a small and prosperous region between Finland and Sweden. Åland is basically a small service economy with a low level of manufacturing and R&D activities.

Exhibit 3: recent trends per region in key indicators

		Unemployment	Per capita GDP	Industry share	Agriculture share	Population density	Tertiary education	R&D intensity
		1996-2003	1996-2002	1996-2002	1996-2002	1996-2002	1999-2002	1996-2002
		%-pnt ch.	% growth	%-pnt ch.	%-pnt ch.	% growth	%-pnt ch.	%-pnt ch.
EU25		--	--	--	--	--	--	--
Finland		-5,60	6,04	-0,63	-0,58	1,79	9,14	0,92
Itä-Suomi	FI13	-5,90	5,02	-0,87	-0,13	-4,00	7,31	--
Pohjois-Suomi	FI1a	--	5,97	2,54	-0,64	0,00	6,90	--
Länsi-Suomi	FI19	--	6,04	--	--	--	--	--
Etelä-Suomi	FI18	--	6,34	-1,23	-0,44	4,00	4,76	--
Åland	FI20	-1,50	6,68	2,11	-1,11	3,64	0,67	--

Source: MERIT based on Eurostat data for period indicated

2.3 Conclusions: innovation and knowledge performance

Exhibit 4: summary of key disparities and needs per region

Region / group of regions	Key factors explaining disparity of performance (weaknesses)	Key needs in terms of innovation and the knowledge economy
Itä-Suomi (Eastern Finland)	• Strong dependence on government sector • High structural unemployment • Traditional industries with low value added • Low private R&D investments	• An increase of innovation and research orientation of companies • Make better use of lifelong training to overcome problems of high structural unemployment • Support entrepreneurship
Pohjois-Suomi (Northern Finland)	• Low population density and long distances a challenge for services and logistics • High structural unemployment • High intra-regional disparities with one successful centre and the rest of the region mainly rural with traditional manufacturing and services	• Build up new solutions for services and logistics to overcome the problem of low population density • Make better use of the services and the strong R&D activities in the central city area • Make better use of lifelong training to overcome problems of unemployment
Länsi-Suomi (Western Finland)	• Relatively low public R&D spending	• An increase of innovation and RTDI activities in enterprises • Increase public R&D investments with leverage effects
Etelä-Suomi (Southern Finland)	• Structural unemployment • High population growth and rising living expenses in the capital region • Average level of manufacturing	• Activities to make the region more attractive in terms of foreign human capital and investments • Improve the use of the strong S&T base
Åland	• Dependency on a few sectors like shipping and tourism	• Diversify the economy

3 Innovation and knowledge: institutional context and policy mix at national and regional levels

Structural Fund support for innovation and knowledge is contingent on and seeks to generate strengthen the existing national (and/or regional) innovation system[3] in each Member State. In particular, institutional, legal and financial factors in the innovation system can limit the potential for certain types of intervention. Moreover, within the framework of the EU's "Lisbon objectives", Structural Fund interventions are expected to complement and provide added value to national (or regional) policy framework. In some Member States, Structural Fund interventions in favour of innovation and knowledge are marginal with respect to the national investment and policy effort, in others Structural Funds provide a main source of funding for such interventions. In both cases, there is a need to identify relevant national and EU policies, which can have an impact on decisions on funding priorities.

3.1 Institutional and legal framework for innovation and the knowledge economy

This section of the report appraises two broad factors that condition the potential for coordinated intervention of EU and national (regional) policies in favour of innovation and knowledge:

- The first concerns the organisational structures of public and semi-public bodies responsible for the design, implementation and monitoring of innovation and knowledge economy policies. In particular, the analysis considers the responsibilities for funding or managing specific types of measures liable to be considered for support under the Structural Funds;
- The second concerns the institutional, legal and financial frameworks, which condition the linkage of national (regional) financing with EU financing.

Finland has a reasonably centred policy co-ordination at the national level. The RTDI policy objectives have been considered within the context of the national innovation system (NIS) approach since the early 1990s. Evaluations, benchmarking activities and other means of policy intelligence are used extensively by the policy makers to steer the policy. The RTDI action is placed under line agencies; Finnish science, technology and innovation policies are formulated by the Science and Technology Policy Council which is chaired by the Prime minister. The government organisations, Ministries, with subsequent primary responsibility for science and technology policy are the Ministry of Education (MoE) and the Ministry of Trade and Industry (MTI).

MoE is responsible for Education**,** Training**,** Science policy**,** Higher Education Institutions and the Academy of Finland**.** It is in charge of 20 Universities. MTI is

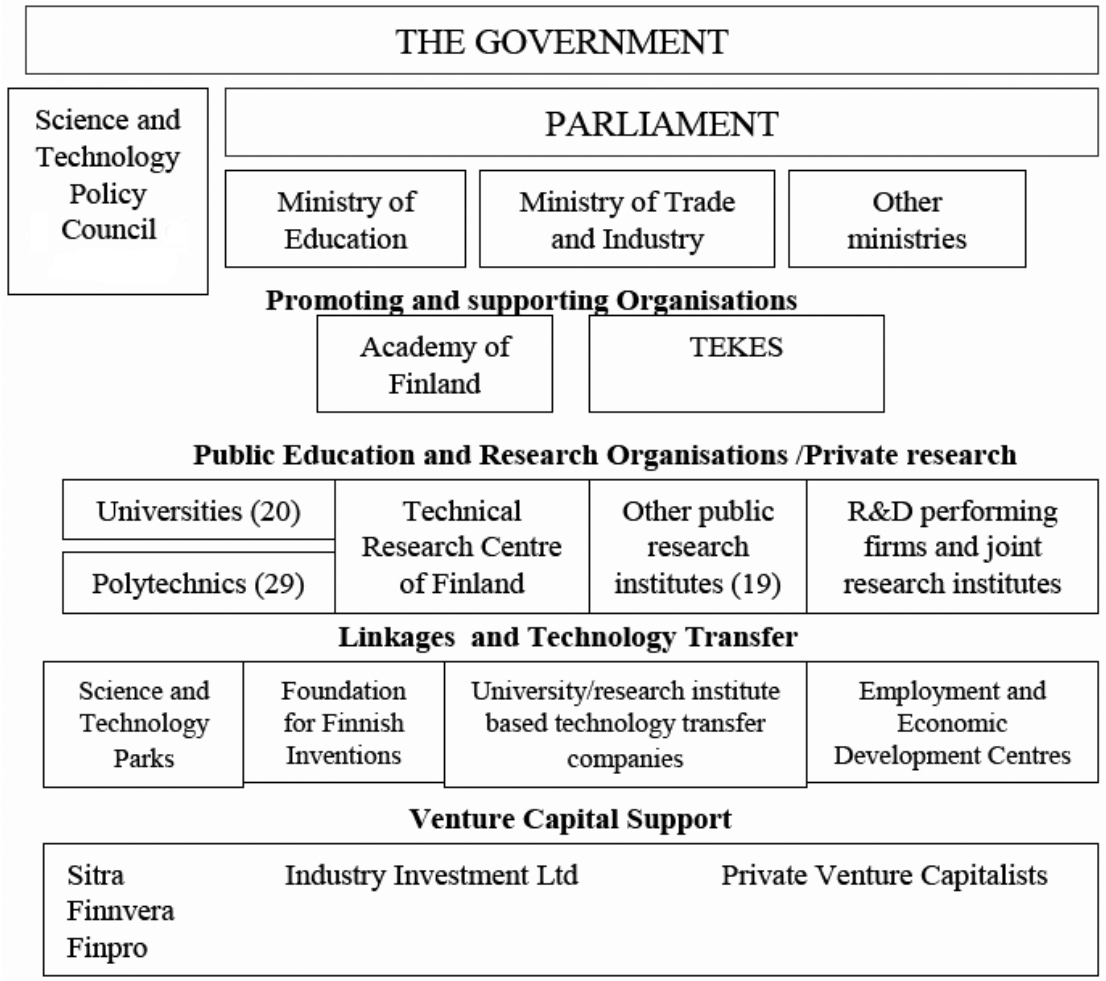
[3] The network of organisations, individuals and institutions, located within or active within national or regional boundaries, that determines and shapes the generation, diffusion and use of technology and other knowledge, which, in turn, explain the pattern, pace and rate of innovation and the economic success of innovation.

responsible for industrial and technology policies**,** supervises TEKES (The Finnish Funding Agency for Technology and Innovation) and the VTT Technical Research Centre of Finland. MTI is responsible for technology policy support to industrial RTDI, EU research, in Finland leading a number of organisations which are part of the national innovation environment (research institutes, agencies and state-owned companies). Almost 80% of the government research funding is channelled through these two ministries, especially through the Academy of Finland and the TEKES. Over the past years the cooperation has increased significantly between these two ministries in issues related to science and innovation. This is partially due to their similar and joint objectives to promote research funding in government budget.

The Academy of Finland is the main body for funding basic research of individual researchers and research units of universities and other research organisations on the basis of competition. When it comes to applied, technological research and development work, TEKES has a central position for planning and financing of technical R&D. TEKES finances industrial R&D projects as well as projects in research institutes. TEKES has a regionally comprehensive domestic organisation that acts in coordination with the employment and economic development centres. Until recently the financing has been allocated through national selection but in the future regional aspects are also increasingly to be taken into account.

VTT Technical Research Centre of Finland is a research institute (3000 employees) of technical and technology economic research & development work; it is an impartial expert organisation that carries out technical and techno-economic research and development work. There are also 19 other dedicated public research institutes in Finland.

Figure 1. The Finnish RTDI policy system. (Revised from: Pirjo Kutinlahti, VTT Technology Studies 2002)



The innovation system[4] has also been gaining importance within regional development. The new legislation requires that both the Government as a whole and individual Ministries prepare plans for regional development. For instance, the MoE has strengthened the regional collaboration of higher education institutions by requesting that they develop regional strategies. The Finnish network of universities and polytechnics, technology centres, centres of expertise and regional Employment and Economic Development Centres (TE-Centres) with other similar institutions have promoted innovation in the regions.

Regional Councils, which represent municipalities, often take advantage of the expertise of the universities and polytechnics in preparing their strategic development plans, which usually emphasise innovation-related issues. The implementation plans are prepared in collaboration with the State Provincial Offices. Moreover, bigger municipalities typically have their own economic development strategies. Practically all Finnish regions are nowadays actively involved in developing local and regional innovation strategies, programmes and other instruments for promotion of innovation.

[4] This approach is nowadays discussed also with concepts such as innovation environments and innovation ecology

Special programmes have been drawn up by the Government to activate and support these operations. Most notable of these is the National Centre of Expertise Programme that constitutes an attempt to promote the development of regions through RTDI, enhancing regional competitiveness and supporting cooperation between different actors. The other important tool is the Regional Centre Programme, which partly overlaps with the former programme but addresses more broad-ranging regional development issues with innovation as one of the key themes. These programmes are coordinated by the Ministry of Interior. The European Union (EU) Cohesion Policy complements and supports these national policy tools.

In Finland municipalities enjoy wide-ranging powers of self-government and have a strong financial independence, but in practice the vast majority of their tasks are set by national legislation. Most municipalities have little to spend on innovation, but bigger cities like Oulu, Tampere and Jyväskylä have been important actors in developing local innovation systems.

Despite increasing collaboration the main challenge in Finnish RTDI policy is the inability to carry truly cross-sector RTDI policy. With operational responsibilities still under different Ministries there are still gaps between science, technology and regional polices.

Exhibit 5: main organisations per policy area.

	Type of organisation	
Policy objectives	**National (&/or regional) public authorities and agencies**	**Key private or non-profit organisations**
Improving governance of innovation and knowledge policies	• Science and Technology Policy Council • Ministry of Education • Ministry of Trade and Industry	• Universities • Consultancies
Innovation friendly environment	• Ministry of Education • Ministry of Trade and Industry • Sitra • TEKES • Municipalities	•
Knowledge transfer and technology diffusion to enterprises	• TEKES	• Universities and polytechnics • VTT • Science and Technology parks • Foundation of Finnish Inventions
Innovation poles and clusters	• Ministry of Interior • Municipalities	•

Support to creation and growth of innovative enterprises	• Sitra • TEKES • TE-Centres • Finnvera • Finpro • SME foundation	• Science and Technology parks
Boosting applied research and product development	• TEKES • Academy of Finland	• VTT • Universities • Polytechnics • Other public research institutes
Investment in basic research capacities	• Academy of Finland	• Universities • VTT • Other public research institutes • Private funds

Source: study team based on national/regional policy documents, Trend Chart reports, OECD reports, etc. See appendix C for a detailed definition of the policy categories.

3.2 Policy mix assessment

This section provides a summary overview and analysis of the national and regional policy mix in favour of innovation and knowledge in which the Structural Fund interventions take place. The analysis is conducted with respect to seven broad categories of objectives of innovation and knowledge policies (see appendix C for an explanation of each category).

Measures identified per category of the policy objectives are then further sub-divided in terms of the direct beneficiaries of funding (or legislative) action. To simplify, the report adopts three broad types of organisation as targets of policy intervention:

- Policies supporting academic and non-profit knowledge creating institutions;
- Policies supporting intermediary/bridging organisations involved in innovation support, technology transfer, innovation finance, etc.;
- Policies supporting directly innovation activities in private sector.

The matrix below summarises the current policy mix in at national level. A simplified coding system is used with intensity of support (financial or political priority) for different policy areas and targets indicated by a colour coding system.

Exhibit 6: Policy mix for innovation and knowledge

	Target of policy action		
Policy objectives	**Academic /non-profit knowledge institutions**	**Intermediaries/bridging organisations**	**Private enterprises**
Improving governance of innovation and knowledge policies	• National and regional evaluation, benchmarking and foresight activities • E-governance initiatives • SITRA Innovation programme	• National and regional evaluation, benchmarking and foresight activities	• SITRA Innovation programme
Innovation friendly environment	• Finland Distinguished Professor Programme (FiDiPro) • NOSTE programme • The legislative framework for commercialisation of university research is under reform • The national strategy on education, training and research in the information society		• TRIO Programme • Start-up Loan for technology companies • Fiscal friendly environment to businesses
	• The Entrepreneurship Policy Programme		
Knowledge transfer and technology diffusion to enterprises	• Tekes Funding for Feasibility Studies (VARA) • Improving the use of research results at universities	• The Centre of Expertise Programme • A network of regional technology parks and incubators supported by the new YRKE project	• The TUPAS Funding Service • Tekes Funding for Feasibility Studies (VARA) • YRKE project
	• Tekes National Technology Programmes • Regional Centre programme		
Innovation poles and clusters	• Tekes National Technology Programmes • Centres of Expertise programme (OSKE) • Regional Centre programme (AKO)		

Support to creation and growth of innovative enterprises	• Tekes Funding for Feasibility Studies (VARA) • TULI programme • YRKE project		• Sitra's PreSeed Service Package • Tekes Funding for Feasibility Studies (VARA) • TULI programme • Seed Financing programme • Start-up Loan for Technology Companies • YRKE project
Boosting applied research and product development	• Tekes Technology programmes • Academy of Finland Research programmes • Centres of Excellence		
Legend			
Top policy priority			
Secondary priority			
Low priority			

Source: calculations of study team based on national/regional policy documents, TrendChart reports, OECD reports, etc.

Many of the RTDI policy measures in Finland do not target only one specific sector but often cover a whole set of organisations both in the demand side (private enterprises, supply side (universities and other knowledge institutions) and the intermediaries enhancing collaboration between these two sides. Typical examples of these are TEKES technology programmes and the National Centre of Expertise programme.

In Finland, the need for **improving governance of innovation and knowledge policies** is quite modest as the governance structures are quite well co-ordinated. There is an extensive culture for the use of evaluation, benchmarking, foresight measures. The systematic use of benchmarking and intelligence tools gives to policy-makers the capacity of anticipating the changes and re-orienting the innovation policy. The Science and Technology Policy Council has a visible role in the co-ordination of innovation policy. There is also a quite strong collaboration culture both at the national level between the main actors (TEKES, Academy of Finland and SITRA especially) but less so at the regional level. Especially between the regional offices under different ministries there are still some challenges in co-ordinating their efforts. In total, there are nine different ministries participating in the governance of Structural Funds. Also the position of regional councils, responsible for the co-ordination of regional policy and Structural Funds at the regional level varies a lot and is sometimes mixed especially because of the strong position of municipalities. The use of new tools for improving governance has been relatively successful and different tools for e-governance have been broadly developed.

Innovation friendly environment is quite well developed in Finland. This situation has been addressed by several initiatives raising the awareness of the larger public.

Despite this there have been challenges with the low level of entrepreneurship and low mobility of skilled workers. These issues got special emphasis in 2004, when the Prime Minister's Office assigned a committee to investigate the factors that were contributing to the success of Finnish work and production in the midst of global economic change. The private equity market is dynamic but small, even though on the seed capital segment, the public venture capital organisations attempt to fill the gap through a series of schemes and measures like start-up loans and capital loans. There are also regional disparities in the venture capital market as most of the venture capital is concentrated in the capital region. So far there have been quite few specific measures to help the mobility of research staff, although mobility of highly educated persons has increased during the 1990s. This has been changing as special attention has been paid to increase employment-based immigration to Finland. There are also some legislative reforms under way like the new legislative framework for commercialising university research. One of the broader targets has been the promotion of entrepreneurship in Finland. A specific Entrepreneurship programme was established to promote entrepreneurship through different measures, some of which may take place at administrative level (e.g. the legal environment) whereas others may target companies more directly. However, the programme does not give direct funding.

The case of **knowledge transfer and technology diffusion to enterprises** has been addressed in many policy measures. Especially TEKES National Technology Programmes have been instrumental in this. These programmes have been planned with the needs of companies in mind, and have been implemented in collaboration with companies. In general there is a strong promotion and close collaboration between public/private RTD organisations. The measure is targeted to private enterprises, universities and public research organisations and the intermediaries supporting collaboration. There is also a close cooperation between companies, research organisations and universities. This can be considered a specific strength of the Finnish innovation system leading to technology transfer.

However, this success shadows the fact that there are many challenges with knowledge transfer within SMEs and firms in the traditional sectors. For example TEKES funding has mainly concentrated in creation and commercialisation of new technologies in the larger companies and the funding has also concentrated in the main university towns. Also in less populated and more peripheral regions there are still challenges to have enough capacity to support knowledge transfer and to network with outside knowledge sources in central regions and abroad.

Innovation poles and clusters. In Finland there was a well established industrial cluster policy developed since the early 1990s. However, recently it has been noted that there is a need for re-designing the cluster policy in order to address the globalisation challenge related to the relocation of manufacturing activities. A new generation of policy is emerging through the concept of “super-clusters” aiming to start new cooperation between clusters for crossing the technologies applications and using different technologies (e.g. ICT cluster is seen in a key role in building chemical/bio innovations). For example, the new TEKES strategy from 2005 was to pay more attention to focused areas chosen by looking at user needs in large application areas. New business opportunities and innovations were seen to emerge at the interface of strong industrial clusters and sectors.

At the regional level the National Centre of Expertise Programme (OSKE) has worked at enhancing regional competitiveness by strengthening innovation, renewing the production structure and creating new jobs in the areas of expertise selected and in this way it supports regional specialisation. There currently exist 22 centres of expertise covering 45 fields of expertise. In the future the CEP is going to concentrate more clearly in supporting the use of internationally high level expertise. The difference from previous definition is the aim towards increasing collaboration between centres belonging to same cluster.

Support to creation and growth of innovative enterprises also host different measures. There are several of measures concerning the creation of new innovative and technology based firms targeting both entrepreneurs and researchers. Incubator schemes have been established in association with the regional technology parks and universities since the late 1980s. There is also a new Development Programme for Business Incubators (YRKE) formed by Sitra, the MTI, the TE-Centres and TEKES in order to develop Finnish business-incubating activities and to increase the number of incubators and improve their prospects for raising capital. These measures are partly filling the gap for early stage and seed-capital financing that now exists, although especially Sitra has several instruments to help with pre-seed financing. There is also a specific plan to support innovation and use of innovation in the service sector that has so far been underdeveloped.

In **boosting applied research and product development,** TEKES national technology programmes for developing innovative products and processes have had an essential role. These programmes have proved to be an effective form of cooperation and networking for companies and the research sector. Currently, there is an increased emphasis on the programmes with "traditional" industrial sectors, such as the forest industry, because high-technology industries, mainly ICT and biotechnologies, have shown their fragility.

The role of higher education institutions has also been facing pressures related to regional development. The new University Act (2005) emphasises the so called third role of universities to take on (regional) economic development mandates in addition to their existing roles in education and research. This is further boosted by competitive funding mechanisms that often require collaboration with firms and other organisations. In the country's 29 polytechnics that have been operating for less than a decade, the launching of their research efforts has significantly benefited from funding obtained from the SF and has given some of them a boost of credibility in the crucial early phases of their research efforts.

As a whole, regional policy has been increasingly seen as an integrated part of the RTDI policy in Finland. The national strategy for innovation is taken into account in the Structural Funds programmes, first via involvement of the relevant Ministries and TEKES in the strategies, which both reflect and influence national goals, including those related to innovation policy. Domestic regional policy also has an innovation component, in the forms of the Centre of Expertise Programme, which encourages collaboration between research providers and users in different sectors.

The EU Structural Funds and in particular Objective 2 funds related to RTDI and measures play an important role in the policy mix since they are typically integrated into regional projects of domestic origin. Objective 1 funds also have an important regional role to play in supporting RTDI activities. As most of the national funding such as TEKES support, are based on national criteria, the funding for RTDI tends to concentrate in the biggest centres. As a result, SF have been an important additional source of funding for innovation support in the less favoured regions.

3.3 Conclusions: the national innovation system and policy mix

In Finland, the innovation policy has had a very central position for a long time. Especially since the recession of the early 1990s, the development of the Finnish innovation system and knowledge-based society has been at the top of the policy agenda for growth and competitiveness. Innovation policy objectives have been considered within the context of the national innovation system (NIS) approach since the early 1990s. Evaluations, benchmarking activities and other means of policy intelligence are used extensively by the policy makers in order to guide the future development activities and there are numerous public programmes for supporting innovation activities at different stages of the innovation process.

Policy measures are also relatively well co-ordinated at the strategy level, although some problems with co-ordination at the operational level still exist. This is mainly a result of the governance of innovation policy instruments and activities by several ministries and other organisations. This makes it more challenging to carry out truly cross-sectoral innovation policy.

However, despite the fact that Finnish innovation policy seems to be working very well when looking at the indicators, there are still several challenges for the policy mix approach. Maybe the biggest of them is the difficulty to implement reforms proposed in some recent analysis in the public research structures and in the innovation system as a whole.

Exhibit 7: Key opportunities and constraints for investment by the Structural Funds

Policy objectives	Opportunities for Community funding (national priorities)	Constraints or bottlenecks (factors limiting Community funding)
Improving governance of innovation and knowledge policies	• To further support successful foresight and monitoring activities at the regional level	• Fragmented governance of innovation measures • Complex management procedures • Numerous actors • Strategic thinking needs to be further developed in regions
Innovation friendly environment	• To improve knowledge workers mobility (also internationally) • To make better use of ICT in developing services • To support the use of ICT to overcome natural obstacles (low population density, long distances) • To support regional funds	• Lack of entrepreneurship culture in some regions is making it difficult to make use of support • Still underdeveloped private VC markets to support activities • Lack of capital left for investments in regional corporate funds
Knowledge transfer and technology diffusion to enterprises	• SF measures can supplement national funding in less favoured regions • Promoting international collaboration • Continuing the support at the regional level to Centre of Expertise and TE centres projects	• Low management capacity of SMEs outside high tech sectors • Low capacity of the regional infrastructure to transfer knowledge from outside the region
Innovation poles and clusters	• To support national mechanisms in developing successful growth poles • To support the creation of central clusters • Promote national and international networks in order to gain critical mass (firms, services)	• Underdeveloped policy co-ordination between innovation poles and their surroundings • Lack of agglomeration effects in many regions
Support to creation and growth of innovative enterprises	• Strengthening the business skills of SMEs • Dedicated support mechanisms for growth oriented SMEs • Support for family business successions and business transfer •	• Low level of innovative and growth oriented SMEs • Fragmented innovation support system •
Boosting applied research and product development	• To support the regional commitment by universities and polytechnics • Improving the ability of firms to make use of public and private R&D funding	• Transformation of results from basic research to innovation • Low R&D orientation of SMEs • Low level of foreign funding in R&D

4 Structural Funds interventions to boost innovation and create a knowledge economy: 2000-2006

This section of the reports provides an analysis the patterns of Structural Fund expenditures in the fields of innovation and knowledge-based economy during the current programming period (2000-2006 for EU-15 or 2004-2006 for the new Member States). It examines the patterns from both a strategic point of view (the policy mix pursued by the Structural Funds programmes) and at an operational level (consumption of funds, management of innovation measures, indications of relative effectiveness of measures, case studies of 'good' practice).

4.1 Strategic framework for Structural Fund support to innovation and knowledge

4.1.1 Strategic approach to innovation & knowledge in Structural Fund programmes

In total there are 11 SF programmes in Finland of which six are financed by the ERDF and ESF. Five of these programmes are regional programmes and one programme (Objective 3 financed by ESF) covers the whole country. Objective 1 areas receive a majority of the funding with Eastern Finland getting 43.2 % and Northern Finland 22.1 % of all funding. Objective 2 regions South Finland receives 15.1 % and West Finland 19.6 % of all SF funding. The distribution reflects the differences between the regions *with Eastern Finland and Northern Finland* having most profound challenges for development. In the case of Objective 1 areas the difference in the allocation of funds is based on the differences in population as discussed in section 2.

The area of the **Northern Finland** Objective 1 Programme consists of Lapland and parts of North Ostrobothnia, Central Ostrobothnia and Central Finland. The land area is 128 000 km² and covers 39% of the total area of the country. However, the population of the region amounts to only 350,000 people, giving an average population density of 3 inhabitants per square km. This means that only 7 % of the total population of the country lives in the area. During the second part of the 1990s the high unemployment rate has dropped, albeit slowly. This is a result of increased growth in the region and the emigration of unemployed inhabitants. Those leaving are principally the younger and well educated, particularly women. This has led to population decline, ageing and to a distorted age and gender structure. The relatively high and continued dependence on public sector employment and on the agriculture and forestry sectors is one of the biggest challenges facing the region, as job opportunities will not increase in these sectors. The objective of the programme is to increase economic growth in Northern Finland and to create new entrepreneurship and new jobs.

The Objective 1 Programme for the period from 2000 to 2006 will develop the four regions of **Eastern Finland,** Etelä-Savo, Pohjois-Savo, North Karelia and Kainuu. The population of the region amounts to 691,000 and the land area is 70 000 km², rendering an average population density of 10 inhabitants/ km². Population decline,

emigration and a distorted age structure once again characterise the whole region. Unemployment rates have remained high throughout the past five years, which are amongst the highest in Finland. The region also experienced substantial job losses during the 1990s and has not been able to recover very well.

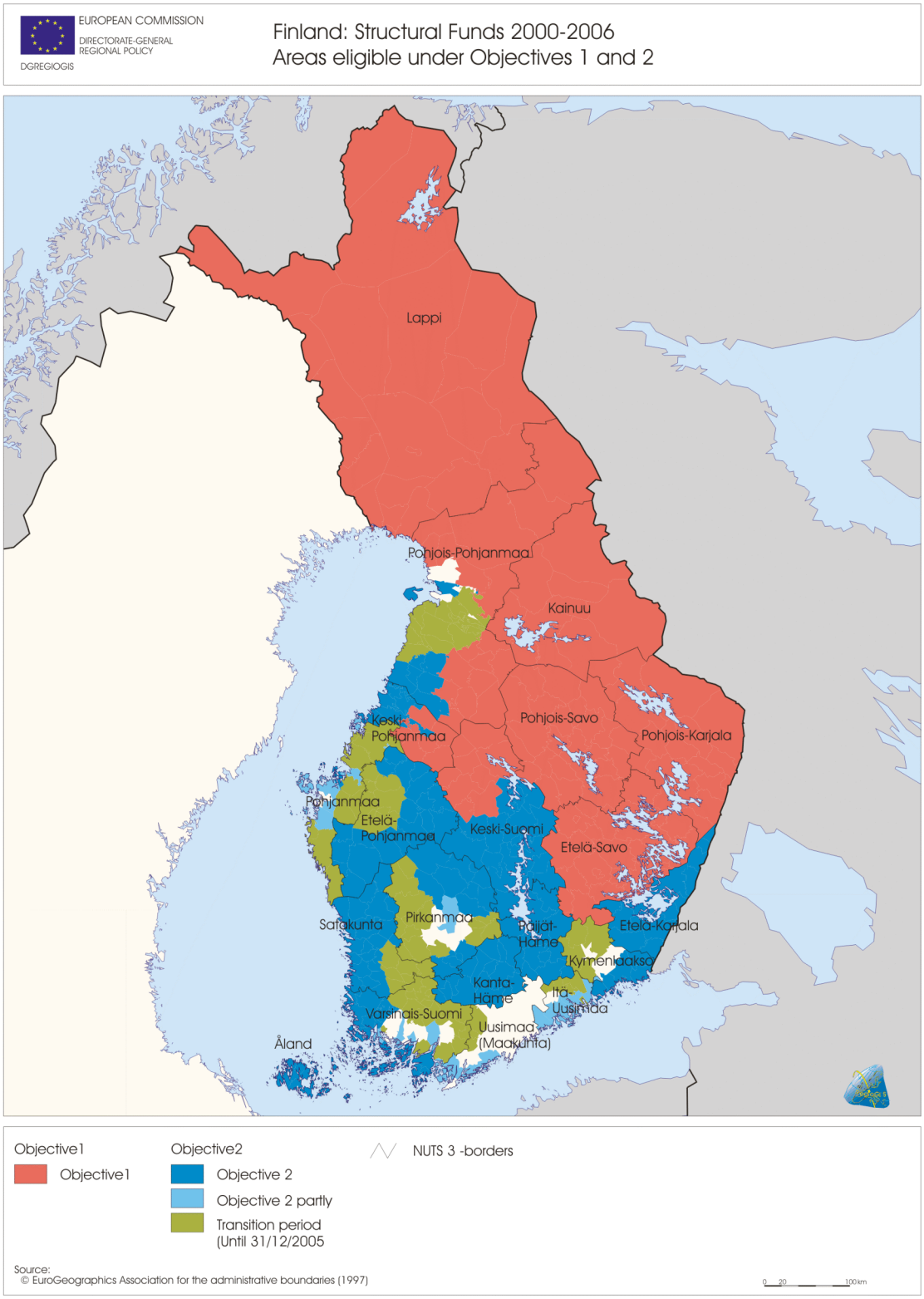
The **Southern Finland** Objective 2 Programme includes parts of the regions of Varsinais-Suomi, Kanta-Häme, Päijät-Häme, Kymenlaakso, Itä-Uusimaa, Uusimaa and South Karelia. The population of the region amounts to 820,000, 126,000 of whom live in support area 5b or 2 of the previous programme period, which received degressive transitional assistance until 2005. The land area is 31 000 km², giving an average population density of 25 inhabitants/ km². It is regionally dispersed, and is thus divisible into several separate sub-regions.

Emigration, typically directed towards the Capital region, together with negative natural population change make ageing one of the biggest challenges to the region. Unemployment hovers around the national average figure. The goal of the Objective 2 programme is thus to increase economic growth and employment, support entrepreneurship, and to help in the development of diverse skills and in the development of the physical and intellectual infrastructures.

The **Western Finland** Objective 2 Programme includes parts of the regions of Satakunta, Central Finland, Pirkanmaa, South Ostrobothnia, Ostrobothnia, Central Ostrobothnia and North Ostrobothnia[5]. The population of the region is 1,225,000 of whom 361,000 live in the 5b and 2 support area of the previous programme period, which received degressive transitional assistance until 2005. The land area is 62 000 km², giving an average population density of 20 inhabitants/ km². Western Finland has negative net-migration as a whole, though significant variations remain between regions. Industry and agriculture dominate the region's economic structure. High unemployment is particularly characteristic of the industrial towns and regional centres. The development strategy is designed to increase entrepreneurship and jobs, and to improve the competitiveness of business, agriculture, and forestry by raising the level of expertise in these sectors. The objective of the area is to be the leading area in Finland for entrepreneurship and human resources.

The **Åland** Islands form an autonomous province of Finland. It has a total land area of 6,784 km2 and consists of a main island and 6,500 smaller islands. Current population is about 26,000. The objective 2 programme is a funding partnership between the Government of Åland and the European Union. The purpose of the programme is to provide economic support to regional development and professional training schemes. The programme is administered by the Government of Åland.

[5] It is also to be noted that highly developed Oulu town region belongs to North Ostrobothnia region and is part of the Western Finland Objective 2 Programme despite belonging to Pohjois-Suomi (North Finland) in statistical analysis.


EUROPEAN COMMISSION
DIRECTORATE-GENERAL
REGIONAL POLICY
DGREGIOGIS
Finland: Structural Funds 2000-2006
Areas eligible under Objectives 1 and 2
Lappi
Pohjois-Pohjanmaa
Kainuu
Pohjois-Savo
Pohjois-Karjala
Keski-Pohjanmaa
Pohjanmaa
Etelä-Pohjanmaa
Keski-Suomi
Etelä-Savo
Satakunta
Pirkanmaa
Päijät-Häme
Etelä-Karjala
Kymenlaakso
Kanta-Häme
Itä-Uusimaa
Varsinais-Suomi
Uusimaa (Maakunta)
Åland
Objective1
Objective1
Objective2
Objective 2
Objective 2 partly
Transition period
(Until 31/12/2005
NUTS 3 -borders
Source:
© EuroGeographics Association for the administrative boundaries (1997)
0 20 100 km

The calculations presented in the two exhibits below are based on the allocation of Structural Fund budgets based on the intervention code classification. For practical purposes, the calculation of financial resources allocated to innovation and knowledge has been limited to the RTDI codes:

- 181 Research projects based in universities and research institutes
- 182 Innovation and technology transfers, establishment of networks and partnerships between businesses and/or research institutes
- 183 RTDI Infrastructure
- 184 Training for researchers

Additional calculations based on broader definitions of innovation are presented in Appendix D.

Exhibit 8: Overall allocation of resources at an objective 1 and 2 level (planned figures in Euro)

Objective	Total cost	SF			NF	
		Total	ERDF	ESF	Public	Private
RTDI INTERVENTIONS						
Objective 1	267 587 000,00	133 793 500,00	133 793 500,00	0,00	133 793 500,00	0,00
Objective 2	293 406 350,00	80 836 250,00	80 836 250,00	0,00	97 367 300,00	115 202 800,00
TOTAL COHESION POLICY						
Objective 1	1 987 241 000,00	989 000 000,00	498 641 000,00	279 835 000,00	989 000 000,00	9 241 000,00
Objective 2	2 411 625 801,00	530 000 000,00	412 166 000,00	117 834 000,00	789 944 801,00	1 091 681 000,00

Source: programming documents and financial data provided by DG REGIO

Exhibit 8 indicates that the share of RTDI measures in total Structural Funds allocations is slightly larger for two Objective 1 programmes (13%) than for the 2 Objective 2 programmes (12%). However, looking at individual SPDs in Exhibit 9, it appears that South-Finland and West Finland, with respectively 16% and 15% of Structural Funds allocated to RTDI actions, are the most "RTDI-oriented" programmes in financial terms. Åland Islands do not have any funding addressed to RTDI measures.

Exhibit 9: Regional allocation of resources (Euro)

Programs	RTDI INTERVENTIONS			TOTAL		
	Total SF	ERDF	ESF	Total SF	ERDF	ESF
OBJECTIVE 1						
DOCUP obj. 1 Eastern Finland	86 019 000,00	86 019 000,00	0,00	653 696 000,00	328 922 000,00	189 102 000,00
DOCUP obj. 1 Northern Finland	47 774 500,00	47 774 500,00	0,00	335 304 000,00	169 719 000,00	90 733 000,00
OBJECTIVE 2						
DOCUP OBJ 2 ALAND ISLANDS	0,00	0,00	0,00	4 761 000,00	4 761 000,00	0,00
DOCUP Obj. 2 South Finland	36 405 850,00	36 405 850,00	0,00	228 075 000,00	179 898 000,00	48 177 000,00
DOCUP Obj. 2 West Finland	44 430 400,00	44 430 400,00	0,00	297 164 000,00	227 507 000,00	69 657 000,00
Total Regional OPs	**214 629 750,00**	**214 629 750,00**	**0,00**	**1 519 000 000,00**	**910 807 000,00**	**397 669 000,00**

Source: programming documents and financial data provided by DG REGIO

In the South-Finland region, the priority 1 covering the promotion of business activities is the largest priority, which partly explains why the area has the largest relative share of RTDI activities. Moreover the measure 2.1 "Improving the operating perquisites for training and research" is in many ways targeted especially for RTDI. Also in West-Finland the largest measures "Activating business and development of firms" and "Developing expertise and innovation networks and promoting new technology" result in relatively high level of RTDI-oriented funds.

In East-Finland and Northern Finland the relative share of RTDI measures is relatively high in EU25 terms compared to the position of these regions as being more peripheral and less favoured in many ways. This partly reflects the high level of R&D infrastructure in these regions and the innovation centred strategy in the whole country. In Eastern Finland the relative share of RTDI is 14% of all SF allocations.

Business development and the promotion of an operating environment for businesses are the main priorities in both programmes. However, the role of infrastructure development and training is large in these areas, which can partly explain that the relative share of RTDI-oriented funds is smaller than in the two Objective 2 areas. However, when looking at the absolute figures of RTDI funding in the Objective 1 areas, Eastern Finland and Northern Finland are bigger. This fact is further highlighted when looking at the population in the different objective areas. In Northern Finland the amount of SF funding in RTDI interventions per capita is over 3 times that in West Finland.

4.1.2 Specific measures in favour of innovation and knowledge.

Generally all Finnish SPDs place a priority on support to creation and growth of innovative enterprises. SMEs are the main target of the Finnish SF policies and in general almost half of the funding goes to the development of SMEs. This objective attracts a major share of the Structural Funds and is present in one or the other of the SF programmes. This reflects the need for new growth companies, better commercialisation of R&D and support to entrepreneurship. In South Finland this approach is called “Fostering, developing and internationalizing business”, in Western Finland “Activating business and developing firms” and in Eastern Finland “Promoting Business”. A major share of this funding is channelled through investment support to SMEs, allocated by regional TE-centres and a major share of these funds is targeted to new or improved products and processes.

Knowledge transfer and technology diffusion to enterprises is also an important part of the measures. These measures have been realised in numerous projects related to networking and the support of knowledge transfer related organisations such as the Centres of Expertise. These measures are typically quite close to boosting applied research and product development. Networking projects are typically projects of networks of companies and other organisations formed around some key industries or technologies, like machinery, automation, electronics, wood etc. Also very typical projects are those supporting the development of competence centres around different public education and research units in areas where there are no universities.

Innovation friendly environment is also present in all programmes, although the relative share is only about one fifth of the total. Typical measures regard ways to use ICT and promoting the operational environment for enterprises. There are also activities related to human capital development.

Exhibit 10: Key innovation & knowledge measures

Policy area	Number of identified measures (all programmes)	Approximate share of total funding for innovation & knowledge measures	Types of measures funded (possibly indicating importance)
Improving governance of innovation and knowledge policies	None	0 %	
Innovation friendly environment	8	18%	Utilising ICT, Information society capabilities, training and courses
Knowledge transfer and technology diffusion to enterprises	4	24%	Networking projects, technology transfer services, centres of expertise, technology centres
Innovation poles and clusters	1	8%	Promoting the formation of business clusters
Support to creation and growth of innovative enterprises	7	40%	Business incubators, developing sectoral chains, support for growth-seeking SMEs, internationalisation projects
Boosting applied research and product development	2	8%	Joint R&D ventures, R&D centres, support for polytechnics and university centres etc.

Nb: this table is a summary of the table in appendix D.2. The total of the percentage share per policy area may sum to more than 100 since certain measures fall into several categories.

The Finnish SPD measures are rather difficult to categorise to certain policy areas as many of them cut across these areas. It is not rare for the same measure to cover development of incubators and services, to develop clusters and networks, promoting risk financing and developing the infrastructure that supports the operational environment of businesses at the same time. This is especially true with measures that support the operational environment for business activities. In a same way it is difficult to distinguish measures that aim to technology transfer from those that boost applied research and product development.

Some recent studies in Finland have noted that the relative importance of Structural Funds support for research, technological development and innovation (RTDI) policies at national level is quite modest compared to the national funding (provided e.g. by t he Finnish Funding Agency for Technology and Innovation TEKES). The SF measures are also well co-ordinated with national policies and are typically part of the same strategies. However, the SF support for RTDI is more important in the more

peripheral areas, such as many parts of the Objective 1 areas, where the actors are not typically as successful in getting national level funding.

The Objective 2 measures are clearly more oriented towards internationalisation, innovation networks and new technologies. This reflects the structural features of these regions as being more industrialised and the aim to make better use of the resources already available in the regions. In Objective 1 areas the emphasis is more on infrastructure, business services, training and entrepreneurship. These priorities reflect the aim to develop the weak areas of the regional innovation environment, to overcome the disadvantageous conditions and to find solutions to problems like unemployment and a low level of entrepreneurship.

4.2 Learning from experience: the Structural Funds and innovation since 2000

4.2.1 Management and coordination of innovation & knowledge measures

This section reviews the overall management of Structural Fund interventions in favour of innovation and knowledge during the current period. It examines the coherence the role of key organisations or partnerships in implementing Structural Funds measures for innovation and knowledge, the linkages between Structural Fund interventions and other Community policies (e.g. the RTD Framework Programme) and the financial absorption and additionality of the funds allocated to innovation and knowledge.

In Finland the design and implementation of SF activities is centrally coordinated. The Ministry of Interior is responsible for the overall coordination of Structural Funds. Other ministries manage Structural Funds within their own policy domain. In total, eight different ministries participate in the management of Structural funds. In terms of allocated funding, the most important of these are the Ministry of Trade and Industry, the Ministry of Education and Ministry of Labour. The management of SF in several ministries has been widely considered as a problem in terms of co-ordination. Despite several improvements the administration is still somewhat fragmented.

Regional Councils were established in their current form in the early 1990s, when the responsibility of regional development activities was transferred from State bound provincial governments to Regional Councils. From the SF perspective these councils are not new but their importance has increased substantially with the Structural Funds as they are responsible for administering SF programmes. According to the Regional Act, Structural Funds have to be reconciled with the national framework. Regional Councils must develop four-year regional strategies that are consistent with the national strategies. These strategies aim to integrate the regional implementation of national programmes and SF programmes, whilst also taking into account longer-term regional plans.

There are also some new bodies in Finland managing Structural Funds. The most important new organisation is the Regional Management Committee (MRC). MRCs were created to coordinate the key actors – regional actors, municipalities, state

authorities and social and economic interest groups – in regional policy. As coordinating bodies, MRCs guide implementation and adjust funding of SF Programmes. They typically also have a dedicated sub-group that handles the specific projects involving enterprises that include confidential information.

The regional TE-Centres, which are responsible for many regional activities of the Ministry of Labour, Ministry of Trade and Industry and Ministry of Environment, were established 1997. TE-centres were not established because of the SF, but they have an important role in managing Structural Funds and especially RTDI-related funding.

SF activities are mainly managed and co-ordinated by existing organisations. Amongst others the business development initiatives, that typically cover a great part of RTDI funding, are almost entirely financed by organisations under MTI (TE-centres, TEKES and Finnvera). These same organisations also conduct national policy instruments and often Structural Funds are used using the same guidelines as these national funds. The specific objectives of the SF, together with the national business legislation, guide the support to enterprises. It is noticeable though, that most of the SF activities fall under national business support legislation.

There are some interaction between the SF programmes and some Community initiatives. For example Interreg programmes have been seen as important additions in Southern Finland to extend some initiatives to neighbouring Baltic States and Russia. However, more systematic mechanisms to improve synergies could still be developed.

When looking at the SF absorption capacity, it is higher for the Objective 1 programme than for the Objective 2 programme (Exhibit 11). However, the differences are quite modest. One explanation to marginally better capacity in Objective 1 areas is that their activities concentrate more on infrastructure and public sector R&D measures, which are typically larger and easier to form than more private sector activities (especially SMEs) that form a considerable part of the Objective 2 measures.

When looking at the individual codes, there are differences between activities in Objective 1 and Objective 2 regions. Especially measures related to innovation and technology transfer and to establishment of networks and partnerships have a good rate of absorption. However, as a whole the differences between different programmes and between different kinds of measures are marginal and in general the absorption capacity is relatively high.

From the situation so far it can be expected that most of the Structural Fund measures for innovation and knowledge will succeed in spending all the resources at the end of the planning period. In the mid 2005 74% of the SF funding was already allocated. Financial progress has been stronger under the measures which support public sector R&D centres and provision of technology-oriented services to businesses. On the other hand the measures including support for science parks, innovation centres and incubators have been slower than average.

Exhibit 11: absorption capacity of innovation & knowledge measures

OBJECTIVES	ALLOCATED	DISBURSED TOTAL SF	EXPENDITURE CAPACITY
Objective 1	133 793 500,00	72 577 210,50	54,2%
Objective 2	80 836 250,00	38 325 023,69	47,4%

Provided by ISMERI.

CODES	ALLOCATED	DISBURSED	EXPENDITURE CAPACITY
OBJECTIVE 1			
181 - Research projects based in universities and research institutes	23 057 500,00	11 574 869,50	50,2%
182 - Innovation and technology transfers, establishment of networks and partnerships between businesses and/or research	97 423 000,00	54 415 556,50	55,9%
183 - RTDI infrastructure	13 313 000,00	6 586 784,50	49,5%
TOTAL OBJ. 1	**133 793 500,00**	**72 577 210,50**	**54,2%**
OBJECTIVE 2			
181 - Research projects based in universities and research institutes	35 292 850,00	16 691 445,80	47,3%
182 - Innovation and technology transfers, establishment of networks and partnerships between businesses and/or research	34 597 400,00	16 459 769,10	47,6%
183 - RTDI infrastructure	10 946 000,00	5 173 808,80	47,3%
TOTAL OBJ. 2	**80 836 250,00**	**38 325 023,69**	**47,4%**

4.2.2 Effects and added value of Structural Fund support for innovation and knowledge

This section of the report analyses the effects and added value of the Structural Fund interventions in favour of innovation and knowledge during the current programming period. The analysis is based on two main sources, namely: a) available evaluation reports or studies concerning Structural Fund interventions; b) interviews and additional research carried out for this study. Accordingly, this section does not pretend to provide an exhaustive overview of the effects or added value[6] of Structural Fund interventions but rather is based on the examination of a limited number of cases of good practice. These good practice cases can may concern the influence of the Structural Funds on innovation and knowledge economy policies (introduction of new approaches, influence on policy development, etc.), integration of Structural Funds with national policy priorities, promoting innovative approaches to delivery (partnerships), or measures which have had a particularly important impact in terms of boosting innovation potential, jobs and growth.

The main result of SF interventions on innovation and knowledge economy performance in Finland has been the ability to complement the existing national policy measures in specific fields (like support for collaborative R&D) and provide a financial instrument for those regions that have less capabilities to make use of the national funding. This has especially been true in the Objective 1 areas, where the capacity for developing innovations has been lower in terms of infrastructure, services and critical mass. However, inside the Objective areas, funding has mainly

[6] A good definition is "The economic and non-economic benefit derived from conducting interventions at the Community level rather than at the regional and/or national level". See Evaluation of the Added Value and Costs of the European Structural Funds in the UK. December 2003. (Available at : www.dti.gov.uk/europe/structural.html)

concentrated in the biggest regional centres. This is a good result in the sense that funds are concentrated in areas where there is a critical mass and notable organisations like universities but on the other hand this can increase regional disparities and hinder development in more rural areas where the capacity to make use of the RTDI instruments is weaker in the first place.

Overall, the SF measures for RTDI activities have been quite successful in Finland. However in the most notable focus of intervention, i.e. support to creation and growth of innovative enterprises, the measures cannot be seen as having been very successful. With respect to this policy area, there are remarkable differences between the Objective 1 and Objective 2 areas. In Objective 1 areas the number of new enterprises related to SF activities has been much higher both in relative and absolute terms. For example in Eastern Finland Objective 1 area, the number of new enterprises relative to the targets set in the Programme was 106 % in mid 2006 as it was only 27 % in South Finland Objective 2 area. These numbers do not tell, however, how many of the companies were innovating and growing. In total, the number of new enterprises has been declining in Finland. In terms of supporting R&D activities the measures have been quite successful and have enabled an increase in the R&D activities in Programme areas. The measures have also mainly been focused on the key industries. The best measures appeared to have been those that have enabled enterprises and R&D institutions to network with each other and to combine resources.

Finland: Multipolis network

Multipolis Network is a good example of the use of Structural Funds to improve the innovation capacity in the more peripheral regions and to build networks to connect those regions with more successful regional centres. The Network includes 15 concentrations of know-how, called poleis, each having its own area of specialisation. These poleis are mostly in the more peripheral regions of Northern Finland.

Multipolis co-operation promotes broader regional utilisation of the experience gained in developing knowledge intensive companies in Oulu. It also acts as a way to spread the effects of the national innovation policy instruments such as the National Centre of Expertise Programme. This kind of networked set of small dedicated technology centres is a unique idea to overcome the challenges of long distances and small size of the regional concentrations..

Finland: Epanet network

One of the good examples of using Structural Funds to support soft innovation infrastructure in less favoured regions is the Epanet network, a co-operation network of Finnish universities in South Ostrobothnia. The agreement to develop a network was a common expression of the will of six universities and key regional development organisations in order to create serious development and research work in South Ostrobothnia region. The aim has been to establish a network of top institutions of applied research work in the region, activating research projects and allowing the local community of researchers and of development agents to enlarge.

So far the network has been successful and as a model has raised interest both nationally and internationally. The project has been partly funded by Objective 2 and 3 Programmes in association with funding from local and national stakeholders.

At the national level, the most efficient measures in support of RTDI have been those that have helped to promote innovative activities of SMEs in the regions that would not have had enough capabilities or resources to do so. Also a creation of joint efforts to build soft innovation infrastructure (e.g. R&D-centres, innovation networks, development platforms, etc.) in the regions where critical mass is difficult to attain has probably been able to

speed up the rate of innovation. The funds have also been able to support R&D infrastructure and activities in the polytechnics. This has been an important addition to R&D infrastructure especially in the regions, which do not have universities or government R&D laboratories. However, the future challenge lies in consolidating the position and long term vitality of these services and activities especially in the more peripheral regions, where the development of RTDI infrastructure has been considerably dependent on SF funding.

The complementary role of Structural Funds interventions could be further developed in enabling and more experimental initiatives and measures and leave the more established forms of RTDI support for the national policy instruments. This way there would be a better division of roles between the national and community funding and these two would also better complement each other. There is also a need to further develop the availability of financing instruments related to R&D and investments for improved processes. The national instruments are often too slow and rigid and international funding is often difficult to capture.

The increased support for business incubators could also be arguable as they substantially help early stage SMEs in networking and developing business competences that are critical for the development of SMEs. Commercialisation of innovations and marketing are seen as the main problems in Finnish SMEs, even compared to some other countries.

In general there is a need for expansion of support for joint R&D activities of SMEs and R&D institutions as many SMEs lack the capability and expertise to successfully undertake research and project development projects. Also in order to help creating a more diversified industrial structure, more attention should be paid to high growth sectors and sectors that have substantial potential for growth. So far a remarkable share of the funding has gone to existing traditional sectors enterprises.

4.3 Conclusions: Structural Funds interventions in favour of innovation and knowledge

Exhibit 12: Main outcomes of innovation and knowledge measures

Programme or measure	Capability	Added value
Supporting innovation project within firms	Capacity to attract new target groups and beneficiaries and to generate larger investments	Kick-off effect and leverage effect on innovation capacities within enterprises
Supporting innovation networks and collaborative research projects	To increase collaboration of SMEs and link them to training and R&D sources	Leverage effect, critical mass
Developing and promoting new technologies	To make better use of public R&D efforts	To make better use of R&D spending
Support for Centres of Expertise and similar innovation policy measures	To support and organise networking and R&D activities in key sectors	Increased synergy and critical mass for R&D activities, Reinforcement of national priorities
Support for R&D infrastructure	To promote R&D infrastructure and activities in universities and polytechnics	Reinforcement of national priorities focused on improved collaboration between public R&D and private sector

Main source: Structural Funds documents and evaluations.

The key findings coming out from the analysis are related to the challenges that regions are addressing through the Structural Funds. Some regions are trying to consolidate and strengthen what already exists. For example in Objective 1 areas of Eastern Finland and Northern Finland there is a need for improving the operational environment both in terms of research and training institutions and services for businesses in order to improve the gaps in the current innovation environment.

A shared objective in Finnish SPDs is to improve networking and to form networked R&D centres of different kinds. This seems to be a relevant objective as because of the small population density and long distances natural agglomerations are rare and there are difficulties in providing services and getting critical mass for R&D without combining resources. The other common target is to improve the interaction between the enterprises and higher education and R&D institutions in the Objective areas. Although substantial collaboration exists in the bigger centres there is still need to make better use of the extensive network of regional universities and polytechnics that Finland has.

The support for new innovative enterprises is also shared in all SPDs. However, in terms of innovation activities, there are slight differences in emphasis between Objective 1 and Objective 2 programmes. In Objective 2 programmes there is more emphasis on internationalisation of SMEs, sectoral chains, growth businesses and high tech companies whereas in Objective 1 programmes entrepreneurship in general and innovation in SMEs get more emphasis.

5 Regional potential for innovation: a prospective analysis

This section of the report seeks to summarise and draw conclusions from the analysis of the preceding sections, available studies and interviews and focus groups carried out for this study in order to provide an analysis of the regional innovation potential. In doing so, the aim is to provide a framework for orientations in terms of future Structural Fund investments in innovation and knowledge.

5.1 Factors influencing regional innovation potential

All Finnish regions, with the exception of Eastern Finland share the typical characteristics of Nordic High Tech Learning cluster. The strengths of these regions are high business R&D combined with relatively strong public R&D, which gives these regions a strong base for RTDI activities. However, all these regions also share a low score in Urban Services dimension due to the low population density. This reflects the difficulties of building strong enough concentrations for RTDI activities. It is therefore important to support networking of different knowledge centres and to connect smaller knowledge centres to national clusters is necessary.

Most of the R&D expenditure has concentrated on the five biggest city regions of Helsinki and Turku in Southern Finland, Tampere and Jyväskylä in Western Finland and Oulu region in Northern Finland. Most of the high tech services and manufacturing are also concentrated in this area, which means that these regions also have the highest innovation potential. However, the regionally dispersed university networks and polytechnics provide a good basis for knowledge-based economy also in other regions, although typically in the regional centres. There is a need to promote the use of R&D infrastructure especially among SMEs.

Western Finland and Eastern Finland are more concentrated on medium tech industries like machinery and forest industry. The specific challenges for innovation in these fields are to keep the productivity high and to specialise in R&D activities and high tech manufacturing in order to compete against low cost countries. Tourism is especially important for Northern Finland where the nature provides potential for tourism if only service innovations can keep the area competitive.

A specific challenge for several Finnish regions is the future of the dominant ICT sector, especially communication technologies. This is the case as well in Southern Finland as in Northern Finland. The main factor in these regions is the ability to stay in the leading edge of RTDI in the ICT and related industries and the ability generate new high-tech industrial activity in the form of new growth oriented enterprises in the knowledge based industries.

Another more specific factor that influences the regional innovation potential is the ability to promote RTDI activities in the service sector, which is somewhat underdeveloped, compared to industrial production. On the other hand there is great need for public sector innovation in order to improve productivity in welfare services.

Exhibit 13: factors influencing innovation potential by type of region

Region / type of region	Main factors influencing future innovation potential
Peripheral region with small excellence poles: Eastern Finland (Itä-Suomi)	• Catching up learning in management, organisational, technological capabilities and innovation capabilities of SMEs • Raising the technological level of industries • Strengthening potential clusters in the region • Ability to link firms to clusters outside the region • Ability to attract innovative companies • Improving general attractiveness of the region
Peripheral region with a high tech excellence pole: Northern Finland (Pohjois-Suomi)	• Catching up learning in management, organisational, technological capabilities • Improving strategic and innovation capabilities of SMEs • Capacity to find incentives to reverse brain drain and attract human capital • Building local clusters of expertise and use networked mechanisms to build critical mass and spread the innovation potential of Oulu region
Advanced region with leading edge RTDI: Southern Finland (Etelä-Suomi)	• Leading edge S&T to support innovation activity • Successful growth of emerging clusters related to region's knowledge base • Successful specialisation to achieve synergies and international visibility • Ability to attract related FDI • New growth oriented start-ups and spin-offs in knowledge based industries
Industrial region with high-tech manufacturing and S&T potential: Western Finland (Länsi-Suomi)	• Staying leading edge in core technologies capacities • Successful specialisation to achieve synergies and international visibility • Successful restructuring and revitalisation of traditionally strong sectors and the development of clusters in new or related industries or technologies • Attracting cluster-related FDI

5.2 A prospective SWOT appraisal of regional innovation potential

The analysis of this section is based on an overall appraisal of innovation potential of the Finnish regions so far. The SWOT matrices aim at pointing out what are the major strengths, weaknesses, opportunities and threats in terms of innovation and knowledge in each group of regions.

Exhibit 14: Innovation and Knowledge SWOT

Eastern Finland (Itä-Suomi)	Opportunities	Threats
Strengths	Some industrial concentrations that have a possibility to succeed in global markets in specific market segments	Potential for diversifying the S&T base through strengthening emerging S&T concentrations
Weaknesses	Potential for developing high-tech manufacturing and turning research into business	Areas outside the pole have difficulties in attracting skilled workers and enterprises. There are difficulties in attracting people and resources outside the region.

Northern Finland (Pohjois-Suomi)	Opportunities	Threats
Strengths	Presence of one excellence pole is a comparative advantage that needs to be nurtured. Scarcity of resources calls for rationalisation and concentration.	The pole may not be strong enough to drag along the rest of the region High dependency of one dominant sector (ICT).
Weaknesses	Areas outside pole may draw upon poles' value chain. Services sector (especially tourism) can be further developed with innovative approach and specialisation	Areas outside the pole have difficulties in attracting skilled workers and enterprises. Local and regional human resources are used at full capacity and there are difficulties in attracting people and resources from outside the region.

Southern Finland (Etelä-Suomi	Opportunities	Threats
Strengths	High scientific and technological potential in a few strong and many new high tech fields	Good potential is somewhat challenged by the problems in attracting FDI and international top level human capital
Weaknesses	Good opportunities in emerging sectors but the concentrations are rather small	Shortage of highly skilled human capital might become a bottleneck

Western Finland (Länsi-Suomi)	Opportunities	Threats
Strengths	Good potential for building on existing industry and strengthening S&T base	Potential for diversifying the S&T base through strengthening the emerging fields
Weaknesses	Potential for going more high tech and have faster growing technology areas	Relatively low attractiveness internationally

5.3 Conclusions: regional innovation potential

Policy headline 4: A mixed potential in the peripheral region with excellence poles: Eastern Finland (Itä-Suomi)

- This region has a few small excellence poles with good potential for innovation in specific fields. However, the rather weak industrial structure provides little help for innovation activities. Particular attention should be devoted to regions outside these poles, where sparse population, net-migration and ageing raise specific challenges for supporting the centres with human resources and subcontractors.

Policy headline 3: A mixed potential in the peripheral region with a high tech excellence pole: Northern Finland

- The presence of the strong excellence pole provides a base for innovation for competing globally in selected high-tech fields. The specific challenges are how to diffuse knowledge to a sparsely populated periphery and how to build critical mass for innovation activities to take place.

Policy headline 1: High innovation potential for an advanced region with leading edge RTDI: Southern Finland

- This region is well equipped and a very high performing region. This stems especially from the capital region Helsinki, which has a strong research base and industry R&D activity, a significant part of which is in ICT and Biotech sectors. Specific efforts are needed in order to strengthen the R&D base in key areas to international leading edge and making the region more internationally attractive in order to attract foreign investments and human capital.

Policy headline 2: Good innovation potential in an industrial region with high-tech manufacturing and S&T potential: Western Finland

- This region covers mostly rural areas with a few medium sized regional excellence poles. The region has a strong manufacturing base with a significant size of medium-to-high tech manufacturing. The few excellence poles with manufacturing companies have a good potential for innovation especially for medium tech but there is further need to strengthen public sector R&D activities and the innovation potential in the areas outside the centres.

6 Future priorities for Structural Fund support for innovation and knowledge: options for intervention

Based on the analysis the priorities for 2007-2013 should be on developing a working innovation environment with supporting the development of R&D organisations, related intermediaries and the development innovation networks between research and education sector and enterprises (especially SMEs). For regions with less developed innovation environments the emphasis should be on building capabilities of organisations and networks in order for them to facilitate the capacity of enterprises to innovate and to be able to network with knowledge centres in more developed regions nationally and internationally. For regions with more developed innovation environments the emphasis should be in making the existing innovation support infrastructure more effective in facilitating innovation activities especially in SMEs and to develop networking.

With a sparsely inhabited country like Finland there is also a need to focus on key industry clusters and key knowledge centres by concentrating resources and by supporting networking. However, there is a need to move the focus from technological innovation to also supporting market based and social innovations and the capabilities of enterprises to commercialise the results of innovation activities. In general there is a need for a more proactive approach in terms of supporting innovation in SMEs as these typically lack resources and capabilities to start innovation activities or even to systematically analyse the possibilities of innovation. This is especially true in the services industries, which should be one specific focus area in the next programming period.

The latest draft of the national strategy for regional and structural development 2007-2013 shares most of these conclusions, particularly the need to support key industries or clusters and the need to pay special attention to the services sector. The national strategy also pays a lot of attention to business operation skills and the ability to commercialise successful innovations in SMEs. Also the need to network SMEs in innovation activities and also the need to network more peripheral regions to more advanced centres through regional knowledge centres and intermediaries has also been emphasised.

However, there is very little to be seen of the linkages with other Community instruments like the 7th RTD Framework Programme and the Competitiveness and Innovation Programme. SF activities do converge with these instruments in some ways but not systematically. On the other hand, this does not seem to be a problem as SF programmes are typically targeted for different audience than, for example, RTD Framework Programmes. The former emphasise more in providing support and developing capabilities in organisations and regions that do not yet have the capacity to national or FP instruments targeted for the more top notch RTDI activities. In this way, there is a kind of division of between different instruments (SF programmes, national instruments and the RTD Framework programmes).

In the future, there is particularly a need to direct more resources to innovation support services and intermediaries at the regional level in order to help the SMEs to

launch innovation activities and develop their capabilities to improve their operations. This requires specific activities in terms of services, personalised assistance and training but also infrastructure such as equipment, testing facilities and support for networking SMEs with R&D institutions such as polytechnics.

When looking at the focus of measures supporting RTDI and knowledge based economy there is in most cases little need to differentiate the objectives territorially. The need to build support system for SMEs and to improve networking is the same in the whole country. However, in less favoured regions such as Eastern and Northern Finland and in regions suffering from structural change there is more need to invest in basic innovation support infrastructure as it is not as developed as in the larger cities. It is also advisable to allocate some of the funding for interregional and international activities as there is a specific need to link the less developed regions to services and sources of knowledge in more developed areas in Finland and abroad. Especially in innovation support infrastructure and RTDI it is important to pay attention to these linkages as in many less developed regions there are not enough resources or capabilities to do everything by themselves.

In order to get the best combination of measures to enhance R&D capacities and make an optimal use of existing potential it is recommendable to concentrate SF activities in the regions and organisations with less capability to work with the existing national and European innovation policy instruments. In Finland there is a comprehensive mix of national innovation policy instruments available with a lot of resources allocated to them. However, most of these serve better and are more easily approached by technology intensive enterprises and bigger enterprises with more resources and experience and also experienced university research groups. Therefore SF can supplement these measures by paying specific attention to those organisations with need for developing basic capabilities for innovation and working in areas where the regional innovation environment is less developed.

In order to promote technology transfer and better co-operation between universities, research centres and business (particularly SMEs) there is a need to support networking and especially to move to a more proactive approach to SMEs. External help is of utmost importance for many SMEs to build up their knowledge based economy and more specifically to gain new knowledge. However, SMEs typically lack knowledge, capabilities and resources to approach intermediaries not to speak of R&D organisations. Building bridges between SMEs and universities, polytechnics and research centres need specific support for intermediaries working between the two. Especially the expertise of intermediaries should be improved for them to address the needs of SMEs and in order to work successfully in between.

The financial instruments are considered to work generally quite well in Finland although there are differences of opinion on the functioning of different parts of financing. For example in seed capital funding many improvements has been made but there is no consensus at the moment if the financing instruments for start-up companies work sufficiently. As a result, many new financing instruments are considered in the national context. However, at the same time there have been expressions of a need to concentrate financial resources under fewer instruments and service providers. There are also discussions at the moment for the right balance between RTDI funding and investment support. There appears to have been shortage

of the latter especially in Southern and Western Finland, which may have partly impeded the use of the former also. At the operational level there is also need to decrease the amount of administrative duties required from SMEs related to the use of financial instruments. It is also to be noted that the new networked cluster approach taken up by the reform in national innovation policy instruments will affect also the financial instruments and this should be taken into consideration also when SF measures are planned.

There is also a need to accept the role of regional centres as the hubs for innovative activities, innovation support services and knowledge in the future. The existing policy of excluding many central cities has made it more difficult to initiate RTDI related activities as most of the knowledge and service providers have existed outside the supported regions. Although the main target of SF activities should be in the less developed regions it should be accepted that for successful RTDI activities these areas often have to be linked with organisations in the more successful centres as knowledge usually tends to concentrate in these centres.

The optimal management structures in terms of innovation and knowledge in SF should be organised by incorporating the innovation approach into the existing regional planning mechanisms. However, co-ordination between all relevant levels from regions to national innovation policy should be further developed. This is particularly important for the 2007-2103 programming period as the national system of innovation (e.g. The National Centre of Expertise Programme) is under change and these changes should also be taken into account in the management of SF activities.

Finally, although the development needs and also the amount of funding (Northern and Eastern Finland are about to receive additional support) differ between different regions, the need to divide the country into four different ERDF-programmes is somewhat questionable. In the end, the basic public research infrastructure is quite developed all over the country and the main differences in RTDI capabilities are, if anything, between the bigger centres and the rest of the country. Moreover, the specific needs of SMEs in terms of innovation and knowledge do not differ that much between different parts of the country. The proposed divisions of funding can potentially only complicate interaction between organisations working in different regions. The objective definitions in the National Strategic Reference Framework are also quite general and more could have somewhat more focus.

Overall, the general national framework and the reflections of national authorities are quite well in line with the conclusions presented in this evaluation. On the other hand the national framework is quite general in guiding the regional programming work and at the moment of writing this document there was little information on the regional draft programmes available.

6.1 Strategic orientations for Structural Fund investments in innovation and knowledge

Key conclusion 1: Sufficient critical mass is a challenge for key technological fields

In order to collect enough critical mass for innovation activities in a small country like Finland more national clusters need to be developed. Individual poles do not in many cases have sufficient critical mass on their own: Therefore, networking and combining the capabilities of several regional centres should be pursued. This would require more funding combining national funding with SF funding where appropriate to cover several poles of excellence in different regions.

Recommendation 1: The linkages to national clusters should be supported at various levels

Horizontal actions supporting the development of networked clusters of expertise could be supported partly by SF especially in the less favoured regions to supplement national funding in other areas. Specific funding could be directing in further elaboration and implementation of successful models to other regions and for initiatives that help less favoured regions to network with expert organisations in larger centres. These could be, for example, more elaborated versions of initiatives like Multipolis model (networked technology centre activities with local specialisations) in northern Finland and Epanet-model (for increased research and technology transfer) in Southern Ostrobothnia. SF activities should also be more closely targeted with relevant national programmes like the Regional Centre Programme. All these actions require more coordination between regions allocating SF funding and the national level actors responsible for planning and implementing cluster activities.

Key conclusion 2: Public sector and service innovations are under-emphasised

Particularly the regions that have been Objective 1 areas during the period 2000-2006 (Eastern Finland and Northern Finland) are sparsely populated areas with ageing population. These areas face specific challenges in the future for providing both innovation support services and public welfare services in general. There is a need to provide more public services with fewer resources in the future in order to maintain the minimum requirements of the welfare society. The same applies to innovation support services as intermediaries of different kinds have to cover a geographically dispersed clientele. There is also a need to support service sector innovations in general. The statistical data show that the service sector is somewhat underdeveloped in Finland compared to many other developed countries and the productivity of the services (with some exceptions like financing and telecommunications) is not as good as it could be.

Recommendation 2: Support for service innovations, public sector innovations and third sector innovations

More attention should be paid to the training of public sector employees with new management techniques, use of ICT, developing new service concepts, outsourcing services, spin-offs etc. This is a countrywide topic, but especially important in more sparsely populated areas, where there are greater challenges in providing both public and private services to the population. Supporting projects related to new service concepts in welfare services should be promoted. In this sector different kind of pilot

projects for new service models should be supported to test the "public value" of the new innovative service models. Good practices and pilot projects for new service models should also be diffused to other regions through development projects that facilitate implementation of this models and concepts. All services in general should be emphasised in the priority level of the development plans. Projects aimed at developing e-learning, e-governance and e-services should be supported, as well as projects supporting new innovations in the service industry.

Key conclusion 3: Current system for SF programmes does not sufficiently take into account uncertainty and risks typical to innovative ideas and measures

The current system with exact objectives in the application stage favours projects and measures with little uncertainty and unexpected results, which are typical aspects of innovation processes. For example projects related to knowledge based society are typically much more uncertain by nature than those focused on infrastructure. Programmes and their objectives are often interpreted more as a regulation than a guideline, which makes the SF programmes sometimes too rigid when new cases and unexpected situations arise after the programme has been started. This is a horizontal challenge that holds true for all regions.

Recommendation 3: More flexible and risk tolerant practices in the implementation of SF measures

The measures related to RTDI should better take into account the uncertain and risky nature of RTDI and measures that target the capabilities to operate in the knowledge based society. The SF programmes should also be more flexible in terms of changes in the innovation environment and leave more room for emerging initiatives. One good model would be to emphasize the kind of activities previously supported by the ERDF Innovative Actions Programme. These practices could be assisted by putting more emphasis to good ideas than "perfect applications" in the selection process. There could also be assistance of improving applications for those organisations that are less adept in generating good applications. There should also be a more flexible practice of making the changes in allocation of funding between different priorities to make it easier to direct funding for the most promising actions.

Key conclusion 4: Current (national) innovation policy instruments favour established organisations, technologies and ways of action

The current competitive funding mechanisms favour existing organisations with experience of RTDI projects and the innovation/regional policy instruments. These are typically larger enterprises, universities, polytechnics and other R&D organisations. New organisations and emerging ideas will often lose in these kinds of situations, for example in TEKES and Academy of Finland funding schemes. Innovations also often emerge outside the traditional organisations and the mechanisms for new innovations to emerge are also more varied.

Recommendation 4: More flexible and risk tolerant practices in the implementation of SF measures

SF measures should also take into consideration new and emerging organisations, networks and approaches to innovation activities that the current innovation policy instruments pay less attention to. These include many SMEs, new intermediaries and service organisations, third sector organisations etc.

6.2 Operational guidelines to maximising effectiveness of Structural Fund interventions for innovation and knowledge

Key conclusion 5: The current governance model based on consensus building meets new challenges in globalisation and increasing role of innovation

Specific challenges related to pressures put by globalisation forces and the increasing importance of innovation and learning require stronger collaboration between the Ministry of Interior responsible for regional policy (including ERDF) and other key ministries related to regional development and innovation, Ministry of Trade and Industry (Innovation system), Ministry of Education (Higher Education), Ministry of Labour (Training, ESF) and the Ministry of Transport and Communications. Also the changes in the administration of SF in Finland have made governance issues more complex. This applies also to regional level. Despite improvements there are still a lot of areas with interaction based rather on sectoral than regional approach to innovation environment.

Recommendation 5: There is a need for more horizontal collaboration and co-ordination between regional policy actors with actors responsible for other policy fields, such as innovation policy

Building stronger formal co-ordination between the ministries related to regional and innovation policy issues. The extreme option would be to concentrate regional development activities and the administration of structural funds under one organisation both nationally and regionally. However, if this is not possible, the governance should be better formally co-ordinated in several levels. In the strategic level, SF activities could be tied more closely to the inter-sectoral policy programmes of the Finnish Government. At the ministry level more active joint committees should be established to co-ordinate planning and administration of SF. This is especially important as some ministries (Ministry of Labour and Ministry of Agriculture and Forestry) have concentrated more and more SF administration to national level. At regional level a cross-sectoral a co-operative body should be established to govern and monitoring of SF development activities. This body should be more active than the present secretariats of the Regional Management Committees.

Key conclusion 6: A combination of bottom-up and top-down funding is needed

The programming model 2000-2006 where the planning and implementation of measures take place at the regional level does not take flexibly into account measures that need inter-regional and/or national coordination. These can be for example programmes related to enhance national "clusters of expertise" and networking between firms, research institutions and intermediaries.

Recommendation 6: A mix of regionally allocated and horizontally allocated funding

From almost purely region-based bottom-up funding (in ERDF) there should be a move to a mix of regional funding and national "horizontal" funding that could be put to larger measures covering several regions. However, these activities should be planned in collaboration with local and regional stakeholders.

Key conclusion 7: A comprehensive approach for supporting innovation activity in SMEs

During the previous programming period different activities trying to improve innovative activities in SMEs have been dispersed in several projects and often required active action from the SMEs to approach the funding bodies (e.g. TE-Centres). This has caused a situation where SMEs have been participating with several individual projects covering different bits and pieces with few possibilities for coordination and a tedious and time consuming administration.

Recommendation 7: Comprehensive project portfolios for SMEs

SF-funded innovation support measures (e.g. training, R&D, networking and financing) should be organised as services provided by intermediaries so that they can take a look at all of the needs of SMEs in a coordinated and experienced way and offer different services as a comprehensive package that cover the innovation process as a whole. Regional expert organisations which know the SMEs (e.g. economic development agencies and science parks) could be strengthened to provide these kinds of services. Enterprise funding could therefore come from the services they buy from the projects rather than participating in the projects.

Key conclusion 8: A need for better selectivity in targeting measures and improving the capacity of SMEs for innovation and global competition

Increasing attention should be put to absorptive capacity and entrepreneurial culture and growth orientation. Especially SMEs in many of the less favoured regions suffer from pressure of not to grow as the dominant culture is risk averse. There is also a lack of capacity to carry out innovative actions and especially with business operations.

Recommendation 8: Dedicated measures to identify and target SMEs with innovation and growth potential

Dedicated measures to comb the regions for people and SMEs with real interest and capacity to innovate and grow. Support for a more proactive approach to support in innovation, internationalisation and building of capabilities in SMEs. This can, for instance, include personal business support (e.g. mentors or technology agents) to help SMEs to increase innovation activities in the daily activities. Instead of offering SF-supported services and projects more proactive measures are needed.

Exhibit 15: Summary of recommendations on investment priorities

Region or group of regions	Strategic focus	Priority measures	Indicative financial resources
• Peripheral region with small excellence poles: Eastern Finland (Itä-Suomi)	• Building capabilities and organisational infrastructure for innovation activities and developing capabilities to operate in the knowledge based society • Raising the capabilities of local knowledge centres to enter global competition and to act as channels of knowledge from elsewhere	• Supporting and developing operational preconditions for existing organisations in the innovation system (universities, polytechnics, intermediaries, innovative enterprises) • Promoting service and public sector innovations • Support for the development of new technology fields and potential growth clusters • Building connections to other knowledge centres nationally and internationally	RTDI expenditures as % of regional allocations from 2000-2006: 13.2% (12.29 MEUR per year) RTDI expenditures 2007-2013: max. 15 % of ROP
• Peripheral region with a high tech excellence pole: Northern Finland (Pohjois-Suomi)	• Building capabilities and organisational infrastructure for innovation activities and developing capabilities to operate in the knowledge based society • Raising the capabilities of smaller and more peripheral knowledge centres	• Building connections from smaller centres to local innovation pole and other knowledge centres nationally and internationally • Further development and solidifying the position of innovation infrastructure in smaller centres • Promoting service and public sector innovations	RTDI expenditures as % of regional allocations from 2000-2006: 14.2% (6.82 MEUR per year) RTDI expenditures 2007-2013: max. 15 % of ROP

• Advanced region with leading edge RTDI: Southern Finland (Etelä-Suomi)	• Building capabilities for international competitiveness and visibility • Strengthening the innovation infrastructure for emerging and growing high tech sectors	• Building networks between smaller centres and innovation poles • Promoting service and public sector innovations • Support networked RTDI activities between SMEs and RTDI institutions	RTDI expenditures as % of regional allocations from 2000-2006: 16.0% (5.20 MEUR per year) RTDI expenditures 2007-2013: max. 20 % of ROP
• Industrial region with high-tech manufacturing and S&T potential: Western Finland (Länsi-Suomi)	• Building capabilities for international competitiveness and visibility. • Improved capitalisation and co-ordination of the existing innovation support infrastructure.	• Support for regional centres of expertise, universities and polytechnics should be further developed • Promoting service and public sector innovations • Support networked R&D activities between SMEs and R&D institutions	RTDI expenditures as % of regional allocations from 2000-2006: 15.0% (6.35 MEUR per year) RTDI expenditures 2007-2013: max. 20 % of ROP

Appendix A Methodological annex

A.1 Quantitative analysis of key knowledge economy indicators

A 1.1 Factor analysis

In order to analyse and describe the knowledge economies at regional level in the EU, the approach adopted was to reduce and condense all relevant statistical information available for a majority of regions. The approach involved firstly reducing the information from a list of selected variables (Table 1) into a small number of factors by means of factor analysis.

Table 1. Reduction of the dataset (215 EU-25 regions) into four factors by means of factor analysis

	The 4 factors			
	F1 'Public Knowledge'	F2 'Urban Services'	F3 'Private Technology'	F4 'Learning Families'
Higher education (HRSTE), 2003	**.839**	.151	.190	.184
Knowledge workers (HRSTC, core), 2003	**.831**	.164	.267	.327
High-tech services employment, 2003	**.575**	.367	.428	.323
Public R&D expenditures (HERD+GOVERD), 2002	**.543**	.431	.275	-.195
Value-added share services, 2002	.323	**.869**	.002	.121
Value-added share industry, 2002	-.265	**-.814**	.386	-.061
Employment government administration, 2003	-.217	**.745**	.124	-.175
Population density, 2002	.380	**.402**	.043	.038
High and Medium/high-tech manufacturing employment, 2003	-.073	-.331	**.873**	-.089
Value-added share agriculture, 2002	-.222	-.350	**-.672**	-.198
Business R&D expenditures, 2002	.335	-.050	**.664**	.267
S&T workers (HRSTO, occupation), 2003	.560	.178	**.589**	.382
Population share under 10 years of age, 2001	-.237	.060	-.015	**.868**
Life-long learning, 2003	.472	-.009	.165	**.703**
Activity rate females, 2003	.418	-.227	.281	**.620**

Note: Principal Component Analysis. Rotation Method: Equamax with Kaiser Normalization, a Rotation converged in 9 iterations. Main factor loadings are highlighted in bold. Source: MERIT, based on Eurostat data, mostly referring to 2002 or 2003

Based on the variable with the highest factor loadings we can characterise and interpret the four factors and give them a short symbolic name:

Public Knowledge (F1)

Human resources in Science and Technology (education as well as core) combined with public R&D expenditures and employment in knowledge intensive services is the most important or common factor hidden in the dataset. The most important variables in Public Knowledge are the education and human resource variables (HR S&T education and core). Cities with large universities will rank high on this factor.

One interesting conclusion is that public and private knowledge are two different factors (F1 and F3 respectively), which for instance has implications for policy issues regarding Science-Industry linkages. Public R&D and higher education seems especially related to high-tech services, whereas Business R&D especially serves high- and medium-high-tech manufacturing.

Urban Services (F2)

This second factor contains information on the structure of the economy. It is well known that industrial economies are quite different from services based economies. It is not a matter of development per se, because in the European regions the variety of economic structure is very large and for a large part based on endowments and path dependent developments like the extent to which government administration is located in a region or not. This factor takes into account the differences between an industrial area and a service based area including the public administration services of the government. Another observation is that there are two different 'urban' factors, indicating that academic centres not necessary co-locate with administration centres. What may not be surprising is that the Urban Services factor is not associated with R&D, since R&D is more relevant for innovation in manufacturing than for service industries.

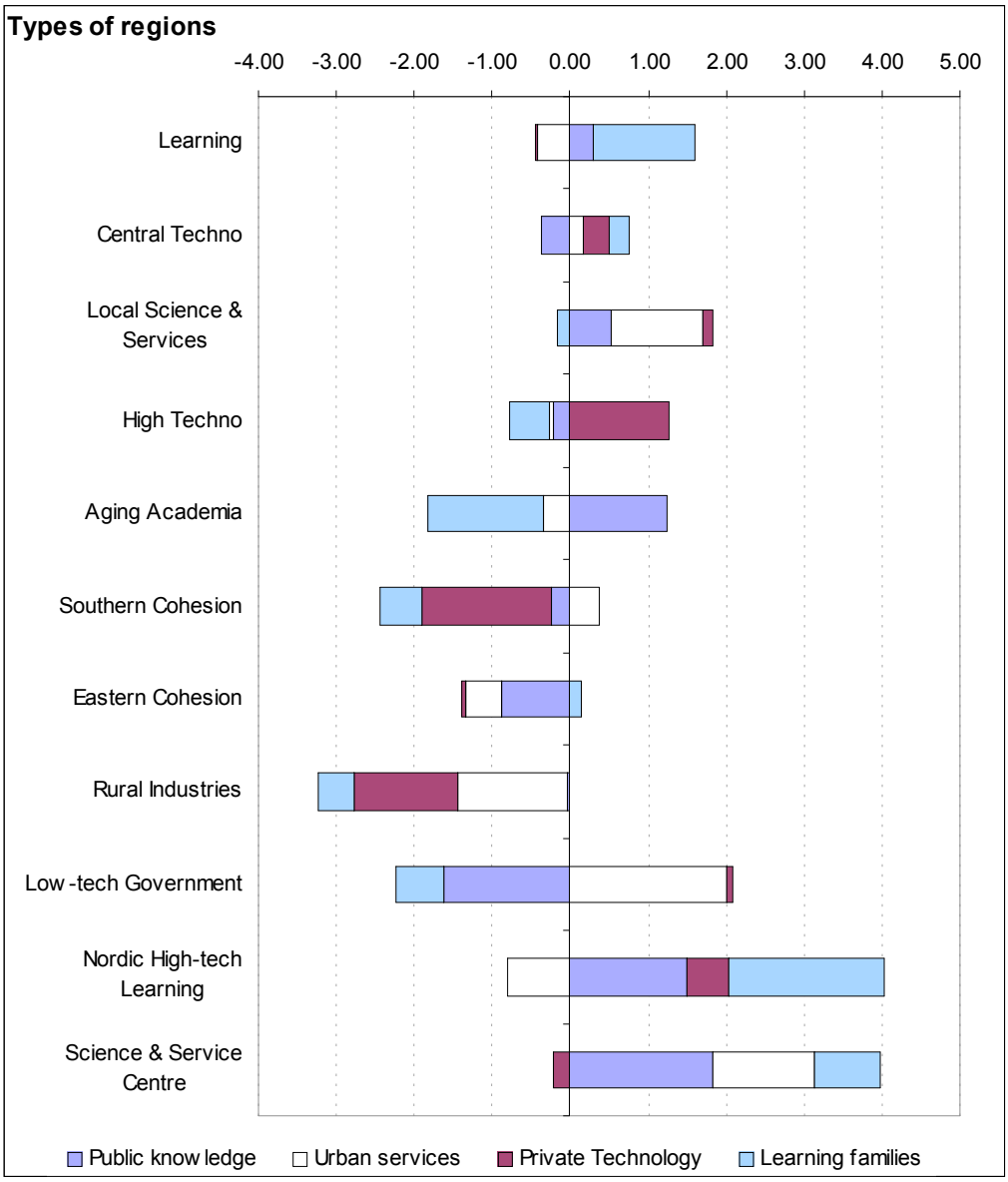
Private Technology (F3)

This factor contains business R&D, occupation in S&T activities, and employment in high- and medium-high-tech manufacturing industries. A countervailing power is the existence of agriculture in the region. One interpretation could be that agricultural land-use goes at the cost of possibilities of production sites. Another interpretation is that agriculture is not an R&D intensive sector.

Learning Families (F4)

The most important variable in this factor is the share of the population below the age of 10. Locations with relatively larges shares of children are places that are attractive to start a family. Possibilities for Life Long Learning in a region seems associated with the lively labour participation of the mothers of these youngsters. The Learning Families factor could also be interpreted as an institutional factor indicating a child-, learning- and participation- friendly environment, or even a 'knowledge-society-life-style' based on behavioural norms and values that are beneficial to a knowledge economy.

A 1.2 Description of the 11 types of EU regions



1 Learning

The Learning regions are first of all characterised by the high score on the factor 'Learning Families', and the three main components of this factor: life-long-learning, youth and female activity rate. On the other factors the regions are close to the regional average. Unemployment is on average the lowest compared to the other EU regions. Employment in the government sector is limited. GDP per capita is rather high. The regions are located in Austria, Ireland, the Netherlands, Sweden and the UK. There are many similarities with the Nordic High-tech Learning regions, but the business sector in the Nordic version invests more in R&D.

2 Central Techno

This is a rather large group of regions located mostly in Germany and France with close to average characteristic, but the share of High-tech manufacturing is rather

high. The factor-scores as well as GDP-per head is slightly above the regional average, except for the Public Knowledge factor which is slightly lower.

3 Local Science & Services
This group of regions with diverse nationality consists mainly of capital cities, such as Madrid, Warsaw, Lisbon, Budapest and Athens. These urban area's serve as national centres for business services, government administration, public research institutes and universities. Urban Services and Public knowledge are therefore the strongest factors for this type of region. GDP per capita is on average slightly below the EU25 average, but growing. The low score on life-long-learning is a weakness in most Local Science & Services regions, especially compared to the more wealthy and advanced Science & Service Centres.

4 High Techno
The High Techno regions host many high-tech manufacturing industries. They are mostly located in Germany (e.g. Bayern and Baden-Wurtemberg), some in Italy (e.g. Lombardia and Veneto) and two French regions. This type is very strong in Private Technology and has a high level of GDP per capita. The factors Public Knowledge and especially the Learning Family factor shows a relative weakness, e.g. in life-long-learning. Growth in terms of GDP per capita has been low and unemployment didn't improve much in the previous years.

5 Aging Academia
This group of regions is mostly located in east-Germany and Spain and also includes the capital regions of Bulgaria and Romania. The strength in the Public Knowledge factor is mostly based on the high share of people with tertiary education. The low score on the Learning Family factor is due to little life-long-learning and hosting relatively few children. The unemployment situation has improved, but is still very high.

6 Services Cohesion
Services cohesion regions are located in Southern Europe, consisting of many Greek, some Spanish and two Portuguese regions. The low score on the Private Technology factor is striking. There is hardly any neither high-tech manufacturing nor business R&D. Services is the most important sector, but also agriculture is still a rather large sector. The share of manufacturing industry in value added is very limited. Population density is low, but on average it has been increasing.

7 Manufacturing Cohesion
Manufacturing industries is the dominant sector, whereas services and agriculture are rather small sectors. This type of region is mostly located in Poland, Czech Republic, Hungary and Slovak Republic. Two Portuguese regions are also included. The Public Knowledge factor is the main weakness of this type of regions. However, the score on the Private Technology factor is close to average, which means that it is much stronger in this respect than the Services Cohesion regions. Unemployment is high, even compared to Rural Industries and Services Cohesion regions.

8 Rural Industries
Besides a low per capita GDP, Rural Industries regions have in common a low score on both the factors Urban Services and Private Technology. Population density is

very low. The service sector is often very small. Especially agriculture but also manufacturing industries are relatively large sectors. Besides regions in Bulgaria and Romania

9 Low-tech Government
This type of region, mostly located in southern Italy is characterised by a very low score on Public Knowledge combined with a high share of employment in the Government sector. Unemployment is severe, on average comparable to Manufacturing cohesion regions. GDP per capita is however close to the regional average.

10 Nordic High-tech Learning
The Nordic version of the learning regions are typically strong in the Learning Family factor, but this type also has by far the highest business R&D intensity. In contrast with the popular characterisation of Nordic societies, the size of the government administration is the lowest of all the types. The low score on Urban Services is also due to the low population density. A rather unique feature of this type of regional knowledge economy is the combined strength in both the Public Knowledge and the Private Technology factor.

11 Science & Service Centre
The main characteristics of this urban group of regions are the high scores on the Public Knowledge and Urban Services factors. Population density is very high. This type also has the highest GDP per capita and productivity. The variables that are captured by the factor Learning Families also show a score above the regional average, but disappointing is the relatively low presence of high and medium-high-tech manufacturing and the business R&D intensity.

A.2 Qualitative analysis and preparation of country reports

In summary, the country reports were prepared in the following stages:

A first country document was prepared by the core study team in the form of a **template country report**. It contained overall guidance to the country experts and included a number of pre-filled tables, graphs and analysis sections based on information available at EU level.

Next, the core team members and the national experts who were involved in the pilot phase of the project commented completed elements of the templates. Drafted elements and templates were completed and compiled into **first country briefings (draft pilot reports)** by the national experts involved in the pilot phase of the project. These pilot country reports were prepared by experts for Belgium, Greece, Italy, France, and Poland.

Once the five first country briefings were completed, a **final set of guidelines** was prepared by the core team. These guidelines were agreed with the Commission services responsible for this evaluation. Prior to this, all first country briefings were reviewed during the January 2006 and presented to a first meeting of the scientific committee.

The work during the **country analysis phase** included:
Undertaking a series of key interviews (KI) with policy decision makers;
Organising a focus group (FG) with key national or regional RDTI stakeholders;
Collecting additional information and finalising short case studies; and
Preparing the synthesis notes of these various activities.

The above-mentioned work served as qualitative data and allowed the national experts to compile the draft **country reports**. All reports were subsequently reviewed, checked and finalised by the core team and the consortium members. Once this first check was completed, the core team organised a final peer reading of the document to verify its overall consistency and to ensure a final English language editing of the document. The core team then completed the final editing and layout of the document with a view to publication.

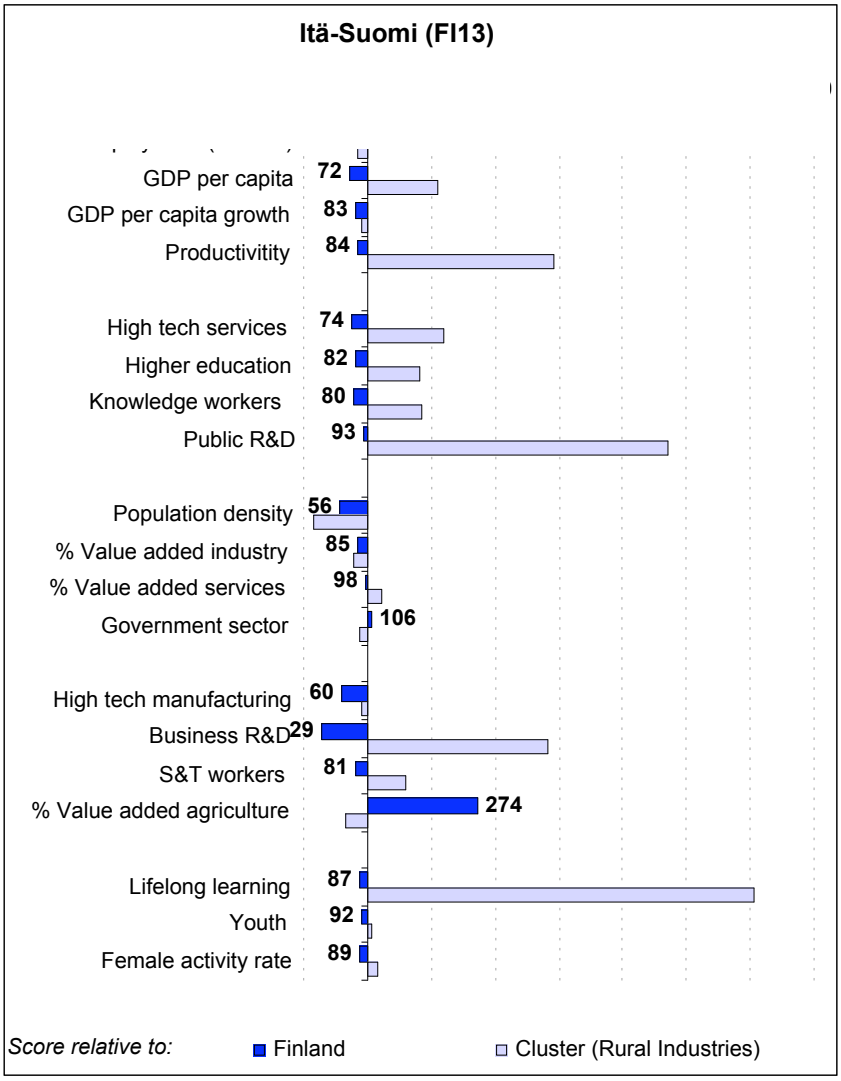
An overall synthesis report of all has been prepared and will be published by the European Commission providing an overview of the issues addressed in each of the 27 country reports produced by the evaluation team.

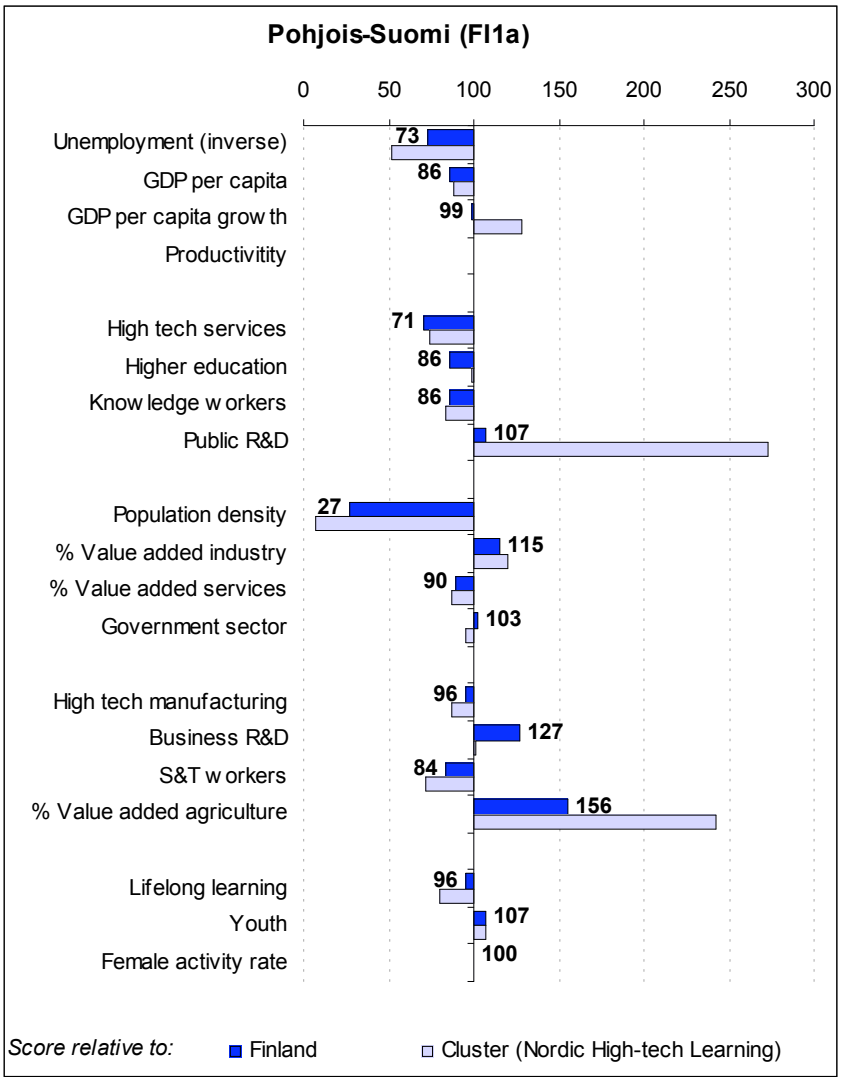
Appendix B Statistical tables and regional scorecards

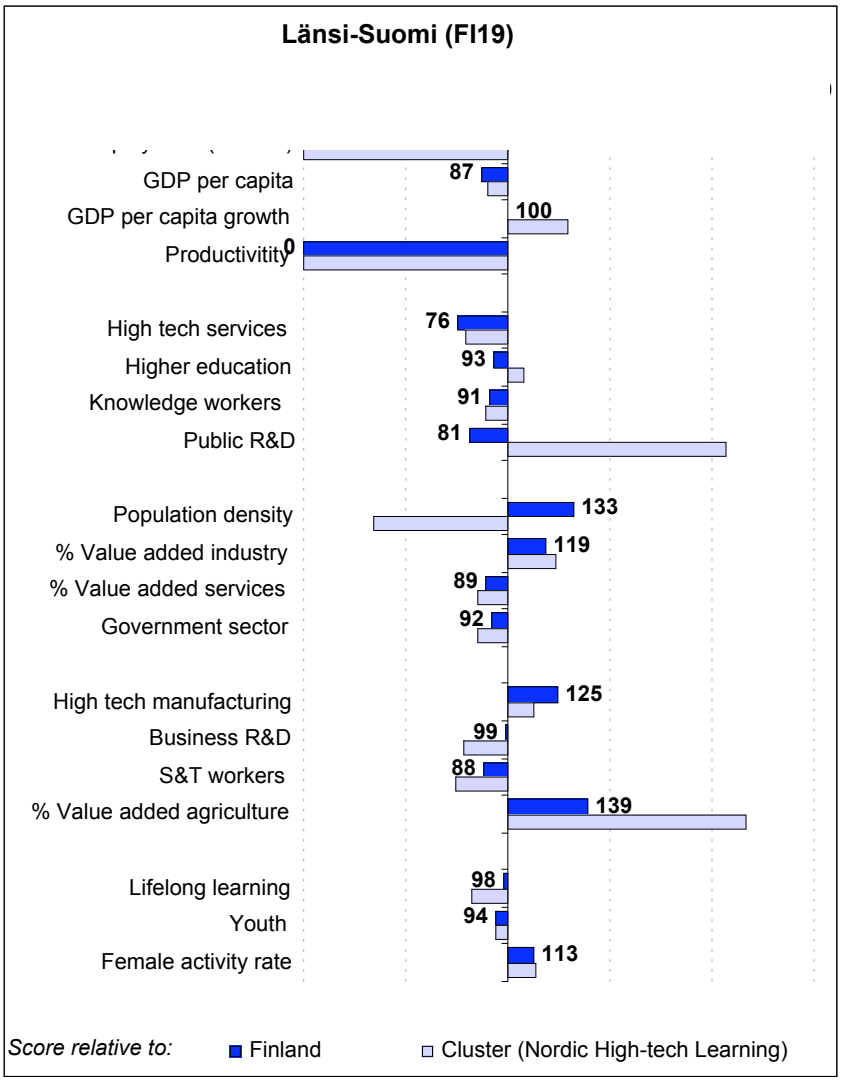
B.1 Overall quantitative analysis per region

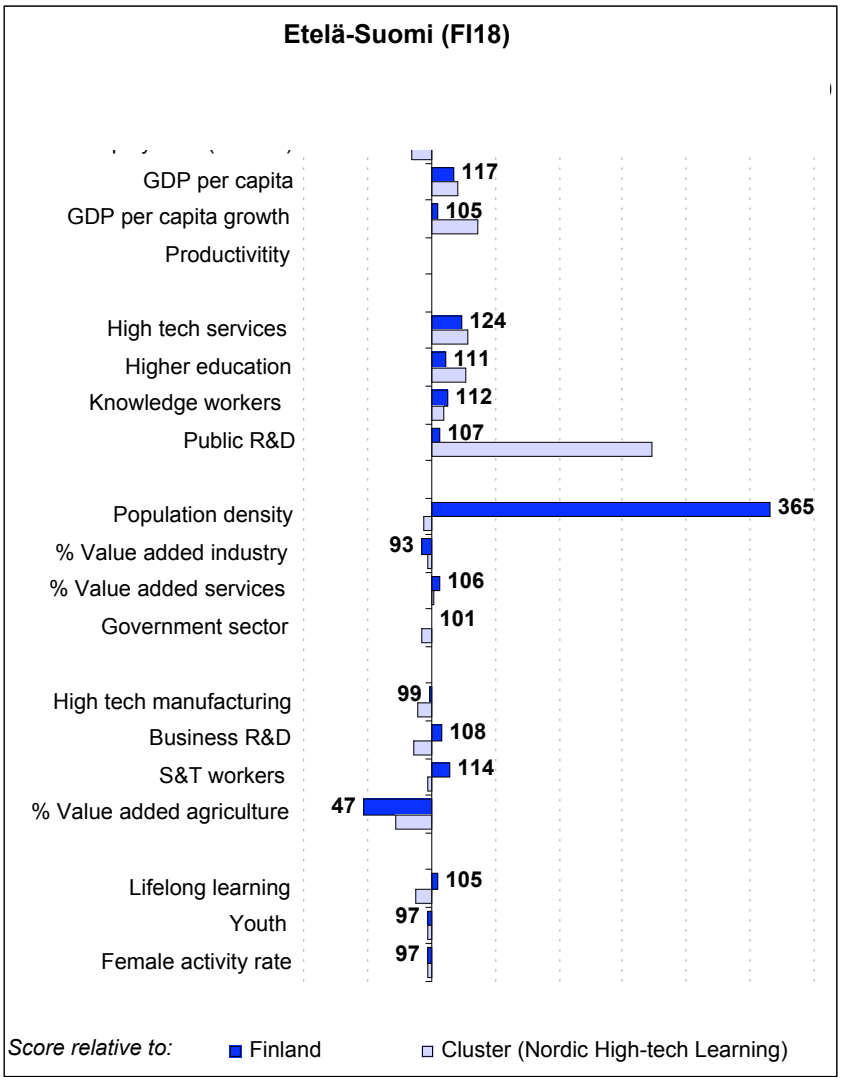
			Economic performance				Public knowledge				Urban services				Private technology				Learning families		
		Cluster	Unemp.	GDP/ capita	GDP/ capita growth 1996-	Produc- tivity	High tech serv.	Higher educ.	Knowl. workers	Public R&D	Pop. density	% VA ind.	% VA serv.	Gov. sector	High tech man.	Bus. R&D	S&T workers	% VA agri.	Lifel. Learn.	Youth	Female Activ. rate
			2003	2002	2002	2002	2003	2003	2003	2002	2002	2002	2002	2003	2003	2002	2003	2002	2003	2001	2003
EU25			9,2	21170	4,8	4556	3,2	20,7	11,6	0,69	117	27,0	70,9	7,5	6,6	1,24	20,7	2,1	8,7	10,8	48,3
Regional average			9,4	18882	4,8	3914	2,8	18,9	10,7	0,49	294	28,9	66,6	7,6	6,5	0,80	19,5	4,3	7,1	10,5	47,2
Finland	FI		9,0	24090	6,0	5240	4,7	32,8	18,2	1,05	17	31,1	65,4	5,0	6,9	2,41	25,6	3,5	21,0	11,8	58,5
Relative to EU25			102	114	127	115	147	159	156	152	15	115	92	66	104	194	124	169	240	109	121
Itä-Suomi	FI13	8	12,3	17329	5,0	4378	3,5	27,0	14,5	0,98	10	26,5	63,8	5,3	4,1	0,70	20,6	9,7	18,3	10,8	52,3
Pohjois-Suomi	FI1a	10	12,3	20663	6,0	--	3,3	28,2	15,6	1,12	5	35,7	58,8	5,1	6,6	3,07	21,5	5,5	20,1	12,7	58,3
Länsi-Suomi	FI19	10	--	21009	6,0	--	3,6	30,6	16,6	0,85	23	37,0	58,1	4,6	8,5	2,38	22,5	4,9	20,6	11,1	65,9
Etelä-Suomi	FI18	10	7,5	28226	6,3	--	5,8	36,4	20,4	1,12	62	29,0	69,4	5,0	6,8	2,61	29,3	1,6	22,1	11,5	56,6
Åland	FI20	10	2,6	32795	6,7	--	2,4	32,0	20,6	0,09	17	14,6	81,1	5,7	0,4	0,06	31,6	4,3	19,6	12,0	59,9
Learning		1	4,3	23139	4,7	4900	3,2	22,1	12,5	0,40	216	30,5	66,0	6,0	6,2	1,12	22,0	2,4	15,1	12,2	53,8
Central Techno		2	7,5	20700	4,0	4884	2,9	18,7	10,6	0,42	182	30,0	66,8	8,2	7,5	0,84	20,7	3,1	6,7	11,2	47,6
Local Science & Services		3	9,2	19852	6,0	3780	4,3	23,6	13,7	0,88	389	22,0	76,2	9,8	4,6	0,79	22,4	1,8	5,9	10,4	46,9
High Techno		4	6,1	25202	3,6	5591	3,1	17,5	10,3	0,58	288	31,7	66,7	7,3	11,9	1,31	22,8	1,6	5,6	9,7	46,4
Aging Academia		5	13,3	17508	5,3	3649	2,5	27,4	13,2	0,67	185	30,1	66,9	7,6	6,7	0,57	18,8	3,0	4,8	7,4	46,0
Southern Cohesion		6	10,7	16213	6,3	3082	1,2	14,7	8,2	0,37	66	19,9	70,0	7,5	1,5	0,11	11,2	10,2	3,1	10,0	38,2
Eastern Cohesion		7	14,2	9776	5,3	1230	1,9	12,0	7,2	0,26	113	34,2	61,3	6,6	6,6	0,33	15,9	4,5	4,1	11,0	48,4
Rural Industries		8	10,3	8204	5,6	1120	1,6	14,8	7,8	0,17	62	33,6	52,0	6,0	4,5	0,18	12,9	14,5	2,6	10,1	45,3
Low-tech Government		9	14,1	18553	4,1	4848	2,3	10,0	6,2	0,55	161	21,2	75,1	12,9	4,2	0,28	16,2	3,7	4,6	10,1	32,4
Nordic High-tech Learning		10	6,4	23323	4,7	5202	4,5	28,5	18,7	0,41	67	29,9	67,9	5,4	7,6	3,05	30,2	2,3	25,0	11,9	58,2
Science & Service Centre		11	6,1	34489	5,3	6663	5,6	28,5	16,8	0,98	2118	16,8	81,2	7,4	3,8	1,00	30,5	0,8	12,8	11,4	55,5

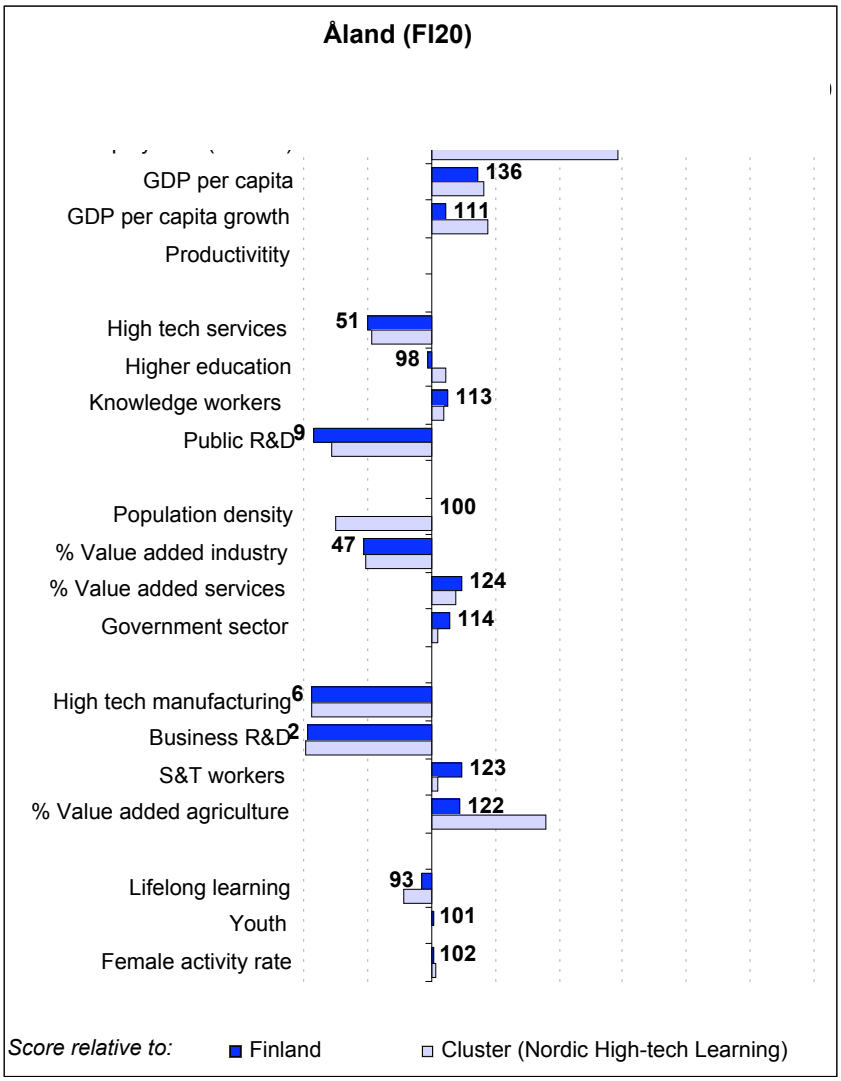
B.2 Regional Scorecards




Pohjois-Suomi (FI1a)
0
50
100
150
200
250
300
Unemployment (inverse)
GDP per capita
GDP per capita grow th
Productivitity
High tech services
Higher education
Know ledge w orkers
Public R&D
Population density
% Value added industry
% Value added services
Government sector
High tech manufacturing
Business R&D
S&T w orkers
% Value added agriculture
Lifelong learning
Youth
Female activity rate
73
86
99
71
86
86
107
27
115
90
103
96
127
84
156
96
107
100
Score relative to:
Finland
Cluster (Nordic High-tech Learning)


Länsi-Suomi (FI19)
GDP per capita
GDP per capita growth
Productivitity
High tech services
Higher education
Knowledge workers
Public R&D
Population density
% Value added industry
% Value added services
Government sector
High tech manufacturing
Business R&D
S&T workers
% Value added agriculture
Lifelong learning
Youth
Female activity rate
87
100
0
76
93
91
81
133
119
89
92
125
99
88
139
98
94
113
Score relative to:
Finland
Cluster (Nordic High-tech Learning)


Etelä-Suomi (FI18)
GDP per capita
GDP per capita growth
Productivitity
High tech services
Higher education
Knowledge workers
Public R&D
Population density
% Value added industry
% Value added services
Government sector
High tech manufacturing
Business R&D
S&T workers
% Value added agriculture
Lifelong learning
Youth
Female activity rate
117
105
124
111
112
107
365
93
106
101
99
108
114
47
105
97
97
Score relative to:
Finland
Cluster (Nordic High-tech Learning)


Åland (FI20)
GDP per capita
136
GDP per capita growth
111
Productivitity
High tech services
51
Higher education
98
Knowledge workers
113
Public R&D
9
Population density
100
% Value added industry
47
% Value added services
124
Government sector
114
High tech manufacturing
6
Business R&D
2
S&T workers
123
% Value added agriculture
122
Lifelong learning
93
Youth
101
Female activity rate
102
Score relative to:
Finland
Cluster (Nordic High-tech Learning)

Appendix C Categories used for policy-mix analysis

C.1 Classification of policy areas

Policy area	Short description
Improving governance capacities for innovation and knowledge policies	Technical assistance type funding used by public authorities, regional agencies and public-private partnerships in developing and improving policies and strategies in support of innovation and knowledge. This could include past ERDF innovative action programmes as well as support for instance for regional foresight, etc.
Innovation friendly environment;	This category covers a range of actions which seek to improve the overall environment in which enterprises innovate, and notably three sub groups: innovation financing (in terms of establishing financial engineering schemes, etc.); regulatory improvements and innovative approaches to public services and procurement (this category could notably capture certain e-government investments related to provision of services to enterprises) ; Developing human capital for the knowledge economy. This category will be limited to projects in higher education aimed at developing industry orientated courses and post-graduate courses; training of researchers in enterprises or research centres[7];
Knowledge transfer and technology diffusion to enterprises	Direct or indirect support for knowledge and technology transfer: direct support: aid scheme for utilising technology-related services or for implementing technology transfer projects, notably environmentally friendly technologies and ITC; indirect support: delivered through funding of infrastructure and services of technology parks, innovation centres, university liaison and transfer offices, etc.
Innovation poles and clusters	Direct or indirect support for creation of poles (involving public and non-profit organisations as well as enterprises) and clusters of companies direct support: funding for enterprise level cluster activities, etc. indirect support through funding for regrouping R&D infrastructure in poles, infrastructure for clusters, etc.
Support to creation and growth of innovative enterprises	Direct or indirect support for creation and growth of innovative firms: direct support: specific financial schemes for spin-offs and innovative start-ups, grants to SMEs related to improving innovation management, marketing, industrial design, etc.; indirect support through funding of incubators, training related to entrepreneurship, etc.
Boosting applied research and product development	Funding of "Pre-competitive development" and "Industrial research" projects and related infrastructure. Policy instruments include: aid schemes for single beneficiary or groups of beneficiaries (including IPR protection and exploitation); research infrastructures for non-profit/public organisations and higher education sector directly related to universities.

[7] This is part of the wider area of in-house training, but in the present study only the interventions targeted to researchers or research functions will be analysed.

C.2 Classification of Beneficiaries:

Beneficiaries	Short description
Public sectors	Universities National research institutions and other national and local public bodies (innovation agencies, BIC, Chambers of Commerce, etc…) Public companies
Private sectors	Enterprises Private research centres
Networks	cooperation between research, universities and businesses cooperation between businesses (*clusters of SMEs)* other forms of cooperation among different actors

C.3 Classification of instruments:

Instruments	Short description
Infrastructures and facilities	Building and equipment for laboratories or facilities for university or research centres, Telecommunication infrastructures, Building and equipment for incubators and parks for innovative enterprises
Aid schemes	Grants and loans for RTDI projects Innovative finance (venture capital, equity finance, special bonds, etc.) for innovative enterprises
Education and training	Graduate and post-graduate University courses Training of researchers

Appendix D Financial and policy measure tables

D.1 Additional financial tables

D 1.1 RTDI plus business (innovation technology) support

Categories 181 to 184 plus :
152 Environment-friendly technologies, clean and economical energy technologies
153 Business organisation advisory service (including internationalisation, exporting and environmental management, purchase of technology)
155 Financial engineering
162 Environment-friendly technologies, clean and economical energy technologies
163 Enterprise advisory service (information, business planning, consultancy services, marketing, management, design, internationalisation, exporting, environmental management, purchase of technology)
164 Shared business services (business estates, incubator units, stimulation, promotional services, networking, conferences, trade fairs)
165 Financial engineering

Objective	Total cost	SF			NF	
		Total	ERDF	ESF	Public	Private
RTDI INTERVENTIONS						
Objective 1	569 491 500,00	284 745 750,00	284 745 750,00	0,00	284 745 750,00	0,00
Objective 2	1 072 855 391,87	207 151 862,52	207 151 862,52	0,00	286 943 184,62	578 760 344,73
TOTAL COHESION POLICY						
Objective 1	1 987 241 000,00	989 000 000,00	498 641 000,00	279 835 000,00	989 000 000,00	9 241 000,00
Objective 2	2 411 625 801,00	530 000 000,00	412 166 000,00	117 834 000,00	789 944 801,00	1 091 681 000,00

Programs	RTDINTERVENTIONS			TOTAL		
	TotalSF	ERDF	ESF	TotalSF	ERDF	ESF
OBJECTIVE 1						
DOCUP obj. 1 Eastern Finland	178 620 050,00	178 620 050,00	0,00	653 696 000,00	328 922 000,00	189 102 000,00
DOCUP obj. 1 Northern Finland	106 125 700,00	106 125 700,00	0,00	335 304 000,00	169 719 000,00	90 733 000,00
OBJECTIVE 2						
DOCUP OBJ 2 ALAND ISLANDS	1 316 912,52	1 316 912,52	0,00	4 761 000,00	4 761 000,00	0,00
DOCUP Obj. 2 South Finland	88 209 400,00	88 209 400,00	0,00	228 075 000,00	179 898 000,00	48 177 000,00
DOCUP Obj. 2 West Finland	117 625 550,00	117 625 550,00	0,00	297 164 000,00	227 507 000,00	69 657 000,00
Total Regional OPs	**491 897 612,52**	**491 897 612,52**	**0,00**	**1 519 000 000,00**	**910 807 000,00**	**397 669 000,00**

OBJECTIVES	ALLOCATED	DISBURSED TOTAL SF	EXPENDITURE CAPACITY
Objective 1	284 745 750,00	153 291 409,40	53,8%
Objective 2	207 151 862,52	103 677 409,36	50,0%

D 1.2 Broad innovation and knowledge economy funding

This third calculation adds RTDI plus business (innovation & technology) support plus information society. As D.1.1 plus:
322 Information and Communication Technology (including security and safe transmission measures)
324 Services and applications for SMEs (electronic commerce and transactions, education and training, networking)

Objective	Total cost	SF			NF	
		Total	ERDF	ESF	Public	Private
RTDINTERVENTIONS						
Objective 1	569 491 500,00	284 745 750,00	284 745 750,00	0,00	284 745 750,00	0,00
Objective 2	1 153 485 232,69	226 397 108,92	226 397 108,92	0,00	312 877 070,58	614 211 053,19
TOTAL COHESION POLICY						
Objective 1	1 987 241 000,00	989 000 000,00	498 641 000,00	279 835 000,00	989 000 000,00	9 241 000,00
Objective 2	2 411 625 801,00	530 000 000,00	412 166 000,00	117 834 000,00	789 944 801,00	1 091 681 000,00

Programs	RTDI INTERVENTIONS			TOTAL		
	Total SF	ERDF	ESF	Total SF	ERDF	ESF
OBJECTIVE 1						
DOCUP obj. 1 Eastern Finland	178 620 050,00	178 620 050,00	0,00	653 696 000,00	328 922 000,00	189 102 000,00
DOCUP obj. 1 Northern Finland	106 125 700,00	106 125 700,00	0,00	335 304 000,00	169 719 000,00	90 733 000,00
OBJECTIVE 2						
DOCUP OBJ 2 ALAND ISLANDS	1 520 558,92	1 520 558,92	0,00	4 761 000,00	4 761 000,00	0,00
DOCUP Obj. 2 South Finland	88 209 400,00	88 209 400,00	0,00	228 075 000,00	179 898 000,00	48 177 000,00
DOCUP Obj. 2 West Finland	136 667 150,00	136 667 150,00	0,00	297 164 000,00	227 507 000,00	69 657 000,00
Total Regional OPs	**511 142 858,92**	**511 142 858,92**	**0,00**	**1 519 000 000,00**	**910 807 000,00**	**397 669 000,00**

OBJECTIVES	ALLOCATED	DISBURSED TOTAL SF	EXPENDITURE CAPACITY
Objective 1	284 745 750,00	153 291 409,40	53,8%
Objective 2	226 397 108,92	113 335 454,21	50,1%

D.2 Summary of key policy measures per programme

Exhibit 16: main measures in favour of innovation and knowledge

	Identified RTDI measure or major project	Focus of intervention (policy areas classification)*	Main Instruments**	Main beneficiaries***
Objective 1 Eastern Finland	1.1. Promoting business	Support to creation and growth of innovative enterprises	Aid schemes	Private sector
	1.2. Improving the operating environment for business	Knowledge transfer and technology diffusion to enterprises Support to creation and growth of innovative enterprises	Aid schemes	Private sector Public sector
	4.1.Developing the structures of expertise and training	Knowledge transfer and technology diffusion to enterprises Innovation friendly environment	Aid schemes Education and training	Private sector Public sector
	4.2. Developing the internal and external network	Innovation friendly environment	Infrastructure	Public sector
Objective 1 Northern Finland	1.1. Developing business, clusters and economic structure	Innovation poles and clusters	Aid schemes	Private sector
	1.2. Improving the operating environment for business	Knowledge transfer and technology diffusion to enterprises Support to creation and growth of innovative enterprises	Aid schemes	Private sector Public sector
	2.7. Improving the rural operating environment	Innovation friendly environment	Aid schemes	Private sector Public sector
	3.1. Developing expertise and information society structures	Innovation friendly environment	Aid schemes Education and training	Public sector
Objective 2 Åland islands	1. Business development and advisory services	Support to creation and growth of innovative enterprises	Aid schemes	Private sector
	3. Information society	Innovation friendly environment	Aid schemes Education and training	Public sector Private sector

Objective 2 South Finland	1.1. Fostering, developing and internationalizing business	Support to creation and growth of innovative enterprises	Aid schemes	Private sector
	1.2. Improving the operating prerequisites of businesses	Knowledge transfer and technology diffusion to enterprises Innovation friendly environment	Aid schemes	Public sector Private sector
	1.3. Developing and applying new technology	Boosting applied research and product development	Aid schemes	Public sector Private sector
	2.1. Improving the operating prerequisites for training and research	Innovation friendly environment	Aid schemes	Public sector
	2.2. Increasing the competence standard of labour and improving the availability of training	Innovation friendly environment	Aid schemes	Public sector Private sector
Objective 2 West Finland	1.1.Activating business and developing firms	Support to creation and growth of innovative enterprises	Aid schemes	Private sector
	1.2. Improving the operating conditions of businesses	Innovation friendly environment	Aid schemes	Private sector Public sector
	2.1. Developing expertise and innovation networks and promoting new technology	Knowledge transfer and technology diffusion to enterprises Boosting applied research and product development	Aid schemes	Public sector Private sector

* Classification of RTDI interventions: Improving governance capacities for innovation and knowledge policies; Innovation friendly environment; Knowledge transfer and technology diffusion enterprises; Innovation poles and clusters; Support to creation and growth of innovative enterprises; Boosting applied research and product development (see appendix).
**Classification of instruments: Infrastructures and facilities; Aid schemes; Education and training.
***Classification of Beneficiaries: Public sectors; Private sectors; Networks

Appendix E Case studies

Name of Case (related policy measure or action)
Title of measure/project: Octopus Description : Supporting the development of mobile applications and services by building an open testing platform Zone: Objective 2
Brief history and main features
What policy area does the initiative belong to? Boosting applied research and product development What are the main beneficiaries characterising the initiative? The main beneficiaries are the (start-up) companies developing mobile communication technology products and companies/educational institutions that need to update education in the field of mobile applications Which organisations have been involved? What was their role? The City of Oulu was the lead partner in the project. Other main partners were Nokia, OPOY/ Finnet Companies, Oulu Polytechnic, Oulu Region Centre of Expertise, The University of Oulu, VTT and the Mobile Forum (a consortium of the main operators of mobile businesses in the Oulu area). Mobile Forum was the co-ordinator of the Octopus programme. The main companies provided equipment and infrastructure and participated in the testing. What was the structure of the initiative? The first part of the project is building and testing a platform. The development & testing platform is open and freely accessible and offers cooperative partners an excellent opportunity to rapidly develop and test mobile applications and services using existing state-of-the-art enablers. The second stage 2004-2006 was about maintaining the infrastructure and developing it but also to enlarge the network of organisations involved with the platform. A second part of the initiative is building a competence programme. Octopus offers educational and research institutions a versatile opportunity to conduct research, develop and update education and create new educational programmes. It also offers the possibility to create networks with operators in this field At the end of the project, the operating model developed is supposed enable the creation of a commercial company to continue the work of the Octopus programme. Crucial milestones and criticalities? • Creating the platform • Gaining customers and new users for the development platform • Establishing the operations of the platform

What is the degree of novelty of the initiative?
The degree of novelty is the high. The same kind of project has not been done before but in many other regions there have been similar interest.

Main results

What are the main outcomes (financial and physical)?
The physical outcome is the development infrastructure. The main financial outcome is to set up the activity by establishing a commercial company to manage the development platform at the end of the programme.
There has also been an objective to create 200 new jobs, create 50 new commercial mobile services and to produce 500 student theses related to mobile technology.

What are the main evaluation results?
The project has been widely seen as important in internalisation and very important in the application of product innovations and in the development of the ICT use. It was strategically well aimed to support the general development objectives of the region and well suited for the needs of the industry. The efficiency has somewhat suffered from the different organisational cultures and different objectives of the participants.

Have all the objectives been fulfilled?
No final information yet. Initial objectives in building the platform have been met.

What is the current state in terms of execution? What are the expected prospects?
The second stage (Octopus network-programme) is underway. To establish the platform as a permanent institutions.

Reasons of success and conditions for repeatability

Why has the initiative been considered a best practice?
The project is an example of a unity where the interests of the public sector (the City of Oulu), research and education (university level) and companies are combined in such a way that new innovations generate new business operations.

What are the main socio-economic and institutional conditions that contributed to the success? How?
The close network of people in different organisations. The willingness of main private sector partners to invest to the project.

What were the main socio-economic and institutional obstacles?
Governing a large network of actors
What are the main lessons?

Did the case inspire new initiatives in either the same or different contexts?

What are the main aspects of the initiative which are susceptible to be transferred?
The participation of bigger companies in building platforms for smaller service providers to develop their products and services. In the Communication technology the success of operators and manufacturers are also dependant on the content and services provided by other companies. However, this kind of platform idea could be used in other sectors and other regions also.

Are there constraints to transferability?
The platform idea needs the support of the leading enterprises who have need to nurture new products and services related to their own business.

Name of Case (related policy measure or action)

Title of measure/project: Multipolis Network Project
Description : A network of local centres of expertise (Polis) that use networking as a tool to combine forces

Zone: Objective 1 Northern Finland and Objective 2 Western Finland

Brief history and main features

What policy area does the initiative belong to?

Knowledge transfer and technology diffusion to enterprises

What are the main instruments characterising the initiative?

What are the main beneficiaries characterising the initiative?
The local technology companies located in the poleis or connected to them. Local R&D organisations and groups located in the poleis.

Was the intervention inspired by a previous experience? Which one?
The intervention was inspired by the success of networked activities in Oulu Region that forms the core internationalised polis. Multipolis activities and network have emerged from the networks and expertise by the technology centre Technopolis and the Oulu Region Centre of Expertise programme. The concept of Multipolis supports this programme and regionalises its tasks and strengths.

Which organisations have been involved? What was their role?
Technology centres, universities and other relevant higher education units, research centres and several regional development organisations.

What was the structure of the initiative?
2000-2002 Identifying and building the Multipolis network, forming the strategies of each chosen polis, Multipolis Metropolis subproject to analyse international connections
2002-2004 Connecting the network to part of The National Centre of Expertise Programme. Two sub-projects: the networking project funded by Regional councils (SF included) and the seed funding project managed by the Oulu

Technopolis and funded by the National Centre of Expertise programme. The establishing of forums (as part of the Centre of Expertise Programme).
2004-2006. The further focusing and consolidating the programme.

Crucial milestones and criticalities?
To be able to build working networks between the local poleis and the central polis and service provider Oulu Technopolis.

What is the degree of novelty of the initiative?
High. This kind of networked set of small dedicated technology centres is a unique idea to overcome the challenges of long distances and small size of the regional concentrations.

Main results

What are the main outcomes (financial and physical)?
The establishments of polis facilities with managers and new product innovations. Important tools are the development forums bringing together actors from private enterprises, R&D-institutions and the public sector. They provide technology foresight and strategy tools.

What are the main evaluation results?
Between 2000 – 2003, a product innovation was a result in 83 % of high-tech enterprises that took part of forum activities, i.e. of intensive technology development programme. In poleis 63 % of high-tech enterprises created a product innovation and 42 % of high-tech enterprises that were located outside the polis in towns with polis. The high-tech enterprises that had taken part of the Multipolis activities have argued that the activities were significant for their enterprises regarding co-operation with other enterprises, social networks, receiving new information and participation to common development projects. Most valuable Multipolis was to high-tech enterprises that took part of forum activities.

Have all the objectives been fulfilled?
Many of these goals have not been met yet and most likely will not be reached by the target year 2006. The main reasons for this seem to be unrealistic expectations in terms of new high tech jobs and firms. In terms of networking results were successful.

What is the current state in terms of execution? What are the expected prospects?
The polis activity continues and is to be consolidated.

Reasons of success and conditions for repeatability

Why has the initiative been considered a best practice?
It is a unique model of how to combine resources of technology oriented enterprises and RTDI institutions by networking local clusters of expertise.

What are the main socio-economic and institutional conditions that contributed to the success?

The strong support from development organisations and local governments has helped to institutionalise the network activities.

What were the main socio-economic and institutional obstacles?
The main obstacles for the programme come from the extreme circumstances in the area with long distances and sparse population. Also the huge difference in the resources and the expertise between the central polis in Oulu and the smaller centres pose challenges.
The relatively scarce resources have slowed down networking.

What are the main lessons?
The main lesson is that networking technology companies and RTDI organisations in more peripheral regions can be an efficient way to support innovation. However the creation on networks is time consuming and difficult. Moreover, with a large project covering many regions and different kind of enterprises there is a need to focus the operations to specific fields.

Did the case inspire new initiatives in either the same or different contexts?
The Multipolis networked mode is considered to be extended elsewhere in Finland

What are the main aspects of the initiative which are susceptible to be transferred?
The main aspects to be transferred are the model to network different smaller technology centres to increase knowledge transfer, to create common forums of interaction and to create division of labour.

Are there constraints to transferability?
Multipolis is a combination of technopolis and learning region models applied in a sparsely populated and extended territory. It is planned to be extended to other parts of Finland. The applicability of Multipolis as a model elsewhere demands an analysis of the goals and the region.

Name of Case (related policy measure or action)

Title of measure/project: South Ostrobothnian University Network EPANET

Description: To establish a network of top institutions of applied research work in the region that does not have a university of its own, to activate research projects and allowing the local community of researchers and of development agents to enlarge. At the same time, a new kind of co-operation network will be created between the Finnish universities.

Zone: Objective 2

Brief history and main features

What policy area does the initiative belong to?
Boosting applied research and product development

What are the main instruments characterising the initiative?

Education and training, aid Schemes

What are the main beneficiaries characterising the initiative?
Universities, polytechnics, networks of enterprises and research institutions.

Was the intervention inspired by a previous experience? Which one?
Thee Regional Knowledge Centre Programme for Entrepreneurship, drawn up in 1994 inspired the regional actors to understand that it was necessary for the region to have its own capability to generate knowledge usable in economic development

Which organisations have been involved? What was their role?
University of Helsinki, University of Tampere, Tampere University of Technology, University of Vaasa, Sibelius Academy and Seinäjoki Polytechnic. The other signatories of the programme agreement are: Regional Council of South Ostrobothnia, Employment and Economic Development Centre of South Ostrobothnia, South Ostrobothnia Health Care District, City of Seinäjoki, University Association of South Ostrobothnia.

What was the structure of the initiative?
Consists of several sub-projects, implemented by the universities that participate in the network. The core of the network was planned to consist of 12 new, fixed-term research professors (5 years at the first phase), each of whom will gather a group of researchers around him or her. In the later stage the network model will be made a permanent institution.

Crucial milestones and criticalities?
To get the universities to agree to participate in the initiative.
To form coalitions to support and fund professorships.
To initiate collaboration between the research groups and local enterprises

What is the degree of novelty of the initiative?
Very high. The model is in its current form unique in Finland and in Europe.

Main results

What are the main outcomes (financial and physical)?
The main outcomes are the establishment of research groups, the increase in research funding in the region and the increasing interaction between the RTDI institutions and local enterprises

What are the main evaluation results?
The project has been able to create an institutional frame for collaboration between research and educational organisations and enterprises. The project has also been successful in gathering research funding in the region.

Have all the objectives been fulfilled?
The objectives have been fulfilled and even surpassed in some areas.

What is the current state in terms of execution? What are the expected prospects?
In 2005 there were already 13 research professors working in the Epanet-network

and the network seems to have established itself as a central organisational form to promote research activities in the region

Reasons of success and conditions for repeatability

Why has the initiative been considered a best practice?
It has been a very effective way to mobilise local resources in a region that does not have a university or a strong research base of its own. Instead of forming a new organisation (like a publicly funded university), which is often difficult, it works through the networks of existing organisations. By doing this Epanet model also creates connections to regions that host the universities and R&D organisations participating in the network.

What are the main socio-economic and institutional conditions that contributed to the success? How?
The strong will of the local development organisations and other key organisations to build up the network.

What were the main socio-economic and institutional obstacles?
Many of the organisations (e.g. the universities) are located elsewhere and development of activities in South Ostrobothnia was not their primary focus. To convince local actors of the feasibility of the initiative.

What are the main lessons?
A networked model can be sometimes more efficient, more economical and easier to execute than a new organisation. With "tailored" approaches it is possible to bring in research activities also to less favoured regions.

Did the case inspire new initiatives in either the same or different contexts?
The approach has raised interest in Finland and abroad.

What are the main aspects of the initiative which are susceptible to be transferred?
The organisational model of local research professors and research groups

Are there constraints to transferability?
The university models and legislation varies in different countries

Name of Case (related policy measure or action)

Title of measure/project: The Finnish Stone Centre

Description: The aim of the project was to create a network-based centre of expertise to stone sector in North Karelia throughout the further development of the stone processing sector, the generation of new small-scale stone sector enterprises and the development of support structures for those enterprises. The Stone Centre has since spawn several sub-projects also related to the development of stone industry.

Zone: Objective 1

Brief history and main features

What policy area does the initiative belong to?
Support to creation and growth of innovative enterprises

What are the main instruments characterising the initiative?
Infrastructures and facilities
Aid schemes

What are the main beneficiaries characterising the initiative?
The local enterprises in the stone manufacturing

Was the intervention inspired by a previous experience? Which one?
The project was based on the previous technology and development programme co-financed by the Association of the Stone Industry and TEKES. As a result of this programme a decision to establish a stone centre was made.

Which organisations have been involved? What was their role?
The Geological Survey of Finland, North Karelian University of Applied Sciences, VTT, North Karelia Municipal Education And Training Consortium, Juuka Stone Museum and Stone Village Foundation. These organisations are responsible for the activities and the maintenance of the stone centre. The development activities of the Stone Centre are done by Stone Pole Oy, which is owned by 40 stone companies, Finnvera and North Karelia Municipal Education And Training Consortium.

What was the structure of the initiative?
- The building of the physical infrastructure
- The establishment of services
- Launching of development activities

Crucial milestones and criticalities?
- Building the physical facilities
- Establishing services and securing the operational perquisites for the centre

What is the degree of novelty of the initiative?
A new way of establishing a physical centre for combining the operations of several organisations. To build a national competence centre and RTDI activities around a local medium tech industry.

Main results

What are the main outcomes (financial and physical)?
What are the main evaluation results?
Not yet evaluated.

Have all the objectives been fulfilled?
The objectives have been fulfilled.

What is the current state in terms of execution? What are the expected prospects?
The Stone Centre operates regularly and several other projects continue to build services, training and RTDI around the concept.

Reasons of success and conditions for repeatability

Why has the initiative been considered a best practice?
This is a very successful example of how different actors in a specific industry combine their forces to establish an expertise centre

What are the main socio-economic and institutional conditions that contributed to the success?
The ability of research and educational institutions, association and, enterprises to agree on the form of the centre.

What were the main socio-economic and institutional obstacles?
-
What are the main lessons?
Through active networking and with the commitment of key actors it is possible to create new organisations to support RTDI, education and services in traditional industries.

Did the case inspire new initiatives in either the same or different contexts?
No information.

What are the main aspects of the initiative which are susceptible to be transferred?
The organisational form of the project and the resulting organisation.

Are there constraints to transferability?
There has to be strong research and educational organisations and key enterprises willing to invest in the infrastructure and support the project.

Appendix F Further reading

Bibliography of references/documents used

European Trend Chart on Innovation. Annual Innovation Policy Trends and Appraisal Report. Finland 2004-2005. European Commission. Enterprise Directorate General.

Itä-Suomi –ohjelma. Itäisen Suomen suuret tulevaisuuden kysymykset -projektin loppuraportti.

Hallituksen aluepoliittinen selonteko 2004.

Kinnunen, J. 2004. Multilevel Governance. The Dynamics of EU Cohesion Policy. The Structural Funds as a Vector of Change in Finland. OEUE Phase II. Occasional Paper 3.4.-9.4.

Kuitunen, S. & Oksanen, J. 2002. Mikä rooli EU:n rakennerahastoilla on alueiden innovaatiotoiminnassa ja innovaatiopolitiikassa. Kauppa- ja teollisuusministeriön tutkimuksia ja raportteja 10/2002.

Laakso, S, Kilpeläinen, P. & Kuisma, H. 2005. Tavoite 2 –ohjelmien väliarviointien ajantasaistamisen teema-arviointi. Yrityksiä tukevan osaamisen ja verkottumisen vahvistaminen tavoite 2 –ohjelmissa.

Making Finland a leading country in innovation. Final report of the competitive environment development programme. 2005. Sitra . Helsinki.

Ministry of Education. Regional Development Strategy 2003–2013

OECD Science, Technology and Industry Outlook 2004.

Ritsilä, J. & Tokila, A. 2005. Yritystoiminnan tukemisesta annetun lain (1068/2000) mukaisen tukijärjestelmän vaikuttavuuden ja toimivuuden arviointi. KTM Julkaisuja 21/2005

Suomen kansallinen alue- ja rakennepoliittinen strategia 2007-2013. Luonnos 8.3.2006.

Third European Report on Science & Technology Indicators 2003. European Commission. DG Research.

Yrityustoiminnan tukemisesta annetun lain (1068/2000) mukaisen tukijärjestelmän vaikuttavuuden ja toimivuuden arviointi. Ministry of Trade and Industry. KTM Julkaisuja 21/2005.

Appendix G Stakeholders consulted

Name	Position	Organisation
Antti Mykkänen	State Secretary	Ministry of Interior
Kyösti Jääskeläinen	Executive Director	The association of Finnish Science Parks
Antti Heiskanen	Development Manager	TEKES
Martti af Heurlin	Director General	TEKES
Pirjo Sylvänne	Senior Advisor	Ministry of Trade and Industry
Ismo Partanen	Development Manager	Federation of Finnish Enterprises
Juha Alarinta	Research Manager	University Consortium of Seinäjoki
Keijo Sahrman	Director	The Association of Finnish Municipalities