Integrating regional policy with technology policy – the experience of Finland

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In order to be responsive to the ideas of new governance, governments have seen the demands of policy integration as increasingly important. In Finland, both regional policy and technology policy have received hegemonic positions. Regional policy had a key role in the welfare state programme that supported equal rights and opportunities, and only slowly promoted structural change in industry. Technology policy has been taken as an evidence of Finland's rapid transformation into a competitive high-tech and market-driven country that has adopted the knowledge-based economy as the key model for further development. The Centre of Expertise Programme, a central government effort to promote technological development and competitiveness at the regional level, illustrates a shift towards technology-driven regional policy. As the programme has become internationally renowned, this paper takes a closer look at its concept, and scrutinises the kind of a model it provides for regional policy efforts. The analysis shows that the programme has a partly conflicting position at the intersection of regional and technology policies. The evolution of the programme also reflects changes in the interpretation of the regional dimension of the knowledge-based economy.

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The regional dimension in the knowledge-based economy

Current visions of the OECD, the European Union and their member states refer to new governance requiring cross-sectoral approaches and integrations of various policy areas (e.g. OECD 2002). These ideas have echoed theories of a comprehensive policy-making where the mandates of government authorities become flexible and inclusive to the interests of a broad set of stakeholders (Stoker 1998; Häyrinen-Alestalo & Pelkonen 2004).

Modern technology policy is hypothesised as having generic possibilities to develop into an integrative policy. The areas of interest move ahead of customary technology policy, and social issues penetrate into a policy that has been – and still is – primarily market-oriented. Some studies, however, indicate that the integrative capabilities of technology policy are limited (Remoe 2005). Its goals are close to economic and industrial policies, and to the attempts to keep national economies competitive in international markets. Accordingly, technology policy has become hegemonic in its ability to steer other policies towards its goals. Today, the political aspirations also emphasise the premises of the knowledge-based economy that has trust in market- and technology-driven elements of economic growth and is highly selective in relation to the integrative visions of socio-economic development. The tensions between the economic and social issues are visible especially in Finland, which belongs to the Nordic welfare states but has since the late 1980s adopted market governance more rapidly than the other Nordic countries (Häyrinen-Alestalo et al. 2005).

Regional policy cannot be considered an autonomous political agenda, as it has always been related to other national policy goals, mostly to employment policy but also to the processes of industrial modernisation, and to the government attempts to neutralise changes due to unbalanced regional development and labour mobilisation. The narratives from the Nordic countries also point to the importance of changing ideologies. The welfare state has been an aggressive attempt to equalise opportunities – both human and material – between different parts of a country and to penetrate into economic and social issues. In Finland, there are contradictory aspirations between mobilisation that is responsive to the structural changes of industry and the attempts to keep agriculture still alive.

In the knowledge-based economy, the regional dimension faces many problems. At the turn of the millennium the arguments for the coming of a new economy spoke for industrial structures where new technologies dominate and are supposed to be neutral to market fluctuations and non-reflexive to regional inequalities. In the view of the Finnish technology policy-makers, high-tech–driven society should not compensate for regional deficiencies. The state can promote the processes of change but it should be careful with such activities that may be dysfunctional for market choices. Accordingly, there is a tension between the former programmes of equal opportunities and the current visions of economic progress, i.e. between the processes of decentralisation and concentration.

In the knowledge-based economy the relations between international super-states and nation-states are transforming especially in the case of regional policy. Until recently the aims of nation-states have concentrated on the problem of underdeveloped regions. The knowledge-based economy tends in turn to identify and support national strengths that help national economies to penetrate into international markets. As these markets are selective, the political power of nation-states tends to become weaker than before.

The diminishing power of European states becomes evident when an effort is made to study regional policy and its integration with technology policy. Regions are part of the EU's strategy in two respects. Firstly, an attempt is made to identify the best areas of competence in the context of the knowledge-based economy. Here, the emphasis is on models that imitate developments in the capital regions and other growth areas. Secondly, the EU has prepared a large adjustment programme for regions that otherwise would drop out of the Europeanisation process. It is characteristic of these programmes that the local authorities collaborate also directly with the EU. In the extreme cases, a regional programme may start to function as a general standardisation process that allows only a few deviations for local peculiarities.

The aims of the study

In respect to policy integration, Finland provides an interesting example because regional policy has been an integral part of industrialisation after the World War II and the welfare state programme thereafter. The development in political priorities illustrates linkages between an institutionalising regional policy and science, technology, industrial, economic and social policies. Here, technology policy is visible but does not overrun other policies. In recent years, Finland has served as an internationally recognised super model of the knowledge-based economy. It has ranked on the top of several competitiveness studies. The rise of the knowledge-based economy since the late 1980s has strengthened the role of technology policy and transformed the aims of regional policy in a radical way. As a result, the Finnish governments have seen regional competence centres and other high-tech–based programmes as a means to pursue an expanding technology policy.

In this article, we make an effort to study policy integration in Finland by analysing the evolution of technology and regional policies and the conditions for market governance and the market forces logic to become a uniting element between these policies. We try to find empirical evidence of the ways the competitive elements have gained importance in regional policy, and how the old ideas of disqualification have disappeared, through a twofold analysis of the welfare state and the knowledge-based economy:

1. We start by demonstrating the changes in the priorities of regional policy and their linkages to the aims of technology policy. After a slow beginning the structural change of industry has been a rapid process in Finland during which technology policy has received a dominant role. Therefore we ask:
   - What were the political choices and ideological preferences that institutionalised regional policy as an important area of na-

tional policy? What kind of means has the state used for the renewal of regional policy?
- How can technology policy solve problems that become evident when competitive aspirations are introduced in regional policy? What are the elements of policy integration? How does political pressure for decentralisation turn into a policy of concentration?
- In which way has the Europeanisation process changed the role and power of a nation-state in the frame of the knowledge-based economy?

2. We take a closer look at the Centre of Expertise Programme, a government effort to promote top-level expertise and networking at regional level. Established in 1994, the programme illustrates well the penetration of the model of the knowledge-based economy into the framework of regional policy. It has served as a successful example of technology-driven regional initiatives by becoming a cornerstone of current regional policy. However, the goals of regional and technology policies are often contradictory, posing challenges for their integration. The former is geared towards equal opportunities, whereas the latter is based on highly qualified and competitive technologies. Concomitantly, we analyse:
   - What kinds of obstacles and tensions have emerged in the programme in terms of policy integration?
   - How has the model of the knowledge-based economy been interpreted during the evolution of the programme?

In order to sharpen the local viewpoint, we take some specifying examples of the possibilities and limits of current policy orientation from the Satakunta Centre of Expertise that is situated in the city of Pori, a middle-sized old industrial city on the coast of Western Finland.

Our analyses are based on public and private sector documents, such as the policy guidelines and future visions of the European Commission and the Finnish national and local authorities in the fields of technology, economic, regional and industrial policies. The historical data consists of the Cabinet Programmes in Finland 1957–2003, statutes for the advancement of the regions 1975–2002, annual reports of the key ministries and the National Technology Agency of Finland (Tekes) 1983–2005, relevant statistics (Statistics Finland & Eurostat) as well as the memoirs of two former Prime Ministers (Urho Kekkonen and Kalevi Sorsa). Personal interviews have been conducted in 2005 among senior officers of the Ministry of Trade and Industry, the Ministry of the Interior, Tekes and the most relevant development agencies within Satakunta region. In addition, we utilise some previous interviews that we have made among the decision-makers of the Finnish technology policy elite.

From industrial policy into technology policy – regional policy meets local, national and international demands

Setting regional priorities to advance industrialisation

Finland industrialised relatively late and the modernisation efforts of the Government after the World War II indicate tensions between the state and industry. Due to unstable modes of governance, the legitimacy of governmental activities was often questioned and the ideological differences between the political parties were notable. In the early post-war period, the Government made the first efforts to modernise national industry and to integrate industrial policy with economic policy. Despite the modernisation of Finnish industry, driven by the substantial war debts paid to the Soviet Union, the economic performance was still moderate in the 1950s. Referring to the Industrialisation Committee, Prime Minister Kekkonen (1952), however, proposed state penetration into economic and industrial issues and stressed the need for a discussion of industrial policy in the Parliament to open the closed circle of industry.

As the emphasis was on raw-material based state-owned industries, the Prime Minister demanded regional policy efforts to better utilise the "extraordinary" natural resources of Northern Finland to make national industry more diversified. Public investments were needed to establish new state-owned industries in the North and to build infrastructure for a rapid regional transformation. Due to the high proportion of agricultural population in the country, the aim was to advance industrialisation to promote a radical mobilisation of agricultural population. Nevertheless, the political support to the idea of the regional superiority of the North was weak. In fact, regional policy moved

towards equalisation of opportunities in the late 1950s being linked to class-based injustices. Thereafter, the Cabinet Programmes (1959–1970) bring up industrialisation and equal economic development among various regions in the country as a general objective of economic policy. The problems were mostly related to under-development such as unemployment and slow modernisation of the peripheral areas.

Regional policy appears as a separate chapter in the Finnish Cabinet Programmes in the early 1970s. It was a politics for under-developed regions with the aim to renovate local administration, to establish a public support system for disqualified regions and to increase linkages to industrial and labour policies. At the end of the 1960s, there was a net emigration of labour force of 200,000 people from Finland to Sweden, a figure that was comparable to the Southern European peripheral areas (Alestalo 1986). For governing the serious situation, the Government established the Fund for Under-Developed Regions in 1971 to support economic activities.

In those days, the idea of knowledge-based industries was not yet clearly developed. In the search for new areas of production, the Government still favoured raw-material–based industries, stressed the importance of natural resources, and made efforts to regulate increasing labour mobilisation. The aims of state regulation were stabilised by passing a law for the advancement of regional development (Act 451/1975). According to this strategy, it was necessary to have a broader view of a balanced socio-economic progress instead of picking up a few disqualified areas. Permanent employment together with a rise of income and better public services should be guaranteed for every citizen. This implied expanding state penetration into socio-economic issues, and the rise of the welfare state programme.

The welfare state in the service of regions

The Finnish welfare state demonstrates a state-led approach that soon integrated social and industrial policies and built a comprehensive strategy for the equalisation of the opportunity in science, education and health policies. In the beginning, the political atmosphere was beset with conflicts due to the problems of labour mobilisation within the country and the high net emigration to Sweden. The areas of loss felt disappointed whereas the areas of gain faced problems in housing and services provision (Sorsa 1998). At the same time, a great structural change proceeded in Finland and the economic progress was among the fastest in Western Europe (Alestalo 1986). The unbalanced situation activated regional policy that for its part strengthened the division between good and low performers but was still opposite to the current policy of concentration. The idea of the peripheral areas in demand of compensations especially in the Northern and Eastern parts of Finland became increasingly obvious. Southern Finland had to pay compensations on the behalf of the under-developed areas. In addition, the Government saw economic growth in the capital area as unhealthy.

In the middle of severe political disputes, the Government made efforts to move towards centralised planning at local, regional and national levels. The visions were a combination of regional, social and technology policies. Technology policy aims provoked conflicts of interest between the Planning Office at the Council of State and the Ministry of Trade and Industry. The Ministry wanted to see the goals of technology policy only through the use and development of technology. In the government policy the technological side of regional policy was, however, stabilised by passing several laws (Act 451/1975, 532/1981, 1168/1988) for the advancement of regions, through committee and ministerial reports with references to broad regional policy issues (Board of Industries/Committee 1980; Technology Committee 1980) and efforts to institutionalise the making of relevant statistics and foresights. The economic turbulences in the middle of the 1970s and in the beginning of the 1980s legitimised the arguments for this kind of rationalisation.

The openings of regional policy towards welfare policy soon dealt with classifications of basic, support-needing and specific areas. From 1966 up to 1977 the criteria for geographical boundaries followed a zonal pattern but thereafter more complex regions were defined (Yli-Jokipii & Koski 1995). At the same time there were both efforts to centralise and decentralise national administration and regional responsibilities. In general, regional policy of the welfare state aimed at constructing a general programme with an attention to the industrial needs of the under-developed regions and to the dysfunctional centralisation of economic activities to Southern Finland. The allocation of subsidies through the Fund for Under-developed Regions emphasised the promotion of entrepreneurial ac-

tivities instead of loans. First references were also made to the knowledge-based society that was closer to Bell´s (1973) definition of the scientification of society rather than to the current idea of the knowledge-based economy. According to the Government it was necessary to invest in local level R&D, primary and higher education and social welfare. Also new technologies and the establishment of growth centres were mentioned as means to promote modernisation in the peripheries. More industrial jobs had to be created for the under-developed areas to make the structures of production and population more diversified (Ministry of Trade and Industry 1973; Board of Industries/Committee 1980).

The first steps towards market governance were taken at the end of the 1970s when a Government seminar ended in a consensual declaration of the importance of high-level competences instead of cheap labour force or energy-intensive production and high investments (Sorsa 1998). The process was, however, hegemonic and tightly in the hands of the Government. Later on new regulations set norms for the distribution of government support for industries, and restricted the choice of location of government-owned industries together with a programme for the decentralisation of public sector decision-making and its provision of services. Regional estimations for a balanced population development were also made to keep the agricultural population in the peripheral areas (Valkonen 1980). Even though the government plans of decentralisation were resisted and there started to be tensions between the interventionist state and the internationalising and market-driven industries, regional policy was still high on political agenda. It crossed all kinds of policies, such as economic, industrial, agricultural, forestry, energy, social, housing, education, university, communication and cultural policies (Cabinet Programme 1975).

Little by little the welfare state made several visions of technologisation as a means to make Finland a high-tech country and to take a distance from regional compensations. Aside from the levelling down of local disqualifications the Government argued for the importance of small and medium-sized enterprises and their role in technology transfer (Technology Committee 1980). More space was given to the integration of public and private interests to promote the Finnish economy. The role of industry in the establishment of the National Technology Agency of Finland (Tekes) was also notable. The idea was to promote modernisation through government investments in R&D. For the first time the regional dimension and the focus on national inequalities became less visible. Technology policy considerations emphasised the need to raise the general level of high-tech in the country and took the success in international markets as the ultimate criterion.

Competitive innovations penetrate into regional priorities

A more systematic development of Finland into a super model of the knowledge-based economy started in the late 1980s when the Government made a radical turn in its political ideology (Cabinet Programme 1987). According to the ideas of neo-liberalism and new managerialism, the welfare state policy with high taxes and high social spending was criticised. The Government accepted competition, privatisation and market governance as new polical arguments (Alestalo 1993). Finland's excellent economic performance from the latter part of the 1990s up to the beginning of the millennium also activated a discussion on the new economy that is based on new technologies and adopts the principles of an expansive market- and high-tech–driven technology policy. The simultaneous growth of the economy and world-market success of the Finnish ICT-industry (Nokia) intensified government efforts to pursue an internationally competitive technology policy. This approach created tensions between the public and the private provision of goods (Häyrinen-Alestalo et al. 2005).

The knowledge-based economy tends to question the idea of a compensatory state. In the early 1990's the Finnish Governments launched new competitive programmes pointing to commercialisation, investments in new technologies, and to the privatisation of state-owned companies and public services. Policy-makers also trusted in the validity of the concept of innovation system that tends to see all national producers of knowledge as important and capable of adopting market orientation. By highlighting the competitive aspects the state was unable to solve new regional policy dilemmas. The regional innovation system has, however, been systematically built by the establishment of the Centres of Expertise (see later), and the regional Employment and Economic Development Centres (TE-centres) with efforts to integrate

the technology units of the latter organisations into the activities of Tekes.

Originally TE-centres were local R&D and marketing units. Later on their priorities have changed and the tasks have moved from consulting and advice into regional centres that try to integrate international, technological and regional services towards a coherent strategy. In the course of this transformation, the technology units have influenced the priorities of regional technology policy programmes making them follow the knowledge-based economy. The national duties have also been responsive to increased international competition, transformation of the productive structures and research-based activities (Annual Reports of Tekes 1986–1990).

In recent years the integration of international and national technology programmes into regional programmes has been strengthened through the attempts to clarify and renovate the regional profile and strategy of Tekes. These efforts have been a mixture of competitive concentration and competitive decentralisation. New goals have been accomplished by increasing the amount of personnel in the TE-centres after 2001. Today there are 14 technology units at the centres.

According to the representatives of Tekes, one problem of the TE-centres has been in that the results come from one place but the strategic and operational management comes from another. As there have been problems in integration, an establishment of a forum for cooperation has been proposed. Moreover, interaction between Tekes, the TE-centres and the Planning and Organisation Councils for the Regions has been emphasised (Ministry of the Interior 2003). It also seems that the focus on innovation has not been so strong than has been expected. Moreover, in the spring 2006 there was a dispute in the Government between the Centre Party and the Social Democrats concerning the degree of decision-making autonomy and the model of governance of the TE-centres.

Current national policy has a trust in large technology centres and new technology-intensive production. Therefore the process has favoured concentration and uneven development of the regions (Fig. 1). In this respect, the division of labour and responsibilities between the state, the municipalities (over 400) and the regional centres of expertise is not clear even though new laws of regional development have been passed by the Parliament (Act 1135/1993, 55/2002). These laws have abolished the Programme for the Under-developed Regions from the political agenda and introduced a demand for more comprehensive national strategies but still they concentrate the final regulation into the hands of the Government. The market-dependent angle has become more evident. For example the Fund for Under-developed Regions has been transformed into a state-led company, Finnvera, allocating venture capital and being also willing to take risks. It has been argued that competitive funding provides a possibility of making choices. The range of choices is, however, often limited due to the push towards a standardised set of opportunities that are characteristic of the knowledge-based economy.

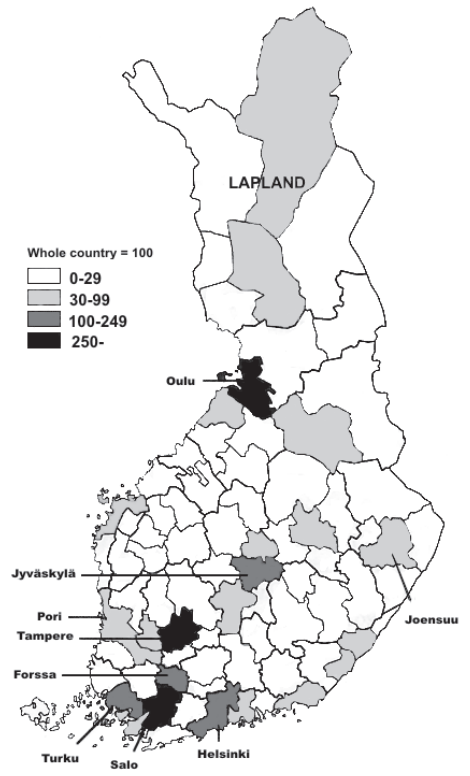

Fig. 1. Research and development expenditure per inhabitant in Finland by region 2004. Source: Statistics Finland 2005.

Internationalisation and new regionalism

The simultaneous processes of globalisation, Europeanisation as well as national concentration and

decentralisation have created tensions between the former and the current regional and technology policies in Finland. The representatives of Tekes and the Ministry of Trade and Industry refer to the needs of self-regulation and self-identification of local strengths because knowledge-based and market-driven technological competencies require local efforts to go ahead of local disqualifications. They say that in front of globalisation, regional competences cannot be based on whatever local peculiarities but on internationally recognised skills and competencies. In this view, all applicants should compete for the same resources irrespective of their location. By following this kind of policy, the majority of both public and private R&D funding has gone to the capital area and other growth areas (Fig. 1).

International competitiveness has introduced an idea of strong regions into technology policy. New arguments of quality also tend to integrate more closely the goals of urban and rural policies by referring to R&D, transfer of technology, and networking with local universities and other producers of knowledge. In the view of the representatives of the Ministry of Trade and Industry the emphasis should be on positive interaction, as it is difficult to break a negative circle.

International competition has intensified the centre of expertise-type of thinking. When regional changes in production, employment and population are compared with the development of the whole country (The Association of Finnish Local and Regional Authorities 2006), two types of concentrations become evident in Finland. In the midst of wide differences between the regions, the capital area and large cities have taken the lead. During the rapid growth period the differences between the growth-potential and disqualified regions have increased and in the periods of slow growth decreased. Accordingly, regional policy is closely related to international markets where turbulences are difficult to neutralise by national efforts.

In recent years Finland has been praised for its high investments in R&D especially in new technologies. The share of R&D expenditure of GDP was 3.5% in 2005 (Statistics Finland 2006). Fig. 1 tells, however, a story of permanent disqualifications. In fact, the majority of the Finnish municipalities have been dropped of regional innovations. The number of these regions is so high that the arguments for new governance and regional cooperation have lost their political validity. The main problems are related to unemployment, mobilisation of educated labour force, ageing and the capability of the municipalities to provide law-regulated services. The last problem is acute as there are elaborations of new criteria for public services depending on the amount of local population. This strategy indicates both a loss of regional autonomy and public funding.

The entrance of Finland into the European Union in 1995 led to radical changes in the Finnish regional policy and the ways the development areas were defined. Yli-Jokipii and Koski (1995) mention the main changes that were made in the renewal of national statutes of regional policy. They stress among others the adaptation of the EU indicators to estimate the regional performance, the use of larger sub-regions, the reduction of the measures on the scale of performance and the turn towards programme-based projects. Irrespective of accomplished adaptations to the EU norms Finland's participation in the EU's regional programmes has been in many ways problematic.

Obviously as an EU member state Finland has been able to apply funds for regional purposes from the structural funds. This possibility has increased individual choices of the regions instead of nationally centralised governance. The aims of combating unemployment and promoting structural transformations in industry and agriculture have been, however, only partially successful. Too many areas are still lagging behind the expected development. The difficulties in the crossings between the sectoral mandates have also been a Finnish peculiarity. In addition, national programmes have been initiated due to large regional exclusions. These exclusions make the efforts to promote "a new partnership for cohesion" (European Commission 2004) a difficult task also for the advanced new technologies-driven countries. This tension is important to note together with the good experiences of the projects to improve social well-being. These projects have had a broader scope than the knowledge-based economy (Council of State 2004).

The Centre of Expertise Programme – changing interpretations of the knowledge-based economy

The Centre of Expertise Programme illustrates the shift towards technology-driven regional policy

and the breakthrough of the knowledge-based economy in Finland. In the words of the former Prime Minister Lipponen (2000), the change of regional policy paradigm in the early 1990s put increasing emphasis on competitiveness, entrepreneurship and collaboration, and success in the global economy was set as the key political objective. The new policy reflected the conceptions of regional innovation systems and models that stress the importance of local networking in regional economic development. These ideas were inspired by studies of the regional dimension of inter-firm collaboration and institutional organisation of dynamically developing regions as well as Michael Porter's ideas on industrial clusters (Miettinen 2002). In many countries, these concepts were turned into policy measures and often implemented in the form of programmes aiming at facilitating co-operation and networking between companies. For instance, a programme based on the idea of local networking was established in Denmark in the late 1980s. In Finland, the new regional policy was build around six programmes, one of which was the Centre of Expertise Programme. It aimed at promoting top-level expertise in specific regions in selected technological fields by increasing regional co-operation and networking. In a short period of time it became the flagship of new regional policy.

Although the background of the Centre of Expertise Programme lies in such general considerations and policy developments, there were also concrete models according to which the centres were developed. Regional technology centres and science parks based on the Silicon Valley model had been developed quite rapidly in Finland since the early 1980s (Pelkonen 2003) and of these Oulu in the Northern Finland stood out as a success story already in the early 1990s. Oulu had been able to create dynamic collaboration between universities, firms and public research institutes while such interactions were relatively weakly developed in other parts of the country. The concrete idea of the programme was to "duplicate" the Oulu model and to transfer it to other parts of the country.

The programme was started in 1994 when the Council of State nominated the first eight regional centres of expertise. In the following year three network-based centres were added to the programme. According to the original concept, the centres ought to be based on already existing strong knowledge base such as university research, technology parks, research units and high-tech firms. The objective of the programme was to enhance collaboration between local actors in selected technological fields, to develop world class know-how and thereby promote regions' competitiveness. As the emphasis was on existing strong knowledge infrastructures, the first eight centres were all based on university cities (Helsinki, Turku, Tampere, Vaasa, Oulu, Jyväskylä, Kuopio and Lappeenranta) and most fields of expertise focused on new growth areas such as biotechnology, information and communication technologies, health technologies and energy and environmental technologies. The idea was that surrounding regions could also benefit from the programme as know-how would be spread from the centres to neighbouring areas (Ministry of the Interior 1990). At the beginning, thus, the programme was strongly developed in the framework of the knowledge-based economy in which growth poles are prioritised and their competences strengthened. Accordingly also the Helsinki region – the most research intensive area in the country – was included in the programme. There was, however, reluctance among the actors in Helsinki concerning the programme as it was regarded as a means of regional policy and considered that such policy or "Oulu model" are not needed in the capital region. According to our interviews, the Committee for the Centre of Expertise Programme which is responsible for the coordination of the programme also saw it necessary to include Helsinki in the programme as otherwise the programme would have been stigmatized as a means of decentralisation.

At the outset the programme revolutionised regional policy thinking: thus far the leading principle had been to support the weak regions and to level down differences between the regions whereas now the strongest know-how was taken as the object of development. The idea was to promote the already strong regions and fields of expertise and thus strengthen the knowledge-based economy. During the evolution of the programme, there have, however, been different stages which reflect changing interpretations of the knowledge-based economy. In the late 1990s and early 2000, the programme expanded considerably both in terms of regions and technological fields, but, conversely, latest guidelines refer to a stricter model based on fewer centres and technological fields and increasing emphasis on international competitiveness. These changes also illustrate the partly conflicting position of the programme at the intersection of regional and technology policies.

A tool for modern and growth-oriented regional policy

The Centre of Expertise Programme model emphasises regions' own initiatives and activeness while the state's role focuses on creating the general framework and defining the criteria according to which regions can apply for the programme. Three sets of criteria have been used: 1. quality criteria (quality related to research and education, business activities and internationalisation), 2. impact criteria (impacts on regional and national development) and 3. organisational criteria (critical mass, networking, organisation, funding). In addition regional specialisation and division of labour have been important criteria when fields of expertise have been selected (Ministry of the Interior 1996). Regions that are nominated to the programme then receive state funding for coordination costs, project preparation and seed funding for top projects. In order to receive state funding, however, it is necessary that regional actors also make own investments. For instance, in the Satakunta Centre of Expertise, the city of Pori has been an important financier as it has provided seed funding as well as funding for coordination of the activities. Actual development projects in the centres are funded through normal funding channels such as the EU structural funds, Tekes, Employment and Economic Development Centres and firms. The aim of the state funding is integrative in the sense that it brings different actors together and catalyses joint activities in the region. Thus the programme is not based on a strict top-down state regulation but rather on a general framework that regions can implement relatively freely once accepted in the programme.

In practice, however, the state funding for the centres has been rather small although it has grown from 1.68 million euros in 1994 to 9.5 million euros in 2004 (Ministry of the Interior 1996; Committee for the Centre of Expertise Programme 2004). During the same period the number of centres has grown from 8 to 22 which means that the average funding per centre has not increased. The irrelevance of the state funding is reflected in that many centres tend to prioritise the centre of expertise status vis-à-vis the state funding they receive. Yet, the basic state funding has generated significant amounts of project funding in the centres. For instance, in 1999–2001 project funding in all centres was some 150 million euros (Ministry of the Interior 2003). The insignificance of the state investments also tends to raise some concern as similar programmes with substantially higher budgets have been started in several countries (Neuvo 2004: 4). Consequently, there are views in the state administration that better results would have been achieved if more state funding had been invested.

Primarily, the programme can be seen as a tool for identifying and marketing regional strengths and profiles but it cannot – and it is not intended to – direct development in the regions. In general terms, regional development is strongly path-dependent as it relies on historical, cultural and institutional factors which change slowly and are difficult to influence upon. The development of an industrial cluster in a certain region, therefore, is often the result of strongly localised conditions and development trajectories that have evolved over decades (Miettinen 2002: 97). Through the programme as well as other state level policy instruments it is thus possible to influence certain elements and generate or strengthen local and regional development processes. Yet, how the development actually unfolds in a region is a complex issue depending on broad socio-economic factors.

According to our interviews, the programme is seen as a successful tool of modern and growth-oriented regional policy both in regional policy and technology policy administrations. Differing from the traditional regional policy based on even distribution of funds, the approach of the programme is founded on competition and strengthening such structures that generate growth, jobs and new entrepreneurship. Similarly, it has also been able to gain a strong support among political decision-makers. Formally the decisions concerning the programme have been made by the Government and all political parties have supported the centre of expertise policy. In this respect there is a clear difference to general regional policy which has been loaded with controversies among political parties.

Recently, the programme has also become an internationally renowned model and it is often used as a best practice example in the EU and the OECD. In this respect, its model has been reflected in the aims of the EU to boost the lagging Lisbon strategy. In the Brussels European Council meeting in March 2005 the heads of state emphasised – referring to the Finnish experience – that the Member States should develop their innovation policies inter alia with the focus on "developing partner-

ships for innovation and innovation centres at regional and local level" (Council of the European Union 2005: 4). An attempt to transfer the Finnish model has recently been made in France where a similar, ambitious programme has been started rather successfully (OECD 2006).

According to evaluations, the programme has indeed had significant impacts on regional growth processes (Ministry of the Interior 2003). As a result of the projects, over 1300 new firms were established and 23,000 new jobs were created between 1994 and 2001. Most jobs were created in Helsinki, Oulu and Tampere regions which are among the strongest growth regions in the country. Moreover, the programme has had important impacts in raising the technological level and in enhancing capacities to exploit national R&D resources and the EU structural funds in different localities (Ministry of the Interior 2003) as well as in promoting regional cooperation and networking (State Audit Office 2001).

In terms of territorial networking, the programme has activated different stakeholders to reflect on regional strengths and created common discussion forums. For instance, in the Helsinki area, collaboration and interaction between universities, research institutes and firms has increased substantially over the last decade as new science parks and technopoles have been created (Pelkonen 2005). As an expression of the progress, the European Competitiveness Index ranked Uusimaa region as Europe's number one in competitiveness and creativity in 2004 (Robert Huggins Associates 2004). The Centre of Expertise Programme has been an important factor in this development. In the view of a representative of the Ministry of Trade and Industry, the role of the programme has been decisive in the development of the knowledge-based economy in the capital region. Similarly, in middle-sized areas, it has substantially activated cooperation between local actors. Satakunta area provides one example in which the programme has contributed to the creation of a culture of co-operation, the lack of which has earlier been an obstacle to regional development.

Problems related to the programme model and the coherence of regional policy initiatives

In the early stages, the programme faced problems in terms of commitment of different actors and doubts over its impacts. While these troubles have now mostly been solved, some problems remain. One of them is related to the links between the individual centres of expertise. The cooperation between the centres is vague which makes the clustering effects at the national level weak. Local actors in Satakunta, for instance, consider that the programme model hinders territorial development by actually preventing cooperation between regions due to the lack of coordination and resources allocated into creating such structures. In this respect, joint strategic efforts and financing between the centres could offer a possibility for a competitive advantage for regions in terms of international competition and resource allocation. Collaboration might also release some resources from administration to the actual regional development work as the limited resources could be utilised in a more efficient way. Stronger clustering between the centres could also increase the coherence of the programme. Recently, the lack of collaboration has indeed been acknowledged by policy-makers and politicians and the next programme period (2007–2013) will comprise a new model based on clusters of various centres of expertise.

The lack of cooperation has also been related to the principle of competition which is at the centre of the programme model. The centres are in strong competition with each other which hinders their motivation for cooperation. On the one hand, by increasing territorial division of labour, the programme tends to decrease competition, but its actual organisation places regions and centres in continuous mutual competition as, for instance, the centres have to compete even for the allocation of the basic state funding. According to some representatives of the state administration, however, there should be even more competition: the current logic is seen to be based slightly too much on even distribution and thus there should be more dynamics.

Besides these general issues, there have been particular problems with two types of centres of expertise: centres focusing on "softer" fields on the one hand and network-based centres on the other. In 1998, the programme was expanded to include not only strictly technological fields but also new soft areas of knowledge and know-how such as marketing, design, cultural production and learning. Such expansion reflects the aims of a broader technology policy and a more inclusive approach to the knowledge-based economy. Subsequently, centres of expertise focusing on, for instance,

chamber music in Kainuu and travelling in Lapland were included in the programme. Although such soft fields are regarded as highly important in terms of future growth and employment, so far their development has not been as fast as was expected. Growth in terms of jobs has not been that important and some of the centres have been operating on a rather vague basis. Also the development of the networked centres of expertise which are based on the cooperation of several smaller centres has been problematic. Currently the programme includes four networked centres (food processing, tourism, metal industry and wood processing) but all of them have experienced serious troubles. There seems to be problems of coordination, mutual competition and lack of commitment. According to our interview data, the networked centres have actually been included in the programme by political decisions and not by quality criteria. The Committee for the Centre of Expertise Programme which makes the proposal of the centres has not included them in the proposals but they have been added in when final decisions have been made at the Government.

If these problems seem to be characteristic to some centres, internationalisation is one that is common to most of them. The original idea has been that the centres should be so strong that they would attract foreign know-how, experts and firms. Thus far such internationalisation has taken place only in a very limited degree and mainly in the three biggest centres (Helsinki, Tampere and Oulu). This has led the smaller centres to question the rationality of the objective of internationalisation. In Satakunta Centre of Expertise, for instance, it is considered that the possibilities for increasing the region's importance in national and international levels are limited due to the lack of adequate resources. The generic model of a successful growth centre with a world-class expertise and competitive performance might not, therefore, be reasonable for a region like Satakunta. Already the understanding of successful regional development is somewhat different in the area in comparison with the programme's objectives. Most of the resources in Satakunta have thus far been used for creating regional know-how and local cooperation structures. From their perspective, the Centre of Expertise Programme is therefore ultimately a regional programme and a tool for development within the area.

There also seems to be some problematic overlaps between the Centre of Expertise Programme and other policy programmes which reflect incoherence in overall regional policy. Of these, most important are related to the Regional Centre Programme which was started in 2001 with the aim of developing a network of 34 regional centres covering every region in the country. The focus of the programme is less on top level expertise and more on traditional economic development policies. The objective is to balance the regional structure and development. Yet, there seems to be some confusion between the programmes as they are often implemented in same regions. Besides the Regional Centre Programme there are also other slightly overlapping programmes and currently another competitive programme, Policy Mix for Large Urban Regions, is being prepared. In one region, there can thus be various regional policy programmes running simultaneously (e.g. the Centre of Expertise Programme, Regional Centre Programme, Objective 1, Island Development Programme, Rural Policy Programme) which may easily lead to confusion. This is acknowledged by a representative of the Ministry of the Interior who stresses that it is then "undoubtedly difficult for elected officials in different meetings to discern what the actual strategy of the region is".

Tensions between regional policy and technology policy

In principle, the Centre of Expertise Programme is placed at the intersection of regional and technology policies. Yet, the policy sectors' divergent foundations and ways of thinking have tended to bring forth conflicts in the course of the programme. Originally, it reflected a reorientation in regional policy in which knowledge and know-how were raised as key aspects of the policy and the role of urban regions became increasingly important. Similarly, the beginning of the programme overlapped with changes in science and technology policy. With the introduction of the concept of national innovation system increasing emphasis was put on networks, clusters and relationships between organisations in the early 1990s. Focusing on regional and local networking the programme concept thus fitted neatly also in the framework of national science and technology policy.

During the evolution of the Centre of Expertise Programme, a central tension has evolved around the question of how large geographical and tech-

nological scope it should cover. In the beginning it consisted of 8 centres, all of which were based on universities and existing technology centres. Such focus supported also the priorities of technology policy. Since the mid-1990s the programme has, however, expanded considerably and currently there are 22 centres which include 45 different fields of expertise. The expansion has widened the geographical coverage of the programme and thus highlighted the regional dimension. It has also taken it towards a broader definition of the knowledge-based economy emphasising larger technological and geographical scale. At the same time the expansion has to some degree compromised the key objective of the programme which is the development of world-class expertise. A representative of the Ministry of the Interior brought this forward in his interview by saying that "we are now in a situation that I guess nobody can really argue that there would be so much world top class know-how and in so many different fields (in Finland)".

In the mid-term evaluation of the programme it was shown that the level of know-how in certain centres was high only by Finnish standards but relatively far from the international top (Ministry of the Interior 2003: 129–134). The expansion of the programme has indeed been seen as problematic in particular in the technology administration. It is considered fragmented with too many themes and too small units. In this way it does not support regional concentration and development of growth poles which is seen as necessary in Tekes for instance (Tekes 2004). It is therefore argued that there is a need to find a better focus to the programme and reduce the number of centres. From the perspective of technology policy it thus seems that the objective of programme has become slightly obscure. Is the goal actually to develop top level expertise or to distribute know-how to the different parts of the country? Representatives of regional policy have been much more moderate in approaching the same question.

The expansion of the programme has also been related to political pressures. The Government makes the final decision concerning the centres that are included in the programme. Often the number of centres has risen from the amount proposed by the Committee for the Centre of Expertise Programme during the discussion at the Government. This indicates that there has been some reflection of regional equality at the political level but also power politics has been involved.

Similarly, there have been some conflicts between the Ministry of the Interior and the technology administration concerning the organisation and coordination of the programme. In this respect, an underlying tension in terms of the regional dimension between the two policy domains becomes visible. While regional equality has traditionally been a central principle of regional policy, in technology policy side there is a clear view that technology policy does not have regional dimension. High quality is thus the most important criterion and funding cannot be allocated according to regional aspects. Such an underlying tension was visible in particular in the beginning of the programme as the Ministry of Trade and Industry was very reluctant in respect to it. In the words of a representative of the Ministry, it was considered at that time that "the programme competes with innovation policy and, since it is coordinated by the Ministry of the Interior, it must be some kind of a regional policy plot and the Ministry of Trade and Industry should not be involved in it". Only during last a couple of years it has been more active which has been largely due to the change of Government. The position of the Minister of Trade and Industry shifted after the 2003 elections from the Social Democrats to the Centre Party and the latter has traditionally strong support in rural areas and thus places a lot of emphasis on the regional policy perspective.

Also funding of the programme has created tensions between the ministries. Although the organisational responsibility has been in the Ministry of the Interior, it has had only very limited resources to invest in the programme and for a long time the funding had to be collected from different ministries. In the Ministry of Trade and Industry, for instance, the situation was regarded as paradoxical as other ministries had to fund a programme that was clearly identified to the Ministry of the Interior. While currently the funding has been regrouped to one source, new tensions tend to arise. In the technology administration it is considered that the programme has been driven too far away from those actors that are responsible for the development and content of technology policy (Koskenlinna 2004). Also the Council of State (2005) has considered that the programme should be better integrated to the Ministry of Trade and Industry. Such a change refers to a stronger regional concentration of resources in the programme.

Towards a stricter model of the knowledge-based economy

Latest guidelines concerning the Centre of Expertise Programme confirm that the programme will comprise a model that promotes increasing regional concentration and embraces a stricter interpretation of the knowledge-based economy. Accordingly, the next programme period (2007–2013) which is currently under preparation will concentrate on promoting competitiveness in fewer centres of expertise than thus far (Committee for the Centre of Expertise Programme 2005). Cooperation between the centres will be strengthened through a cluster-based model: there will be 6–8 national clusters to which different centres will contribute. Thus, also the links to national technology policy will be strengthened and regional specialisation will be increasingly promoted.

Increasing cooperation and building clusters is undoubtedly important, as it is unlikely that individual Finnish regions can be highly successful in new high tech fields in which heavy investments are made globally and competition is fierce. Yet, it is also reasonable to ask how many regions in Finland can base their success in knowledge and know-how. And more specifically, what kinds of regions can base their future success in the knowledge-based economy model? In particular regions which have been public sector-driven and lack strong industrial base are facing problems. On the other hand, currently large regions and parts of the country are completely left outside these programmes and policies focusing on fostering knowledge-based growth (Siuruainen 2003). The new programme model also strengthens this discrepancy. Therefore it has been argued that more measures should be directed in enhancing the competitiveness of those regions that are not covered by current innovation and competitiveness policy (Vihriälä 2003). If a region does not have structures for knowledge creation and diffusion, keeping up with knowledge-based development becomes increasingly difficult. In this respect it is worth to note that also the Centre of Expertise Programme is more apt for enhancing the existing knowledge infrastructures and it clearly does not suit as well for creating such structures or networks (Ministry of the Interior 1996). Thus further consideration is needed at the highest levels of decision-making on how different regions are developed in the framework of the knowledge-based economy and whether some regions should develop alternative development paths.

Conclusions

Along with the increasing complexity of socio-economic issues the demands for integrative policies have received government attention. However, the attempts to implement these requirements have met many problems. Partly they are dependent on the changes in the underlying state ideology that draws the general outlines and specifies the division of labour between the state, industry and other actors. Partly the problems refer to the objectives of various policies, the structures of power between them, and to the inflexibility to cross customary mandates.

Today the idea of a knowledge-based economy has penetrated into the visions of the super-states and their member countries. In principle, the knowledge-based economy refers to policy integration, but as our study indicates, the conditions of integration are limited. In principle market governance has taken power from state regulation, and strict competitive elements have strengthened the efforts to identify the best economic performers and to elaborate regional profiles on this basis. In Finland the state that has adopted the principles of market governance still wants to regulate more policy issues than is typical for a market-oriented state.

The relationship between technology policy and regional policy in Finland provides a good angle to the analysis of policy integration and the role of the policies under various political ideologies, i.e. the welfare state and the neo-liberal knowledge-based economy. High-tech- and market-driven technology policy fits well to the latter frame and is also high among the political priorities of the EU. Modern technology policy is not, however, very reflexive to new social problems.

Regional policy in turn has gone through a long history of state compensations and regional disqualifications reflecting the goals of an ideologically coherent period of the welfare state and slowly advancing industrial modernisation. Thereafter a competitive technology policy has become hegemonic bringing in tensions between the idea of the equalisation of opportunity and new, quite standard sets of competitive performance. When the current Finnish Government has pushed technology policy towards regional issues, new tech-

nology- based approaches have been adopted as the primary strategy. Finland is an excellent example of a nation-state that first established raw-material based state-owned industries and new regional universities all over the country and is now filling it with the centres of competence. This strategy indicates that regional issues are highly politicised and full of conflicts of interest.

The Centre of Expertise Programme reflects well the transition towards a technology-driven and competitiveness-oriented regional policy as well as some conflicts that have arisen in attempting to integrate regional and technology policies. At the same time, the evolution of the programme shows changes in how the framework of the knowledge-based economy has been interpreted. The expansion of the programme has been an indication of a broad approach in which a range of geographical and technological areas were drawn into the programme. This resulted in a model which included very different kinds of regions both in terms of foundations for knowledge-based development and level of know-how. The scale went from large cities with internationally recognised base of science, research and industry, to middle-sized cities aiming to develop top-level expertise in one or two fields and to small peripheral localities with one very specific field of expertise. Interestingly, the concept proved quite successful in these very different kinds of environments. Yet, there is, undoubtedly, a trade-off between quality and scale. In a small country like Finland the limits become apparent quite soon.

The recent guidelines of the Centre of Expertise Programme refer to a model of substantially higher quality criteria and fewer regions. Reflecting a stricter version of the knowledge-based economy, it raises concern over balanced regional development. Dropping some regions out of the programme will be a serious backlash for those areas. A key question will thus be whether other state programmes will be able to take care of these regions and how the coordination between the various regional policy programmes can be improved. An alternative approach would have divided the programme into different categories. Such a model would have enabled differentiation between the centres and promoted concentration of resources without excluding any of the current centres. Ultimately, the question of how to strike a balance between competitiveness and regional diversity and equality will still remain open in regional and technology policies.

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