

Regional and innovation policies in Finland - towards convergence and/or mismatch?

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Regional and Innovation Policies in Finland Â Towards Convergence and/or Mismatch?

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Manuscripts

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3 Regional and Innovation Policies in Finland – Towards Convergence and/or Mismatch?
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20 JAUHAINEN, J. (2007) Regional and Innovation Policies in Finland – Towards
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22 Convergence and/or Mismatch?, *Regional Studies*, 41, 000–000. This article discusses
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24 regional and innovation policies in Finland, with special attention focused on centres of
25
26 expertise, regional centres and Multipolis programmes. Traditionally, regional policy in
27
28 Finland supports populating of the entire country by providing equal access to welfare
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30 regardless of local resources. Current innovation-oriented regional policies promote
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32 larger urban areas by integrating them as regional clusters into the national innovation
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34 system while promoting necessary innovation-supportive interaction within localities,
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36 and by opening development into a global economy. Simultaneous implementation of
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38 the goals of the traditional distributive welfare policy and new competitiveness policies
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40 easily leads to a policy mismatch at the local level.
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INTRODUCTION

The European Union (EU) is struggling to reach the goals of the Lisbon strategy: to become the world's most competitive area by 2010. In February 2005, the European Commission led by José Manuel Barroso stressed the importance of employment growth and productivity rise in the EU. The Commission insisted that investment in research and development, a well-functioning education policy, high technologies, innovations and strengthening of the common market are necessary for a more competitive EU, member states and regions (EUROPEAN COMMISSION, 2005).

The EU progresses slowly in implementing competitiveness strategies, but in several international evaluations Finland appears as the world's most competitive country. For example, the World Economic Forum (2005) ranked Finland 1st in information society, 1st in innovation, research and development, 1st in liberalisation, 1st in network industries, 1st in enterprise environment, 1st in sustainable development, 2nd in financial services and 3rd in social inclusion among the EU countries. Nevertheless, Finland is a small country in terms of population (5.3 million inhabitants, i.e. 1.1 % of the EU27) and economic resources (GDP 157,200 million euros, i.e. 1.5 % of the EU27). Furthermore, Finland places among the lowest of the OECD countries in attracting foreign direct investments (12,467 million euros) (OECD, 2005, 26).

Finland has a national strategy to organise an information society that includes production and use of high technology. The policies support a vision of a comprehensive

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2
3 information society that territorially encompasses the whole country and its population
4 (*SCIENCE...*, 2000; 2006; *INFORMATION...*, 2005). The Finnish innovation policy
5 follows the definition of an innovation policy given by Lundvall & Borràs (1997, 37):
6 promoting the development, diffusion and efficient use of new products, services and
7 processes in markets and inside private and public organisations. For example, mobile
8 phone penetration was very rapid already in the 1990s, and today over 90 percent of the
9 population are mobile phone subscribers and over half use the Internet (ITU, 2006).
10 However, there have also been challenges in the recent years. The explosion of the
11 'Internet bubble' in 2000 ended the rapid progress in employment growth in the
12 information and communication technologies (ICT), and Finland is not among the top
13 countries in broadband distribution. In addition, the OECD (2005, 70) indicates that the
14 use of ICT by SMEs "falls far short of the image of Finland as a leading 'Information
15 Society' country." Nevertheless, Finland has met many of the criteria of the Lisbon
16 strategy. The EC target of investing three percent of the national GDP into R&D by
17 2010 was reached in Finland already in 2000, and it was 3.4 percent in 2005 – with the
18 notable contribution of Nokia (STATISTICS FINLAND, 2006a).
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43 In this article I discuss the development of regional and innovation policies in Finland.
44 Firstly, I synthesise the evolution of the nationally designed regional policy and
45 innovation policy until today. I argue that the regional and innovation policies were
46 separate earlier, but since the 1990s, following the national authorities' focus on high
47 technology, globalisation and competitiveness in economic policies, they have been
48 converging. As empirical material I use regional development legislation in Finland
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3 between 1966 and 2006, key documents of the Science and Technology Policy Council
4 in 1990, 2000, 2003 and 2006, as well as earlier scientific reviews of the Finnish
5 regional and innovation policies.
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12 Secondly, I discuss the on-going regionalisation of the national innovation policy and the
13 integration of innovation into the regional policy. As empirical examples I use the
14 Centres of Expertise Programme, the Regional Centres Development Programme, and
15 the Multipolis project. The traditional regional policy aims to maintain the whole
16 country of Finland populated through a balanced regional structure that provides
17 opportunities for welfare and growth regardless of the location (REGIONAL
18 DEVELOPMENT ACT, 2002). These equal opportunities are also stressed in recent
19 information society policies (*SCIENCE...*, 2006). However, at the same time the
20 contemporary (innovation) policy aims to raise the competitiveness of large urban
21 agglomerations, based on regional specialisation, clustering of economic activities and
22 internationalisation (MINISTRY OF THE INTERIOR, 2004). There is a challenge in the
23 integration of these two. Thirdly, I use northern Finland and the Multipolis high
24 technology network as an example of controversies encountered in integrating regional
25 and innovation policies in Finland. Finally, I raise issues regarding both the Finnish and
26 international debates on regional and innovation policy evolution.
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53 SUCCESS OF REGIONAL AND INNOVATION POLICIES
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3 Several scholars in the 1980s (see FREEMAN, 1991; LUNDVALL, 1992; NELSON,
4
5 1993) elaborated the concepts of innovation systems, i.e. how interaction leads to
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7 innovations over space. In the beginning, an innovation system meant the innovative
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9 capacity of national production systems. Such a nationally bounded innovation system
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11 was localised and promoted valuable capabilities and framework conditions not
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13 available to competitors abroad. In the early 1990s, globalisation and the need to
14
15 enhance competitiveness turned the attention of national governments towards
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17 systematic understanding and applied use of innovation systems. It was possible to
18
19 enhance national competitiveness by identifying and enhancing the core of the national
20
21 innovation system, i.e. nationally specific interaction between the structure and
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23 institutions (LUNDVALL & MASKELL, 2000, 364). The European Commission and
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25 many countries were attracted by these observations and formulated their policies
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27 accordingly.
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36 In the EU's structural policies for 2007–2013, significant is to improve local and
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38 regional competitiveness through innovations (HÜBNER, 2005). Regional and
39
40 innovation policies are crucial for reaching the goals of the Lisbon strategy and for
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42 successful regional development. According to Lorenzen (2001, 164), regional
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44 development is dependent on localised and interconnected processes of technological
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46 development (innovation) and evolution of a range of social institutions (institutional
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48 learning). The ability to organise endogenous learning processes and create favourable
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50 resonance structures for policy learning determines the competitiveness of regions
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52 (BENZ & FÜRST, 2002, 22).
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6 Evolutionary economics is increasingly used to conceptualise and organise regional
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8 development by stimulating the diffusion of innovations and the emergence of
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10 behavioural and institutional variety in an economic system. Important are traditional
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12 structural development parameters, such as the composition of the production structure,
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14 the size and knowledge level of the labour force, demand for certain goods and services,
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16 the efficiency of market institutions and an efficient system of fiscal and non-fiscal
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18 government regulations, but also dynamic relations between economic actors and their
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20 environment. Development is a trajectory between 'path dependency' and 'selection',
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22 referring to a local environment that channels new variety, enabling or constraining
23
24 favourable conditions for change. Constraining practices are inherited regional
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26 structures, institutions and ideas that do not enable necessary changes. To prevent
27
28 negative development lock-ins, selections need to be made. However, these selections
29
30 are often based on trial and error, because in the current globalisation context the success
31
32 of regional development policies cannot be guaranteed. Nevertheless, a regional policy is
33
34 more likely to be successful when its policy objects are strongly embedded in the
35
36 surrounding environment (LAMBOOY & BOSCHMA, 2001, 115–128).
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46 Innovation has taken a fundamental role in organising regional development. Innovation
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48 is the basis for obtaining competitiveness by firms, regions and nations. Innovations
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50 bring new opportunities to a territory in which innovation takes place or is implemented.
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52 Several approaches explain the territorial features of innovation, such as innovative
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54 milieu, industrial district, regional innovation system and new industrial spaces. These
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3 approaches share the importance of innovation in regional development, but differ in
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5 estimating the role of firms, institutions and other actors in the emergence of innovation
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7 and the regional organisation of innovation. Some see institutions as enabling, others as
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9 constraining. Regarding R&D, some underline the volume of investment, others
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11 interactivity and learning (MOULAERT & NUSSBAUMER, 2005).
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17 Under globalisation, the private sector and public authorities have to focus on keeping
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19 not yet ubiquitous, immobile, localised capabilities and networking these capabilities
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21 successfully (LUNDVALL & MASKELL 2000, 364). From the spatial perspective,
22
23 several innovation systems co-exist in the same area. Production, transfer and
24
25 application of knowledge are crucial for innovation systems, whether mostly at the
26
27 supranational, national or regional level. Systematic enhancement of such knowledge is
28
29 conducted through innovation policies. According to Cooke (2004, 2–3), a regional
30
31 innovation policy promotes the emergence and development of new products and
32
33 innovative enterprises in a certain territory. Interaction between actors and agents of
34
35 innovation is highly embedded, exclusive, and localised. It relies heavily on network
36
37 modulation in a milieu in which vibrant and active social capital exists. Production and
38
39 efficient use of intellectual capital is an intangible and reproducible resource, which
40
41 fundamentally depends on social capital. Therefore, regions and networks between
42
43 developers and users of innovations are fundamental, and regionalisation of a national
44
45 innovation system and policy is needed to foster innovations in regional development.
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47 Based on evolutionary economics, Lambooy & Boschma (2001, 124–128) argue that
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49 recommendable policies allow a variety of development paths that connect various parts
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3 of innovation systems to stimulate learning and innovation. Embedding of policy objects
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5 in the surrounding environment is important, because when local strategies deviate
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7 considerably from the local context, the risk of policy failures increases.
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12 According to Asheim & Gertler (2005, 298–308), regional aspects in innovation systems
13
14 can be viewed from three perspectives. Firstly, there is regionalised national innovation
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16 system, which is functionally integrated in a national or a supranational innovation
17
18 system. It means clustering of large enterprises' or governmental research institutes'
19
20 R&D laboratories in planned science parks, often near traditional universities and
21
22 universities of applied sciences. Secondly, there is a territorially embedded innovation
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24 system based on interaction within a particular region. Firms base their innovation
25
26 activity on localised learning processes stimulated by proximity in geographical, social
27
28 and cultural aspects, but not much on interaction with knowledge organisations. Thirdly,
29
30 there is regionally networked innovation system in which interactively learning
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32 enterprises and organisations are embedded in a specific region. Regardless of the
33
34 differences in these three perspectives of the role of territorial inputs and outputs of
35
36 innovation, a combination of knowledge generation and exploitation is seen as a
37
38 necessity for commercially viable innovations, which in the long run generate growth.
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40 An advantage for the emergence of commercially viable innovations is a shared vision
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42 and networking between key agents, such as scientists, engineers, entrepreneurs and
43
44 venture capitalists. Supportive public and private sector co-operation is often significant
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46 in generating existing and new knowledge. Publicly-funded research organisations
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48 possess a highly absorptive financial capacity and have a broader emphasis on basic
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3 research, whereas many leading specialised applied research centres are private. For
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5 knowledge exploitation as well, significant is a combination of the public and private
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7 spheres, which creates an institutional structure for innovations that arranges patenting,
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9 licensing, spinout, incubation, financing and swift stock market flotation and allows the
10
11 active presence of venture capitalists (COOKE, 2004, 2–3).
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17 In Finland, success in the above-mentioned ranking lists for global information society,
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19 innovation and competitive economy does not mean that such success is territorially
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21 even. The past ten years have witnessed particular growth in the population and
22
23 employment of the largest urban agglomerations, whereas the countryside and the
24
25 peripheral eastern and northern regions have declined. Polarisation of the regional GDP
26
27 per capita has increased, and in 2001 only three regions were above average (OECD,
28
29 2005, 14–20). The earlier regional convergence measured with the regional GDP per
30
31 capita changed into divergence during the deep recession and the recovery from it in the
32
33 1990s (PEKKALA, 2000; KAUPPINEN & KARHU, 2002, 276). In addition, regional
34
35 differences in R&D are over seven-fold, with the Helsinki region plays an overwhelming
36
37 role. There are notable regional differences in higher education, as well. For example,
38
39 the share of the population aged 25–54 years with a university degree is 39 percent (total
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41 230,000) in the Uusimaa region close to Helsinki and 24 percent (total 8,000) in the
42
43 north-eastern region of Kainuu (OECD, 2005, 14–20). Furthermore, universities in the
44
45 Helsinki region have a much higher scientific impact than elsewhere. To summarise,
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47 Finland is not as harmonious and equally developed a country as is often presented.
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3 One key strategy in Finland is to pay more attention to the regional level in organising
4 the knowledge-intensive society (*SCIENCE...*, 2003; 2006). Embedded regional
5 specificities and untradable interdependencies within innovation-developing networks
6 are capabilities not yet available to enterprises outside the regions. According to
7 evolutionary economics, achieving an innovation in one enterprise or institution does not
8 diminish the possibilities of other enterprises or institutions to reach innovations
9 (KRUGMAN, 1998). Spreading the emergence of innovations spatially would create
10 more even regional development while raising national competitiveness. However,
11 achieving such balanced and even regional development is challenging even in Finland.
12 The possibilities of policies depend not only on the current economic context, but also
13 on the trajectory of trials and errors in past regional and innovation policies. Therefore, a
14 careful analysis of the policy trajectory is necessary.
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36 REGIONAL AND INNOVATION POLICIES IN FINLAND

37 *Early regional and innovation policies until the late 1980s*

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41 Regional policy is a rather old phenomenon in Finland. Already before the Second
42 World War there was a plan to use natural and human resources efficiently in terms of
43 the whole country. The immediate post-war development of regional policy was
44 influenced by geopolitics. Besides economy, it was politically important that the whole
45 country, including the peripheral eastern borderland and northern Finland towards the
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3 Soviet Union, would be populated. The state promoted this expansion of human
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5 activities to less developed areas and unified the country and its population. Agriculture,
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7 including forestry, was supported by arranging small farms for war veterans, refugees
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9 from ceded Karelia and others. Another method was to establish state-owned mass-
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11 production factories in less developed areas, which had a labour force and natural
12
13 resources available. The key was to develop export-oriented industries (KEKKONEN,
14
15 1952). Later expansion of the welfare society created public sector employment in
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17 peripheral municipalities and regional centres. Additional regional policy support was
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19 targeted to declining rural areas. This was to prevent radicalisation of the inhabitants of
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21 rural areas, i.e. their turning into supporters of the growing Communist Party.
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29 In 1960 the labour force was equally divided between agriculture, industry and services,
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31 but soon people started to move on a massive scale to industrialising towns: from the
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33 north to southern Finland and Sweden. An institutional regional policy was started in
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35 1966 when the first regional development legislation was approved by the Parliament,
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37 which was motivated to constrain migration and to help less developed areas through
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39 investment and tax exemptions. During the first (1966), the second (1970) and partially
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41 the third (1975) period of regional development legislation, regional policy was a matter
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43 of regional subsidy transfers and of supporting national economic growth by means of
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45 industrial location policy – the latter influenced by the then common growth pole policy
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47 (VARTIAINEN, 1998; PEKKALA, 2000). In addition, the functional central place
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49 theory was applied to organise service, administration and the transport network. Since
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51 1975 one can really talk about regional policy in Finland with comprehensive goals for
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3 the whole country (HAUTAMÄKI, 1999, 2–3). Large-scale industrialisation of
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5 peripheral regions was the goal, where local employment was created in factories, in
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7 subcontracting industries and in additional services for the new population. State
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9 ownership of mass-production manufacturing allowed such policy implementation.
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11 Legislation specified the objectives and procedures of regional policy, the
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13 responsibilities of different authorities, implementation of planning procedures, and
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15 measures for implementing the projects in different administrative sectors.
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22 Regional policies in Finland were designed with an eye on the policy practices of
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24 Finland's more developed neighbour, Sweden. However, the situation started to change
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26 in the latter 1970s and early 1980s due to the differing economic context. The fourth law
27
28 (1981) brought some decentralisation in regional development decision-making and
29
30 investments, as well a focus on a variety of policy tools for qualitative change in the
31
32 regions. However, despite the need for restructuring, the strategies of concentration
33
34 prevailed in industrial policy. Regional policy was part of the national economic policy,
35
36 and the national government promoted balanced regional development through it. The
37
38 economic structure of regions was taken into account in the allotment of subsidies. The
39
40 fifth law (1988) stressed the importance of equality in regional development. About half
41
42 of the population lived in an area covered by regional subsidies. Information society was
43
44 mentioned for the first time in this context. Gradually, more emphasis was placed on
45
46 small and medium-sized enterprises, development by projects and renewing the national
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48 economic structure (VARTIAINEN, 1998; HAUTAMÄKI, 1999, 3–4; PEKKALA,
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50 2000). However, substantial changes took place only in the early 1990s.
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6 Compared with the regional policy, the innovation policy is a newer phenomenon. The
7
8 current national innovation policy in Finland can be traced to the science and technology
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10 policy (STP) initiated during the 1960s when, according to the key scholar of the Finnish
11
12 STP, Lemola (2003, 78), the machinery of the innovation policy was quantitatively
13
14 expanded. Lemola (2004, 271–272), has found five elements that promoted STP in the
15
16 early years. Firstly, higher education was developed and regionalised from the late 1950s
17
18 until the 1970s. This signified the establishment of several new universities, including
19
20 that of Oulu, today the second largest. Secondly, in 1963 the science policy council was
21
22 established, which later became the Science and Technology Policy Council. This
23
24 council is fundamental in national innovation matters today, especially in their political
25
26 dimension. Thirdly, in 1967 the Finnish National Fund for Research and Development
27
28 Sitra was founded to promote industry-related STP. Sitra is today the major funding and
29
30 supporting authority for technology-related research and debate. Fourthly, a reform of
31
32 national scientific funding was conducted at the turn of the 1970s. Namely, the new
33
34 Academy of Finland was established and the old Academy, which was less controlled by
35
36 the national authorities, was dismantled. This led to more direct involvement of national
37
38 education policy in scientific research. Fifth, a policy doctrine was published in the first
39
40 STP programmes in the early 1970s. The emphasis on basic research in STP changed
41
42 into technology orientation already in the early 1980s. This was facilitated by the
43
44 founding of the National Technology Agency Tekes (later the Finnish Funding Agency
45
46 for Technology and Innovation) in 1983, the most important funding authority for
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48 applied technology development. However, until the late 1980s, the aim was to create a
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3 framework for STP to increase investment and internationalisation in R&D, especially in
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5 microelectronics and information technologies (LEMOLA, 2003, 78).
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10 *Transformation of regional and innovation policies during the 1990s*
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15 Internationalisation and globalisation significantly influenced regional and innovation
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17 policies in the 1990s. The evolution of the Finnish regional innovation policy is linked to
18
19 major macro-economic changes and EU accession. In the past 20 years Finland has
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21 changed from a rather closed society with a national economy to an economically open
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23 country with advanced technology. The roots of this change are in the late 1980s, when
24
25 the national government relaxed the national financial policy and true
26
27 internationalisation started (SKURNIK, 2005). Soon after that Finland's major trading
28
29 partner, the Soviet Union, collapsed and other major export partners declined, leading
30
31 into a deep economic recession in Finland, with unemployment over 17 percent. In
32
33 1990–1993 the national GDP fell by 9.5 percent (KANGASHARJU & PEKKALA,
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35 2004, 256). Necessary economic restructuring and a strong currency devaluation in the
36
37 early 1990s led to a fast recovery and growth in labour productivity in the latter 1990s.
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39 The latter was facilitated by the rise of the ICT cluster, whose competitiveness was
40
41 improved by the early opening of national competition in ICT and the launching of
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43 technology-supporting higher education programs in the 1980s (OECD, 2005, 9–10).
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53 In 1990 the Science and Technology Policy Council in Finland led by the Prime Minister
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55 published the *Review 1990 – Guidelines for Science and Technology policy in the 1990s*
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3 for the new STP (*SCIENCE...*, 1990). This fundamental document was based on a
4
5 review of the contemporary findings and paradigms of evolutionary economics in which
6
7 innovations were the core for development – to stimulate the development and diffusion
8
9 of innovation in the national economic system (see LAMBOOY & BOSCHMA, 2001,
10
11 119). According to Lemola (2003, 84; 2004, 273–274), the review influenced the
12
13 conscious organisation of the national innovation system. The key policy and
14
15 programme designers and makers fostered the role of R&D and higher education for
16
17 industrial and economic development. The result was a systematic identification of the
18
19 key features of the Finnish innovation system: development and utilisation of new
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21 knowledge and know-how (aggregate factors), a national research system (targeting
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23 higher education), a supportive atmosphere for innovations (facilitating co-operation and
24
25 interaction between the key actors), and internationalisation (enhancing simultaneous
26
27 national creation of innovations).
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36 The formation and direction of a national innovation policy and national innovation
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38 system are well evident in the policy statements of national governments. Accordingly,
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40 innovation, technology, competitiveness of the nation, knowledge-based development
41
42 and flexibility were mentioned as keywords of the government policy statement a few
43
44 times in the late 1980s. These keywords came into politics from the main
45
46 internationalising technology, paper and metal enterprises in Finland, including Nokia
47
48 and (Stora) Enso. In addition, in the early 1990s the national government and the key
49
50 stakeholders in economic policy organised training courses for decision-makers in which
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52 contemporary innovation-related theories, practices and policies were analysed. By the
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3 early 2000s, these keywords became common in national government policy statements
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6 (KANTOLA, 2006).
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10 Although the national innovation system was the core of early policies, ideas were
11 almost simultaneously presented for regionalising the knowledge-intensive society by
12 supporting regional centres of expertise, which would become globally competitive
13 through specialisation in technology (PAASIVIRTA, 1991). Government promotion of
14 regional strategies targeted towards a knowledge-intensive society facilitated the
15 penetration of innovation-related issues into a nationally designed regional policy
16 (LEMOLA, 2004). The national government 1991–1995 mentioned regional
17 competitiveness in its policy statement. Soon two major stakeholders in the Finnish
18 economy, Sitra and the Research Institute of the Finnish Economy Etlä, commissioned
19 an extended project on the competitive advantage of industrial clusters in Finland. In
20 1993 this regionally focused cluster framework was adopted in the *National Industrial*
21 *Policy for Finland* (MINISTRY OF TRADE AND INDUSTRY, 1993). There were nine
22 clusters, of which the ICT sector was one (HERNESNIEMI ET AL., 1996). The role of
23 Michael Porter's (1990) famous book, *The Competitive Advantage of Nations*, was
24 significant to the design of this cluster policy. Later the cluster approach was used to
25 design the Finnish innovation system, and Porter visited the country, as well. Lemola
26 (2003, 87) states that it was the national government that decided to allocate research
27 funding to support the development of national industrial cluster programmes. This
28 improved co-operation between cluster members, increased knowledge flow, spill-over
29 and networking, and deepened the co-operation between and within public and private
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3 sector agents involved in industrial clusters and innovation activities (PENTIKÄINEN,
4 2000). Later this “triple helix” model, i.e. active co-operation between national
5 government policies, universities and enterprises was fostered and the national
6 innovation policy strengthened the competitiveness of national clusters (PRIHTI *ET AL.*,
7 2000).

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18 As indicated, internal pressure towards an economically more accountable regional
19 policy came from the deep economic recession the country experienced in the early
20 1990s. Public investment in regional development was diminished and inefficient
21 transfer of subsidies was altered. The sixth regional development law (1994) changed the
22 principles of the national regional policy. After a long period of centrally designed
23 regional growth principles driven by passive state investment , endogenous regional
24 development and innovation-driven development emerged, indicating a paradigm shift
25 (OECD, 2005, 43). Beneficial development was to be achieved through locally initiated
26 projects implemented with the programming principle. Two regional policy goals were
27 still traditional, namely development of living conditions and ensuring the availability of
28 basic services everywhere in Finland and expansion of the infrastructure necessary for
29 regional development. The remaining aspects were new: renewal of regional production
30 structures, improvement of companies’ operating conditions and job creation, and
31 strengthening of regional economies and the skills of the local population (AALBU *ET*
32 *AL.*, 1999, 30). In addition, from then on innovations, technology development,
33 competence improvement and competitiveness have been ordinary regional policy
34 keywords.
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6 External pressure towards a national regional policy came from the need to adopt the EU
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8 standards before Finland joined the EU in 1995. The main responsibility in formulating a
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10 regional development strategy, i.e. a long-term regional plan, programme and
11
12 implementation, was transferred to new 19 regional authorities consisting of unions of
13
14 local authorities, in addition to the autonomous Åland islands. The ability of these
15
16 regions to carry out strategic tasks associated with the innovation policy improved. The
17
18 fundamentals of such an innovation-based regional policy were to increase knowledge and
19
20 competencies, innovations, new technologies, and related education and training. These
21
22 were combined with the traditional regional policy goal of maintaining the whole
23
24 country populated. It resulted in a programme-based policy to strengthen the
25
26 competitiveness and learning capacity of every region (VARTIAINEN, 1998;
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28 HAUTAMÄKI, 1999, 6–7; PEKKALA, 2000, 15). The devolution of power from the
29
30 former state provinces was not comprehensive, because in 1997 the national government
31
32 established for different regions altogether 15 Regional Economic and Employment
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34 Development Centres, which were responsible to various ministries. These centres
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36 became significant gatekeepers of national and EU funding for the regions.
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46 From the perspective of the innovation policy, Finland's joining the EU took place at a
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48 moment when innovativeness was strengthened in the EU's regional and structural
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50 policies. Furthermore, urban areas and networks were acknowledged as promoters of
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52 economic and employment growth at the European level (EUROPEAN COMMISSION,
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54 1995; 1998). This led to more careful attention to urban areas and urban policies in
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3 Finnish regional development – a topic not implemented so far (OECD, 2005, 49–57).
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5 The globally early attempt to unify traditional industrial policy and separate science and
6
7 technology policies into one united national innovation policy in Finland helped in
8
9 dissociating from the negative inherited lock-ins of low-tech mass production,
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11 agriculture and passive regional policies that the country had experienced so far.
12
13 Therefore, the current position of Finland among the advanced technological countries is
14
15 at least partly a result of the national government policies, despite Miettinen's (2002)
16
17 claim that it was also a coincidence, especially the enormous success of Nokia.
18
19 Nevertheless, as a result of this technology-promoting transformation, the value of
20
21 industrial production grew by 50 percent in 1995–2000, while the sector's employment
22
23 growth was 8 percent (STATISTICS FINLAND, 2006a). In 2004 the ICT sector
24
25 accounted for 20.6 percent of the national export value, or about 10 percent of the GDP,
26
27 of which 4 percent by Nokia alone (YLÄ-ANTTILA, 2005, 8). High technology became
28
29 a topic frequently discussed in the media and most often related to business with Nokia
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31 mobile phones (JAUHAINEN, 2007).
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42 *Current issues in regional and innovation policies*

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46 Today the Finnish innovation policy is based on a national innovation system divided
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48 between the public, private and non-governmental sectors (Figure 1). The most
49
50 important public actor formulating the institutional innovation system and innovation
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52 policy is the national government. The Science and Technology Policy Council, led by
53
54 the Prime Minister, is significant in issues of policy content. Obviously, the Parliament
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3 with its political parties is important due to its legislative powers. The most important
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5 ministries linked to the innovation policy are the Ministry of Education, the Ministry of
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7 Trade and Industry and the Ministry of the Interior, but other ministries are involved, as
8
9 well. Crucial public technology and research financing institutions are the National
10
11 Agency for Technology and Innovation Tekes, the Finnish National Fund for Research
12
13 and Development Sitra and the Academy of Finland. Other organisations, such as the
14
15 Finnvera funding agency, play a minor role. The key actors in creating innovations and
16
17 implementing innovation policies are universities, universities of applied sciences and
18
19 research institutes, including the State Technical Research Centre VTT. In the private
20
21 sector one finds scientific associations, private foundations, research institutes, large and
22
23 small enterprises (including the key actor, Nokia) and other corporate agents, such as
24
25 venture capitalists involved in R&D. At the local level there are municipalities,
26
27 technology and science parks, business parks and incubators that implement regional and
28
29 innovation policy programmes. According to Miettinen (2002), in the Finnish context,
30
31 the national innovation system relates to both academic research and the applied
32
33 innovation policy implemented through the triple helix approach mentioned earlier. The
34
35 OECD (2005, 58) also states that the triple helix interaction model contributed to the
36
37 rapid penetration of the national innovation system into practice. Formulation of a
38
39 national innovation policy in Finland has been very pragmatic (LEMOLA, 2003, 90).
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51 ## Figure 1. National innovation system in Finland.
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3 Knowledge, learning, expertise, research and innovation are seen as crucial to Finland's
4 competitiveness, so they continue to be emphasised in the national innovation system
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6 (*SCIENCE...*, 2003, 20–21). In a small country, formalised scientific knowledge does
7
8 not constitute the most important source of economic growth (LUNDVALL &
9
10 MASKELL, 2000). Recently, there has been increasing emphasis in Finland on
11
12 understanding innovations as social processes. Innovations are influenced by a broad
13
14 societal network consisting of national and regional R&D organisations, education
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16 organisations, funding authorities and venture capitalists, technology transfer, politics
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18 and habits, costumes, routines, laws, etc. Important is the interaction between these
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20 innovation actors.
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29 In the early 2000s two major issues concerned the Finnish national innovation system:
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31 its broadening into social innovations and its regionalisation (*SCIENCE...*, 2000;
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33 *SCIENCE...*, 2003; *INFORMATION...*, 2005). The Finnish innovation system is
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35 comprehensive, but political and even practical decision-making is still strongly
36
37 concentrated. Most key public actors are located in the Helsinki region. The Prime
38
39 Minister's Office (2004) has also noted the disparity between innovation organisations.
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41 Attention is paid to networking between the key agents in innovation and also on co-
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43 ordinating policies with direct or indirect influence on the national innovation system
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45 (LIEVONEN & LEMOLA, 2004, 55). Nevertheless, regionalisation of the innovation
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47 system and policy has not been addressed, despite the heated political debate on the
48
49 regional reorganisation of technology agencies and funding in the early 2000s.
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51 Regionalisation of some innovation system actors, such as universities of applied
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3 sciences, university centres and other research institutions has started. This fosters
4 functional integration of regionally based clusters into the national innovation system.
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6 This is what Asheim & Gertler (2005) call a regionalised national innovation system.
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12 Lundvall & Maskell (2000, 365) point out that the state facilitates accumulation,
13 reproduction and protection of valuable social capital that is fundamental for the
14 comparative advantage of nations and sub-national regions. Due to limited financial and
15 material resources in Finland, the national innovation system concentrates on activities
16 in which the necessary volume and quality can be reached. Besides techn(ological)
17 innovations, the Science and Technology Policy Council includes social innovations –
18 without defining them – into the current core of the national innovation policy
19 (*SCIENCE...*, 2003). Another key actor, SITRA, launched a “Social innovations,
20 renewal capacity of the society and economic success: towards the learning society”
21 project in 2002. This project defines social innovation as “those reforms of regulation
22 (laws, authorities), politics and organisational structures and models of action that
23 enhance the performance of society”. The economic and social success of a society is
24 seen as being dependent on its capacity to implement structural reforms, which derive
25 from the mental and cultural abilities of the society to be reformed. This enhancing of
26 national capabilities can be economic or social (HÄMÄLÄINEN & HEISKALA, 2004,
27 10–11). Nevertheless, the main actors in product innovations are enterprises, which
28 achieve innovations in interaction with society. Despite the strong state guidance in
29 innovation and technology development, over two-thirds (69.1 %) of total R&D
30 investments in Finland are carried out by private enterprises and one third alone by a
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3 single enterprise, Nokia (STATISTICS FINLAND, 2006a). However, in the early 2000s
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5 globalisation has become an increasingly significant reference in the Finnish innovation
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7 and regional policies, in their strategies and practical implementation, as well as due to
8
9 out-sourcing of various innovation-related activities from Finland to abroad.
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18 CONVERGENCE AND/OR MISMATCH OF REGIONAL AND POLICIES IN
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20 FINLAND
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24 In recent years there have been attempts to discover the speciality of the Finnish way of
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26 making an innovation policy. In fact, Manuel Castells has become a regular guest at
27
28 several formal and informal meetings regarding the topic in Finland. As a result, Castells
29
30 and Himanen (2001) named this significant support for comprehensive and distributive
31
32 knowledge-based social policy the “welfare information society”. However, on the other
33
34 side of this policy is the aim to make Finland globally the most competitive economy.
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36 Obviously, macroeconomic policies matter here, but so does the regionalisation of the
37
38 innovation policy. To that end the national government and regions have started to
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40 promote larger competitive urban agglomerations through various regional and
41
42 innovation policy instruments. This attention to urban agglomerations and innovations
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44 was facilitated by Richard Florida (2002), another key expert whose books were
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46 translated into Finnish and who was an invited lecturer of Finnish regional and
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48 innovation policy actors.
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3 A regional dimension of innovation matters exists in the nationally-designed innovation
4 and regional policies in Finland. As mentioned, in the design of the national innovation
5 system, attention has been paid to regionalising it since the early 1990s. Practices for a
6 regionally networked innovation system (see ASHEIM & GERTLER, 2005) have also
7 emerged. The contemporary regional policy is a programme-based policy for
8 strengthening the competitiveness and learning capacity of each region, maintaining a
9 balanced regional structure and safeguarding a service structure everywhere
10 (REGIONAL DEVELOPMENT ACT, 2002). There are four major regional policy
11 programmes, of which two are more traditional (the Rural Policy Programme, the Island
12 Development Programme) and two (the Centres of Expertise and the Regional Centres
13 Development programmes) are more innovation-oriented.
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32 Although simple in strategies, successful convergence of the regional and innovation
33 policies is difficult in practice. In Finland, the Ministry of the Interior in co-operation
34 with other ministries and regional councils is responsible for the formulation of national
35 targets for regional development that the national government decides on. The seventh
36 regional development law (2002) focuses on strengthening the competitiveness of the
37 regions. The national government's first regional development target indicates this well,
38 namely improving the competitiveness of regions in the global market by strengthening
39 specialisation and promoting the information society (OECD, 2005, 44–45). The
40 guidelines are designed to strengthen the regional innovation policy, support the use of
41 expertise outside regional centres and allow the whole country to make use of funding
42 allocated to technology and expertise (MINISTRY OF INTERIOR, 2005b). These tasks
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3 and guidelines are again an endeavour towards regionalising the national innovation
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5 system.
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10 In the implementation of innovation-related policies, the smallness of Finland matters.
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12 Resources for basic and applied research are tight, the amount of key experts of core
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14 technologies is rather small and the variety of social capital is limited. At the same time,
15
16 the national innovation system internationalises in an open society such as Finland.
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18 Studying the Nordic countries, Hanell *et al.* (2002) noted how regional policy is
19
20 diverging into regional cohesion policy and regional development policy. The former
21
22 enhances welfare and resource redistribution, favouring less-developed regions, and the
23
24 latter promotes economic growth across all parts of the country (OECD, 2005, 104).
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26 However, this divergence is stronger in Finland after competitiveness became the
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28 fundamental task. Goddard *et al.* (2003, 29) claim that the strong national focus on the
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30 innovation system means Finland has one national innovation system and several local
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32 systems, but no true regional innovation systems.
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41 *Centres of Expertise Programme*

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46 The most significant example of convergence of the regional and innovation policies in
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48 Finland is the Centres of Expertise Programme (CEP) launched in the mid-1990s. Since
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50 1994 the number of Centres of Expertise (CoE) has varied from 8 to 22, covering all
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52 regions of Finland (Figure 2). The CEP has become an actor that implements regional
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54 innovation and industrial policies (*HUIPPUOSAAMISESTA ...* 2003, 8, 21). The idea of
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3 the programme was discussed already in the mid-1980s, and it was officially proposed in
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5 1991 by Anssi Paasivirta (1991, 82–84, 101, 154), the appointed evaluator of the Finnish
6
7 regional policy. He proposed that the key Finnish urban agglomerations should be
8
9 developed into locations for internationally competitive enterprise activities. To
10
11 accomplish this there was a need for universities, technology centres, enterprises,
12
13 information and communication technology projects, high-quality living environments,
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15 provision of services in English, international marketing of the expertise centres, etc.
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17 (LIEVONEN & LEMOLA, 2004, 106).
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24 The CEP focuses on a few growing urban agglomerations with universities, specialised
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26 research institutes and a stock of related industries. In the early 2000s the CEP included
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28 18 localities and 45 fields of expertise focused on internationally competitive activities.
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30 Despite Finland's success in ICT, only three CoEs dealt precisely with ICT. In 2007–
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32 2013 the number of CoEs was 21, with 13 clusters. Besides health, welfare,
33
34 environmental and energy technologies, thematic fields include tourism, experience
35
36 industry, nano- and microsystems and future materials, intelligent machines, forest
37
38 industry future, housing, food, sea, etc. Some fields are based on immobile localised
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40 capacities, but often the aim is to promote public-private innovation-supportive co-
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42 operation. National funding for the CEP in 2006 was 8.2 million euros (MINISTRY OF
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44 THE INTERIOR, 2006).
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53 The CEP pools local, regional and national resources to utilise world-class expertise in
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55 selected, internationally competitive fields in the region. New knowledge-intensive
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3 business is created to improve the competitiveness of enterprises. According to the
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5 Ministry of the Interior (2005), the CEP fosters regional strengths, specialisation and co-
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7 operation between the various CoEs. The CoEs “establish the prerequisites for the
8
9 creation and commercialisation of innovation; launch co-operative projects between the
10
11 research sectors and industries; continuously strengthen and modernise top-level
12
13 expertise in the region; and promote the development of creative and innovative
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15 environments.” The CEP can be defined as a programme-based national regional policy
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17 that focuses on innovations in accordance with the regional development law.
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24 The CEP is heavily based on public knowledge generation and exploitation institutions.
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26 It utilises international high-level knowledge and expertise for entrepreneurial activities,
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28 improves development resources, and creates new employment opportunities in the
29
30 regions. Such expertise is based on strong, developing research, education and business
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32 activities located in the region, including product and service innovations. In regional
33
34 development the CEP helps localities to make strategic choices in innovation policy
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36 (*HUIPPUOSAAMISESTA...*, 2003). In addition, the CoEs help the regions to exploit
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38 national and EU R&D resources. By doing this the CEP supports the formation of an
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40 institutional regional innovation system (see COOKE, 2004, 4).
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48 The central authorities provide the basic public funding for the CEP. In 1994–1998,
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50 public state funding for the programme was 14 million euros. In 1999–2002, 903
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52 projects were carried out within the programme, with total funding of 148.7 million
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54 euros, of which basic state funding was 20 million (*HUIPPUOSAAMISTA...*, 2003). The
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3 CoEs use the latter funding to co-ordinate programmes, prepare projects and provide
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5 spearhead projects with seed-stage funding. The requirement for receiving basic state
6
7 funding is that the regions also contribute to financing. Based on the proposal submitted
8
9 by the committee, the national government decides on how to regionally allocate basic
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11 CEP funding.
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17 The CEP has been received positively by the national government, the European
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19 Commission and many EU member states (MANNINEN, 2004). Despite the general
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21 positive evaluation of the CEP (*HUIPPUOSAAMISTA...*2003), Kauppinen & Karhu
22
23 (2002, 274) state that in the short run, the growth centres are unable to spread positive
24
25 spill-over effects to surrounding areas. In addition, the earlier large number of CoEs
26
27 meant that only a few of them have had an internationally competitive knowledge base
28
29 and enterprises (PIKKUJÄMSÄ *ET AL.*, 2005). In fact, the early stage of the CEP seems
30
31 have relied on a territorially embedded innovation system. Expansion of the CEP in the
32
33 early 2000s seemed to rely on the idea that this embedded and localised innovation
34
35 system could be integrated into the national innovation system. The results from 1999 –
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37 2006 indicate that with the CEP was generated 13,000 new jobs, 29,300 jobs were
38
39 maintained and 1,300 new enterprises emerged (MINISTRY OF THE INTERIOR,
40
41 2006). The reform of the CEP for the period 2007–2013 means that this integration was
42
43 not successful enough. However, since the selection of CoEs for the CEP is based on
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45 competitive bids by the localities, the national authorities still have the aim that each
46
47 selected CoE supports national competitiveness and is integrated into the national
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49 innovation system. Bidding and selection is also a way to promote desired institutional
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3 learning in the localities and allow national authorities to hold a significant position in
4 enabling and constraining regional formation of an innovation system. However, party
5 politics is involved in the selection, so the number of CoEs is higher than their
6 performance.
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12 13 14 15 16 17 18 *Regional Centre Programme*

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22 The CEP is deliberately targeted towards a few larger urban agglomerations, so the
23 broader national regional policy goals demand an additional policy tool to further
24 regionalise innovation-related activities. To focus on smaller regional centres with lower
25 innovation capabilities, the national government launched the Regional Centre
26 Programme (RCP) in 2001 in accordance with the seventh regional development law.
27
28 The RCP aims to develop a balanced network of regional centres in every Finnish
29 region, enhance the international competitiveness and innovativeness of Finland and its
30 regions, and use all available resources efficiently (MINISTRY OF THE INTERIOR,
31 2005). The total funding for the RCP was 8.34 million euros, i.e. on average under
32 300,000 per regional centre in 2005.
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48 The RCP is implemented in 35 urban regions with 257 municipalities, which provide
49 service and employment for their immediate hinterland (Figure 2). Most localities are
50 small, creating a particular need to focus on their strengths, expertise and specialisation.
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52 The RCP has five roles, depending on the sub-regional characteristics and the
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3 implementation method of the programme. Firstly, the RCP as a *strategic umbrella*
4 means systematically and simultaneously focusing on several development aspects.
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6 Secondly, the RCP as a *promoter of sub-regionalism* means strengthening the sub-
7 regional co-operation structures and modes. Thirdly, as an *extensive programme* the
8 RCP is implemented broadly to enhance the added value of the region by co-ordinating
9 functions and projects. Fourthly, the *new development aspect* signifies that the RCP's
10 goal is to generate a new field of industry and expertise in a region with already existing
11 strong sectors. Fifthly, the RCP is also an *additional instrument and resource* for other
12 regional development work (MINISTRY OF THE INTERIOR, 2005). The goals for the
13 period 2007–2010 emphasise enterprise-led development strategies, specialisation,
14 creation of an attractive environment for innovations and action, enhancement of
15 national and regional innovation tools and modes and partnership between the public and
16 private sectors and within the public sector at various spatial levels. National funding for
17 the RCP for 2007 is 8.0 million euros (ALUEKESKUSOHJELMA... 2006).
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39 The RCP has been criticised. According to the evaluations, the central themes in 2001–
40 2005 were closer sub-regional co-operation, commitment of the municipalities and
41 partnership between central co-operators, regional councils and regional administrative
42 authorities. The RCP intensified the formation of regional co-operation strategies and
43 co-operation among the public sector authorities in selected urban regions. Networking
44 has been limited in some regional centres, but in others co-operation between
45 enterprises, research and education organisation has increased. In general, networking
46 with the surrounding region has been poor. It seems that the national authorities have
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tried with the RCP to facilitate the transformation from a territorially embedded to a regionally networked innovation system. Another criticism is the vagueness in promoting the real innovation potential of regional centres. The RCP has not been able to facilitate key strategic selections of the involved localities to deviate from the lock-ins of negative path dependency and to promote added value in innovation-oriented institutional learning. This is partly due to small programme funding. However, it is impossible to know the impact of the RCP exactly, because there are many other similar development programmes taking place (VIRTANEN & VALOVIRTA, 2004, 61–62; MINISTRY OF THE INTERIOR, 2005a; OECD, 2005; ALUEKESKUSOHJELMAN... 2006).

In the early 2000s several localities took part simultaneously in the CEP and the RCP, resulting in overlapping and confusion, project mismatching and wasting of resources (VIRTANEN & VALOVIRTA, 2004, 61–62). In 2007 the RCP has more national orientation in its co-operation activities. However, such a focus is a challenge to creating long-term employment growth based on competitive innovations. Also, networking of localised innovation capacities is even more challenged due to the heated debate regarding on-going municipal reform in which the national authorities are pushing towards territorial amalgamation based on the daily labour area. This has destroyed some started co-operation practices of the RCP.

Multipolis project

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3 In the early 2000s there were seven centres of the RCP and three of the CEP in northern
4 Finland, which is a very challenging area in terms of innovation and high technology. It
5 covers a territory of 155,100 square kilometres, with 0.7 million inhabitants, i.e. on
6 average 4.6 persons per square kilometre. The only major functional urban region
7 (FUR), Oulu, has 210,000 inhabitants, and population growth is concentrated there
8 (+22.9 % in 1990–2005). In addition, the Oulu FUR is the only area in which the number
9 of jobs has grown since 1990. The most declined areas lost almost every fourth person
10 and more than every third job in the same period. Northern Finland has two universities
11 and five universities of applied sciences, with 38,000 students (MINISTRY OF
12 EDUCATION, 2005; STATISTICS FINLAND, 2006b). The area hosts very few
13 specialists, a very small local market and long distances between regional economic
14 development actors.
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34 One CEP centre is the Centre of Expertise of the Oulu Region (CEOR). It focuses on
35 information technology and wellness technology, strengthening the Oulu FUR
36 internationally in these fields. Information technology includes telecommunications,
37 electronics, software, content production and media, with 10,900 jobs and 274
38 companies with a total annual turnover of 4,200 million euros in the region. Wellness
39 technology consists of medical technology, biotechnology and environmental
40 technology, with 6,400 jobs and 214 companies with a total annual turnover of 660
41 million euros in the area (CITY OF OULU, 2006).
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3 The CEOR is a spatially tightly networked regional innovation system (see COOKE,
4 2004, 14) encompassing local, regional, national and supranational levels. Competence
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6 in the Oulu area comes from both basic and applied research in the public and private
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8 sectors, including the large research centre of Nokia. The co-operation of the innovation
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10 system is active and there are many stakeholders involved, such as associations, a
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12 development forum and industry clubs. Funding originates from government agencies,
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14 enterprises, banks and venture capitalists through various agreements, such as the Oulu
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16 Growth Agreement (OGA). The OGA was a voluntary measure and regional strategy for
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18 2000–2006 with the aim of promoting spearhead projects amounting to 300 million
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20 euros for growth in employment (+6,000 jobs) and turnover (+1,500 million Euro) in
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22 five technology fields. The agreement was signed by all the major actors in the Oulu
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24 area (CITY OF OULU, 2006). However, the national downturn in ICT in the early 2000s
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26 and problems in successful project internationalisation meant that the goals were not
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28 fully achieved.
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39 In addition, since 2000 the CEOR has funded and promoted a spatially wider regional
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41 innovation system, the Multipolis project. Multipolis connects high technology
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43 enterprises, regional developers, and higher education and research institutes located all
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45 around northern Finland (Figure 2). There are 137 high technology enterprises and 116
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47 other enterprises outside the Oulu area, mostly located as clusters in technology centres
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49 in 14 localities. The goal of Multipolis is to maximise the utilisation of technological
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51 know-how in northern Finland and to expand the technology-related expertise and
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53 knowledge of the Oulu FUR to elsewhere in the north. The concrete aim set in 2000 was
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3 to improve the competitiveness and knowledge-base of technology enterprises and to
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5 create 15,500 new jobs in high technology (MULTIPOLIS, 2004).
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10 Multipolis is a project set up to regionalise the national innovation system by focusing
11 on high technology, which is one key national economic cluster. Many public and
12 private actors of the national innovation system are involved in the strategic and
13 operational implementation of the project – from funding to administration. They
14 address Multipolis as a tool for sharpening existing key technologies to make them
15 globally competitive and commercially viable. However, some regional and local
16 authorities in northern Finland see Multipolis as a traditional regional policy tool for
17 promoting employment in the localities in which it is implemented (JAUHAINEN,
18 2006).
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34 Multipolis as a policy initiative has been received positively by the national government
35 and the European Commission, and there are plans to implement the concept also
36 elsewhere in Finland (MANNINEN, 2004). The very idea is promising: a high
37 technology network in a peripheral area that simultaneously raises national
38 competitiveness and creates local employment. However, studied in detail, quite a few
39 enterprises involved in the Multipolis project have received poor benefits from it. Most
40 enterprises saw Multipolis as very important or important as a channel for new
41 information, as a social network and for co-operation with other enterprises
42 (JAUHAINEN, 2006). The impact on turnover, employment and competitiveness is
43 much smaller than planned. In fact, in 2006 the employment growth target was reduced
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3 to one tenth of the original. It is very difficult to simultaneously regionalise an
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5 innovation system by supporting its internationalisation and global competitiveness and
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7 maintain the traditional aims of welfare distribution of the Finnish regional policy within
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9 the same project. Even trying seems to flatten the results, as Multipolis indicates.
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15 ## Figure 2. Main innovation-related regional policy initiatives in Finland in 2007.
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20 21 22 CONCLUSIONS 23 24 25 26

27 Innovations are crucial for countries that cannot compete with low labour and production
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29 costs or with a large domestic market. Finland is such a country: small in population and
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31 natural resources and geographically peripheral. Nevertheless, in several international
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33 rankings Finland's economy is among the most competitive. The conventional
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35 explanation is the early emphasis on a national innovation system and policies,
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37 significant investment in high technology R&D and constant improvement of the
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39 comprehensive education system. In all, Finland has been receptive to regional and
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41 innovation theories from the 1960s growth pole and regional welfare policies to the more
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43 recent cluster and regional innovation systems. The country followed these policy trends
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45 until the 1980s, but nowadays many claim that Finland is a trend-setter in current
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47 regional (and) innovation policy practice.
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3 In fact, Finland took early moves towards a comprehensive innovation policy. The
4 contemporary keywords of innovation, technology, knowledge and competitiveness
5 appeared in the annual reports of the main internationalising Finnish enterprises in the
6 1980s, and they were subsequently used in the national government's statements and
7 guidelines for development policy (KANTOLA, 2006). The Finnish innovation policy
8 was organised in the early 1990s, leaning on the Lundvallian concept of a national
9 innovation system and on the Porterian cluster model covering the whole country
10 (LEMOLA 2003, 82, 89). The policy was based on a systematic review of these
11 concepts and models and it was formulated even before or simultaneously with the
12 publication of Porter's (1990), Lundvall's (1992) and Nelson's (1993) key books. In the
13 early 1990s attention was also paid to regional clusters in the national innovation system.
14 The design of the Centres of Expertise programme, the most well-known Finnish tool of
15 regional innovation policy, was influenced by the prominent concepts and theories of the
16 mid-1980s as well as the early development of the information and communication
17 technology sector in Finland. The national innovation policy and regionalised innovation
18 system were implemented from the early 1990s onwards.

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43 From the national perspective, Finland is now on the watershed between past legacies
44 and future alternatives. Traditionally, regional policy in Finland supports populating of
45 the entire country by providing equal access to welfare regardless of local resources.
46 Such a tradition has its roots in the early 20th century, in safeguarding the eastern border
47 against a possible enemy, in exploiting the few natural resources available, such as forest
48 and water power, and in unifying the Finns among themselves and to the national
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3 territory. During the past ten years new national innovation and regional policies have
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5 been implemented in Finland under globalisation. The Centres of Expertise and the
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7 Regional Centres programmes promote the integration of regional clusters into the
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9 national innovation system while promoting necessary innovation-supportive interaction
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11 within the localities, and opening development into the global economy. In the new
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13 national policies one can find a continuation of the idea of using all national resources
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15 for the development of Finland. In the new context these resources are knowledge and
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17 technology.
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25 So far, the regional, innovation and information society policies pronounce the
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27 traditional goals of a balanced regional structure. However, the population, employment
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29 and R&D trends indicate a divergence in regional cohesion instead of balance
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31 throughout the country. In practice, there are very few growth areas in Finland (globally
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33 competitive large urban agglomerations), a few areas of potential modest growth or
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35 decline (regional centres) and many declining areas (the rest of the country).
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37 Simultaneous implementation of the traditional distributive welfare policy and the new
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39 competitiveness policy goals easily leads to a policy mismatch at the local level, as
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41 indicated with the case of Multipolis. To be efficient, such a network must focus on very
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43 few, key special technologies. Less developed areas have serious challenges in this
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45 respect due to lacking competencies. In addition, because global trends vary very rapidly
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47 and competition is increasing, concentration on globally-oriented high technology makes
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49 the localities vulnerable.
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3 In a short article it is not possible fully explore how much the Finnish innovation policy
4 and its regionalisation followed a logically planned path. One has to more deeply
5 consider the particularities of internal and external contexts and the persons involved in
6 the decision-making, trials and errors. Obviously, the prevailing way to narrate the
7 Finnish story is to stress the proactive approach and logical selection instead of uncertain
8 trials, errors and coincidence (but, see MIETTINEN, 2002). Policymakers easily see
9 themselves as crucial in enabling social institutions to be characterised by institutional
10 learning and in favouring organisational capacities that intertwine the key actors of
11 innovation. However, the private sector also played an important role, especially the
12 leading enterprises involved in technology. There is much to learn from the evolution of
13 the Finnish regional and innovation policies, but one has to deconstruct their trajectory
14 before implementing them elsewhere. The current strategy and implementation do not
15 necessarily prevent future lock-ins. In a global economy past success does not guarantee
16 the future, so uncritical copying of the Finnish model definitely would lead to a
17 mismatch.
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51 REFERENCES

- 1
2
3 AALBU, H., HALLIN, G. & MARIUSSEN, Å. (1999) When policy regimes meet:
4
5 Structural Funds in the Nordic Countries 1994-1999. *Nordregio* R1999:3.
6
7
8 ALUEKESKUSOHJELMA 2007 – 2010 (2006). [Regional Centres programme 2007–
9
10 2010). Sisäasiainministeriö Alueiden kehittäminen julkaisuja 61/2006.
11
12 ALUEKESKUSOHJELMAN TULOKSET JA VAIKUTUKSET – ARVIOINTI 2001–2006
13
14 (2006). [Outcomes and impact of Regional Centres programme – evaluation 2001–
15
16 2006). Sisäasiainministeriö Alueiden kehittäminen julkaisuja 48/2006.
17
18
19 ASHEIM, B. & GERTLER, M. (2005) The geography of innovation: Regional
20
21 innovation systems, in FAGERBERG, J., MOWERY, D. & NELSON, R. (Eds.)
22
23 *The Oxford Handbook of Innovation*, 291-317. Oxford University Press, Oxford.
24
25
26 BENZ, A. and FÜRST, D. (2002) Policy learning in regional networks. *European Urban*
27
28 *and Regional Research* 9:1, 21–35.
29
30
31 CASTELLS, M. & HIMANEN, P. (2001) *The Finnish Model of the Information Society*.
32
33 Helsinki: Sitra.
34
35
36 CITY OF OULU (2006) *Oulun 2006 kasvusopimus. Vuosikertomus 2005*. [Oulu 2006
37
38 growth agreement. Annual report 2005] Oulun kaupunki, Oulu.
39
40
41 COOKE, P. (2004) Introduction. Regional innovation systems – an evolutionary
42
43 approach, in COOKE, P., HEIDENREICH, M. & BRACZYK, H. (Eds.) *Regional*
44
45 *Innovation Systems. The Role of Governance in a Globalised World*, 1-18.
46
47
48 Routledge, London.
49
50
51 EUROPEAN COMMISSION (1995) *Outlook for the Regions: Growth, Competitiveness,*
52
53 *Employment*. ECE, Luxembourg.
54
55
56
57
58
59
60

- 1
2
3 EUROPEAN COMMISSION (1998) *Towards an Urban Agenda in the European*
4
5 *Union*. ECE, Luxembourg.
6
7
8 EUROPEAN COMMISSION (2005) Working together for growth and jobs: a new start
9
10 for the Lisbon Strategy.
11
12 <[http://europa.eu.int/rapid/pressReleaseAction.do?reference=SPEECH/05/67&for](http://europa.eu.int/rapid/pressReleaseAction.do?reference=SPEECH/05/67&format=HTML&aged=0&language=FR&guiLanguage=en)
13
14 [mat=HTML&aged=0&language=FR&guiLanguage=en](http://europa.eu.int/rapid/pressReleaseAction.do?reference=SPEECH/05/67&format=HTML&aged=0&language=FR&guiLanguage=en)> accessed 3 March 2005
15
16
17 FLORIDA, R. (2002) *The Rise of the Creative Class and How It's Transforming Work,*
18
19 *Leisure, Community and Everyday Life*. Basic Books, New York.
20
21
22 FREEMAN, C. (1991) *Technology Policy and Economic Performance: Lessons from*
23
24 *Japan*. Pinter, London.
25
26
27 GODDARD, J., ASHEIM, B., CRONBERG, T. & VIRTANEN, I. (2003) *Learning*
28
29 *Regional Engagement. A Re-evaluation of the Third Role of Eastern Finland*
30
31 *Universities*. Edita, Helsinki.
32
33
34 HANELL, T., AALBU, A. & NEUBAUER, J. (2002) *Regional Development in the*
35
36 *Nordic Countries 2002*. Nordregio, Stockholm.
37
38
39 HAUTAMÄKI, V. (1999) Aluepolitiikan tavoitteet lainsäädännössä. [The goals of
40
41 regional policy in legislation] *Kunnallistieteellinen aikakauskirja* 1/99, 1–6.
42
43
44 HERNESNIEMI, H., LAMMI, M. & YLÄ-ANTTILA, P. (1996) *Advantage Finland –*
45
46 *the Future of Finnish Industries*. Taloustieto, Helsinki.
47
48
49 *HUIPPUOSAAMISESTA ALUEILLE KILPAILUKYKYÄ. OSAAMISKESKUSTEN*
50
51 *VÄLIARVIOINTI 1999-2002* (2003) [High competence as a source for regional
52
53 competitiveness. Mid-term evaluation of the Centres of Expertise programme
54
55 1999–2002] Sisäasiainministeriö Alueiden kehittäminen julkaisuja 4/2003.
56
57
58
59
60

- 1
2
3 HÜBNER, E. (2005) EU Structural Funds are key to promote EU R&D, says Hübner.
4
5 <[http://dbs.cordis.lu/fep-](http://dbs.cordis.lu/fep-cgi/srchidadb?CALLER=NEWS_INNO&SESSION=&ACTION=D&RCN=EN_RC)
6
7 [cgi/srchidadb?CALLER=NEWS_INNO&SESSION=&ACTION=D&RCN=EN_RC](http://dbs.cordis.lu/fep-cgi/srchidadb?CALLER=NEWS_INNO&SESSION=&ACTION=D&RCN=EN_RC)
8
9 [N_ID:23999](http://dbs.cordis.lu/fep-cgi/srchidadb?CALLER=NEWS_INNO&SESSION=&ACTION=D&RCN=EN_RC)> accessed 30 June 2005
10
11
12 HÄMÄLÄINEN, T. & HEISKALA, R. (2004) *Sosiaaliset innovaatiot ja yhteiskunnan*
13 *uudistumiskyky*. [Social innovations and the renewal capacity of society] Edita,
14
15 Helsinki.
16
17
18
19
20 INFORMATION SOCIETY COUNCIL (2005) *Information Society Programme*.
21
22 Helsinki.
23
24
25 ITU (2006) International Telecommunication Union statistics. <[http://www.itu.int/ITU-](http://www.itu.int/ITU-D/ict/statistics/)
26
27 [D/ict/statistics/](http://www.itu.int/ITU-D/ict/statistics/)> 16 September 2006
28
29
30 JAUHAINEN, J. (2006) Multipolis – high technology network in northern Finland.
31
32 *European Planning Studies* 14, 1407–1428.
33
34 JAUHAINEN, J. (2007). Men, money and mobile phones: tracing the technology
35
36 discourse in the Finnish newspapers. *Technology in Society* 29, 79–91.
37
38
39 KANGASHARJU, A. & PEKKALA, S. (2004) Increasing regional disparities in the
40
41 1990s: the Finnish experience. *Regional Studies* 38:3, 255–267.
42
43
44 KANTOLA, A. (2006) Suomea trimmaamassa: suomalaisen kilpailukyvyn sanastot
45
46 [Trimming Finland: The vocabulary of the Finnish competitiveness], in
47
48 HEISKALA, R. & LUHTAKALLIO, E. (Eds.) *Uusi jako. Miten Suomesta tuli*
49
50 *kilpailukyky-yhteiskunta?*, 156–178. Gaudeamus, Helsinki.
51
52
53
54
55
56
57
58
59
60

- 1
2
3 KAUPPINEN, M. & KARHU, V. (2002) Kasautuva alueellinen kasvu ja sen
4 ohjausvaikutukset. [Accumulation of regional growth and possibilities for its
5 regulation] *Kunnallistieteellinen aikakauskirja* 3/02, 273–283.
6
7
8
9
10
11 KEKKONEN, U. (1952) Onko maallamme malttia vaurastua? [Does our country have
12 patience to become wealthy?] Otava, Helsinki.
13
14
15 KRUGMAN, P. (1998) Space: the final frontier. *The Journal of Economic Perspectives*
16 12:2, 161–174.
17
18
19
20 NET EFFECT (2003) Aluekeskusohjelman arviointi. [Mid-term evaluation of the
21 Regional Centre programme] NetEffect & NORDREGIO, Helsinki.
22
23
24
25 LAMBOOY, J. & BOSCHMA, R. (2001) Evolutionary economics and regional policy.
26 *Annals of Regional Science* 35, 113–131.
27
28
29 LEMOLA, T. (2003) Innovation policy in Finland, in BIEGELBAUER, P. & BORRÁS,
30 S. (Eds.) *Innovation Policies in Europe and the US*, 77–92. Ashgate, Aldershot.
31
32
33
34 LEMOLA, T. (2004) Finnish science and technology policy, in SCHIENSTOCK, G.
35 (Ed.) *Embracing the Knowledge Economy. The Dynamic Transformation of the*
36 *Finnish Innovation System*, 268–284. Edward Elgar, Cheltenham.
37
38
39
40
41 LIEVONEN, J. & LEMOLA, T. (2004) Alueellisen innovaatiopolitiikan haasteita.
42 *Sisäasiainministeriö Alueellinen kehittäminen julkaisu* 16/2004.
43
44
45
46 LORENZEN, M. (2001) Localized learning and policy: academic advice on enhancing
47 regional competitiveness through learning. *European Planning Studies* 9:2, 163–
48 185.
49
50
51
52
53 LUNDVALL, B. (Ed.) (1992) *National Systems of Innovation: Towards a Theory of*
54 *Innovation and Interactive Learning*. Pinter, London.
55
56
57
58
59
60

1
2
3 LUNDEVALL, B. & BORRÀS, S. (1997) *The Globalising Learning Economy:*
4
5 *Implications for innovation Policy.* Commission of the European Communities,
6
7
8 Luxembourg.

9
10 LUNDEVALL, B. & MASKELL, P. (2000) Nation states and economic development:
11
12 From national systems of production to national systems of knowledge creation
13
14 and learning, in CLARK, G., FELDMAN, M. & GERTLER, M. (Eds.) *The Oxford*
15
16 *Handbook of Economic Geography*, 353–372. Blackwell, Oxford.

17
18
19
20 MANNINEN, H. (2004) Interview with the Minister for Regional and Municipal
21
22 Affairs, 25 May 2004 [in Finnish].

23
24 MIETTINEN, R. (2002) *National Innovation System. Scientific Concept or Political*
25
26 *Rhetoric.* Edita, Helsinki.

27
28
29 MINISTRY OF EDUCATION (2005) Education statistics. <<http://www.minedu.fi>>
30
31 accessed 30 June 2005

32
33
34 MINISTRY OF THE INTERIOR (2004). Valtioneuvoston päätös alueiden
35
36 kehittämislain mukaisista valtakunnallisista alueiden kehittämisen tavoitteista
37
38 15.1.2004 [The decision of the Government on 15 January 2004 on the national
39
40 goals for development of regions according to the Regional Development Act].
41
42
43 Helsinki.

44
45
46 MINISTRY OF THE INTERIOR (2005) *Regional Centres Programme.*
47
48 <http://www.intermin.fi/intermin/hankkeet/aky/home.nsf/pages/indexeng>> accessed
49
50 6 February 2005

51
52
53 MINISTRY OF THE INTERIOR (2006) Centre of Expertise Programme.
54
55 <http://www.oske.net/in_english/> accessed 10 December 2006

- 1
2
3
4
5
6
7
8
9
10
11
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13
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40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
- MINISTRY OF TRADE AND INDUSTRY (1993) *National Industrial Strategy for Finland*. Publication 3/1993. Industry Department, Helsinki.
- MOULAERT, F. & NUSSBAUMER, J. (2005) The social region beyond the territorial dynamics of the learning economy. *European Urban and Regional Research* 12:1, 45–64.
- MULTIPOLIS (2004) *Multipolis-projekti 1.8.2002 – 31.10.2004*. Unpublished report in Finnish.
- NELSON, R. (1993) *National Innovation Systems*. Oxford University Press, Oxford.
- OECD (2004) *PISA results 2003*. OECD, Paris.
- OECD (2005) *Territorial review of Finland*. OECD, Paris.
- PAASIVIRTA, A. (1991) *Suomen alueellinen uusiutumisstrategia: aluepoliittisen selvitysmies Anssi Paasivirran ehdotus aluepolitiikan uudistamiseksi*. [Regional renewal strategy for Finland: the proposal by regional policy evaluator Anssi Paasivirta to renew regional policy] Sisäasiainministeriö, Helsinki.
- PEKKALA, S. (2000) Aluetalouden kehitys Suomessa, 1960-1998 [The development of regional economy in Finland, 1960-1998], *Kansantaloudellinen aikakauskirja* 96:1, 11–18.
- PENTIKÄINEN, T. (2000) The economic evaluation of the Finnish cluster programmes. *VTT Group for Technology Studies Working Papers* N:o 50/2000.
- PIKKUJÄMSÄ, P., LAUNONEN, M. & JANHUNEN, H. (2005) *Kansainvälistymällä innovaatiivetoiseen kasvuun. Osaamiskeskusten kansainvälistymisstrategia 2013*. [Internationalisation as a tool for innovation-based growth. Internationalisation strategy for Centres of Expertise 2013.] Osaamiskeskusohjelma, Helsinki.

1
2
3 PORTER, M. (1990) *The Competitive Advantage of Nations*. The Free Press, New York.

4
5 PRIHTI, A., GEOGRHIU, L., HELANDER, E., JUUSELA, J., MEYER-KRAHMER,
6
7 F., ROSLIN, B., SANTAMÄKI-VUORI, T. & GRÖHN, M (2000) *Tutkimuksen*
8
9 *lisärahoituksen arviointi*. [Evaluation of the need for additional research funding]
10
11 Sitra, Helsinki.
12

13
14
15 PRIME MINISTER'S OFFICE (2004) *Finland in the Global Economy*. Helsinki.

16
17 REGIONAL DEVELOPMENT ACT (2002) *Regional Development Act of Finland*
18
19 (602/2002), <http://www.finlex.fi/lains/index.html> accessed 31 May 2004
20

21
22 SKURNIK, S. (2005) *Suomalaisen talousmallin murros. Suljetusta sääntelytaloudesta*
23
24 *kaksinapaiseen globaalitalouteen*. [Break in the Finnish economic model. From
25
26 closed regulated economy to bipolar global economy] Dissertation thesis at the
27
28 Helsinki School for Business and Administration, Helsinki.
29

30
31 STATISTICS FINLAND (2006a) *High technology*. <http://www.stat.fi/> accessed 16
32
33 September 2006
34

35
36 STATISTICS FINLAND (2006b) *Population*. <http://www.stat.fi/> accessed 16 September
37
38 2006
39

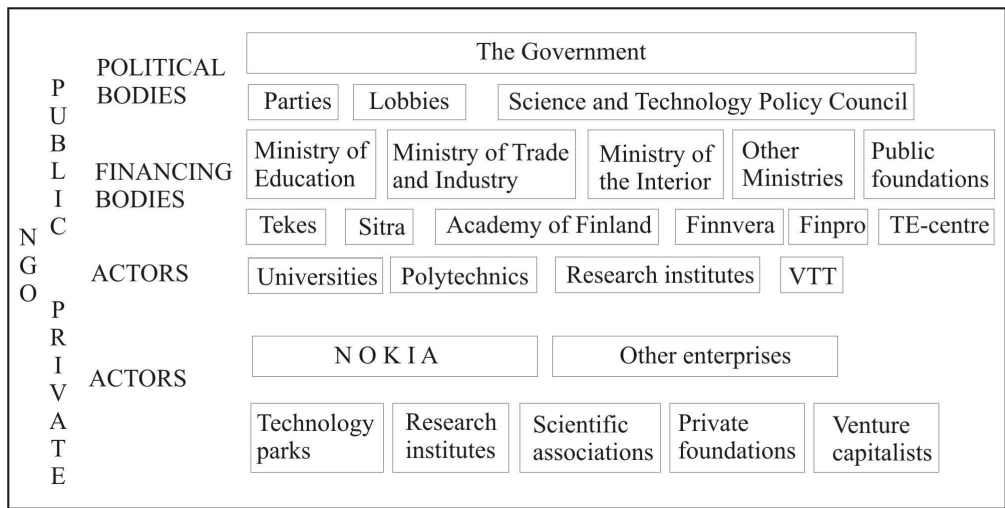
40
41 SCIENCE AND TECHNOLOGY POLICY COUNCIL (1990) *Review 1990: Guidelines*
42
43 *for Science and Technology Policy in the 1990s*. Edita, Helsinki.
44

45
46 SCIENCE AND TECHNOLOGY POLICY COUNCIL (2000) *Review 2000: The*
47
48 *Challenge of Knowledge and Know-how*. Edita, Helsinki.
49

50
51 SCIENCE AND TECHNOLOGY POLICY COUNCIL (2003) *Knowledge, Innovation*
52
53 *and Internationalisation*. Edita, Helsinki.
54

- 1
2
3 SCIENCE AND TECHNOLOGY POLICY COUNCIL (2006) *Science, Technology and*
4
5 *Innovations*. Edita, Helsinki.
6
7
8 VARTIAINEN, P. (1998) Suomalaisen aluepolitiikan kehitysvaiheita. [The development
9
10 stages of the Finnish regional policy] *Sisäasiainministeriö Alueiden kehittäminen*
11
12 *julkaisuja 6/1998*. Helsinki.
13
14
15 VIRTANEN, P. & VALOVIRTA, V. (2004) Kohti elinvoimaisia kaupunkiseutuja.
16
17 Aluekeskusohjelman väliarviointi. [Towards living urban regions. Mid-term
18
19 evaluation of Regional Centre programme] *Sisäasiainministeriö Alueiden*
20
21 *kehittäminen julkaisuja 9/2004*.
22
23
24 WORLD ECONOMIC FORUM (2005) *Global Competitiveness Report 2004–2005*.
25
26 World Economic Forum, New York.
27
28
29 YLÄ-ANTTILA, P (2005) Finland – an ICT-driven knowledge economy. *ICT Cluster*
30
31 *Finland 2005*, 6–8.
32
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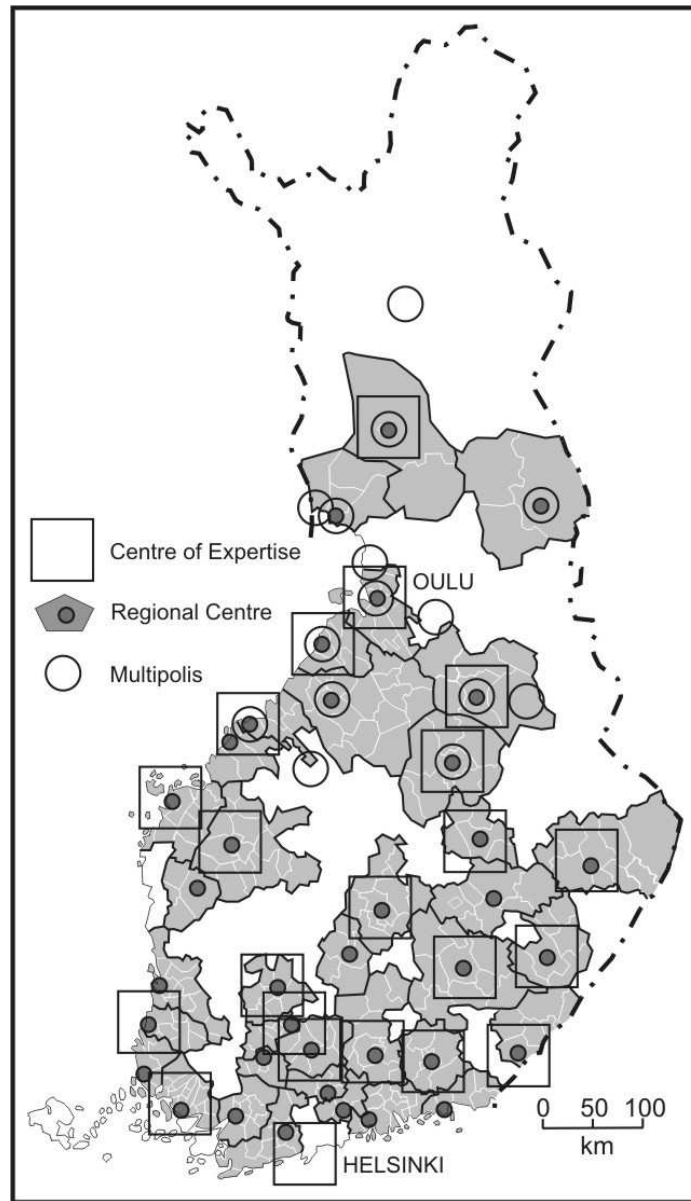
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