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**THE ROLE OF EMPLOYMENT AND ECONOMIC
DEVELOPMENT CENTRES IN THE FINNISH REGIONAL
FORESIGHT SYSTEM**

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ABSTRACT

Article provides basic conceptions and visions of the regional foresight system in Finland. Article includes brief information concerning foresight activities and up-dated description of current regional foresight system in Finland. In 1990s there has been a "boom" of extensive foresight and futures studies. Among the most important development projects has been the regional foresight project of Employment and Economic Development Centres (TE-Centre)¹. This article describes how regional foresight activities have been developed in Finland and what kind of challenges there are in the field of the Finnish regional foresight.

Today Finland is a modern and successful industrialised country. The nations strengths are to be found in its advanced level of education and high standards of expertise, functional infrastructure, highly evolved use of telecommunications and information technology, and its innovation system with 3,2 % of GPD spent in research and development (Castells and Himanen 2001, Markkula 1999, Kuparinen 1999). In Finland, the whole rationale of economic development has changed from resource based to knowledge-based economy and here this structural change has been faster than in any other industrialised country. In many fields of science and technology Finland has moved from the status of a retarded follower to the international forefront. Finland was the first country to launch a digital network for mobile communications (GSM). Today the country's mobile phone penetration is 86 % and Internet penetration is 59 %. And the national competitiveness of Finland has been estimated to be the best in the world (Porter, Sachs, Cornelius, McArthur and Schaw 2001). Often competitiveness analysis is merely connected to macroeconomic policy choices and measures, but in reality regional development policies also have a large impact on competitiveness. The idea of this paper is to describe this kinds of regional foresight, which is essentially connected to regional foresight policies.

In this article, we describe the basic conceptions and visions of the regional foresight system in Finland. We begin by sketching the background of Finnish regional foresight in the administrative forecast activities of 1970s and 1980s and describing the general field of foresight activities in Finland. We then go on to present the points of departure and targets of the Finnish regional foresight system, its structure, the methods used in it, the areas it focuses into, and its role and significance within the field of Finnish foresight activities and the working environment of its users. We conclude by presenting some future challenges for the regional foresight system of Finland.

¹ The description of the TE-Centre is on the page 5.

1. THE BACKGROUND AND DEVELOPMENT OF FINNISH FORESIGHT STUDIES

Finland has a long tradition in forecast activities, especially in quantitative regional and local forecasts concerning economic trends, development of population and demand for labour force. In the 1970's started regional development programmes of the Provincial State Offices and ministries centrally co-ordinated by the Council of State. These regional development strategies had a top-to-down approach and they did not include strong participatory elements. At the end of 1980s, regional technology programs were implemented with the co-ordination of Provincial State Offices. The methods used in these programmes were mainly quantitative forecasting and expert groups consisting of public authorities and labour market parties. In addition to this, Provincial State Offices produced regional development programs from mid 1970s to mid 1980s. These processes can be considered as preliminary stages of foresight, when foresight is seen as a process in which actors interchange information and produce strategies and action plans for the future.

In the year 1993 was ordained the Regional Development Act, which gave the co-ordination task of regional development to the Regional Councils. The Regional Councils co-ordinated the work of the regional development programmes. In addition to regionalising the responsibility for regional development the aim of the new act was also to move the regional planning system in Finland towards the programmatic regional policy system in European Union. With the introduction of this act, the importance of strategic planning increased in regional development.

During the years 1995-1999, European Social Fund 4 -program was implemented in Finland with the co-ordination of the Ministry of Labour. The first priority area of the program concerned anticipating changes in working life, labour market and competences. Within the framework of this futures oriented program, 174 foresight projects were carried through, the expenditure of these projects amounting to about 17 million €. Many different actors such as universities, polytechnics, labour market organisations, regional and local public authorities, ministries, and enterprises participated in carrying through these projects and also futures researches had an active role in several of them. As a result of these projects, a significant amount of anticipation and foresight expertise was accumulated and this expertise and knowledge has been actively disseminated, especially through the Internet (see, e.g., <http://212.54.2.68/esf/ennakointi/english.htm>). In Finland, the aim of the anticipation priority was not that of building a broad and unified foresight system with centralised administration. Instead, the target was to construct a project-based system for foresight (Mäkelä 1999).

In addition to these activities, many technology foresight processes are constantly being carried out in connection with technology programmes, which are co-ordinated by the National Technology Agency of Finland. In order to identify research topics with considerable future potential, these programmes are preceded by extensive consultations with industry and academic research institutes. Thus the element of technology foresight is rooted already in the very core of Finnish technology policy (Kuparinen 1999).

Although Finland has taken action in the fields of forecast and foresight, in Finland no formal large-scale national foresight activities have been performed at any stage. In 2001 the Ministry of Trade and Industry produced a study according to which it is not reasonable to carry out individual large-scale foresight projects in Finland. Instead the Finnish strategy has been a decentralised strategy, not a large macroeconomic strategy. This study also suggests that we should concentrate on improving the co-ordination of the already existing foresight activities and launching specifically targeted foresight projects. Today a critical element of successful foresight activities seems to be effective networking, not large macroeconomic master plans (Salo 2001, Hjelt, Luoma, de Linde, Ligtvoed, Vader and Kahan 2001).

Among the main problems in Finnish regional policy and planning have been the dispersion of regional organisations and the disunity of the instructions ministries give to these organisations. At the regional level there has been some co-operation between regional authorities and labour market organisations, but the engagement of enterprises and educational institutions in regional policy and planning has been underdeveloped. And there have been no systematic attempts to engage citizens into democratic dialogue concerning the means and aims of regional policy. For this reason, the Finnish foresight activities of the 1980s can be seen as bureaucratic and having a strong top-to-down approach. Even the new legislation ordained in 1993 could not abolish totally these kinds of administrative problems of rigid hierarchies. In 1990s it was well understood in the Finnish public administration machinery that more effective measures should be taken to overcome them.

2. THE DEVELOPMENT OF EMPLOYMENT AND ECONOMIC DEVELOPMENT CENTRES

Employment and Economic Development Centres (TE-Centres) were established in 1997. TE-Centres are joint regional service centres of the Ministry of Trade and Industry, labour districts of the Ministry of Labour and the agricultural, forestry and fishery districts of the Ministry of Agriculture and Forestry. A total of 15 TE-Centres were founded in different regions of the country. The TE-Centres are centres of expertise concerning the development of industries, human resources, labour force, rural issues, technology and export. The main aims of the centres are to unify the dispersion of regional organisations and strengthen the role of state administration in regional policy of industries and labour market. In Finnish regional policy the TE-Centres have adopted the main responsibility for regional foresight activities, while the Regional Councils are responsible for the co-ordination of regional development.

3. BASIC IDEAS AND TARGETS OF THE FINNISH REGIONAL FORESIGHT SYSTEM

That TE-Centres should engage in foresight activities was taken to be clear right from their beginning. As the main purpose of the foresight activities was seen, roughly, that of identifying future threats and possibilities in the working environment with the aim of optimising the measures taken by the users of foresight knowledge. In many foresight cases, one crucial observation is that the foresight process in itself is at least as important as its substantial content, because it creates synergies, partnership, networks, and future oriented collective intelligence. It may be impossible to create learning organisations or even learning regions, if foresight activities are not performed (see e.g. Saxenian 1994, Morgan 1997, Porter 2000). Foresight is like a long lasting learning process and a journey, which will never come to the end.

Foresight is needed in TE-Centres, in order to (1) recognise as early as possible the relevant changes in business and working life, competences and technology, (2) to influence the future so that the targets, goals and visions are actualised, (3) to act proactively so that the recognised threats are avoided and the possibilities are utilised, (4) to increase the effectiveness of the decisions and actions of TE-Centres, (5) to deepen the expertise and understanding in the regional business and working life, competences, technology, internationalization and rural issues.

The foresight of TE-Centres is action, which produces knowledge about the trends, weak signals, possibilities and threats of the environment of TE-Centres and which evaluates the meaning and influence of these to targets, goals, decisions and services of TE-Centres. TE-Centre foresight activity tries to recognise new business possibilities and changes in working life, competences, technology and social issues (social marginalisation threat). TE-Centre foresight produces also strategies of regional business policy, labour market policy, training policy, technology policy, internationalisation and rural policy issues. Typical for TE-Centre foresight is (1) systematic and long term visioning of future, (2) connecting the threats and possibilities to decision making, (3) networking of regional actors and (4) open knowledge sharing. TE-Centre foresight will support regional development, strengthen regional innovation system and promote regional competitiveness and growth.

In TE-Centre-foresight, this understanding is taken to strengthen the TE-Centre expertise concerning the forthcoming changes in industry, farming, labour market, technology, and competences and thus to help to optimise the actions and measures TE-Centres take within these fields.

To promote foresight competence in the TE-Centres, Ministry of Labour launched a development and support project for regional foresight with European Social Fund (ESF) funding in the summer of 1998. Central aims of the project include (Martinen, Varelius and Honkanen 2001):

- 1) Creating a regional foresight system for the TE-Centres.
- 2) Co-ordinating the foresight work of the centres in order to avoid overlapping development work.
- 3) Launching new foresight projects and activities.
- 4) Developing the methods of foresight.
- 5) Training foresight experts of the TE-Centres.
- 6) To disseminate and localise the foresight knowledge gathered by ministries, employers, and labour organisations.
- 7) Integrate foresight into the strategic planning and decision making of the TE-Centres.
- 8) Integrating the regional foresight knowledge into the management and information system (Executive Information System, EIS) and other management systems of the TE-Centres.
- 9) To develop foresight on a local and regional level in a way that makes it possible to utilise that information in the planning of the national employment and economic development policy.

The foresight activities at the TE-Centres began with drafting of the so-called launching plans the launching plans aimed to ensure that foresight is connected to the management, strategic planning, decision making and service processes of the TE-Centres. The plan mapped the foresight knowledge needs of both the centre and its local stakeholders. It also presented a vision of the foresight for the TE-Centre, described co-operation and networking in the region, presented how foresight is to be organised, and drafts a training programme, which aims to commit the management and the personnel of the TE-Centre to foresight.

The TE-Centre foresight is developed with an open strategy, which means that different actors taking part in the activity all have a say in the moulding of the process and that the knowledge gained in this process may be used by anyone who needs it. In TE-Centre foresight, both the bottom-up-principle as well as the top-down-principle has been adopted. Local and regional actors may adopt the methods and practices they see as best serving their purposes, while at the national level the TE-Centre foresight's development and support project took care of the tasks specified above. As a result of this joint activity of the development and support project and the TE-Centres, the regional foresight system of Finland began to take shape.

4. THE ELEMENTS OF THE FINNISH REGIONAL FORESIGHT SYSTEM

The regional foresight system of Finland is structured as shown in the figure below.

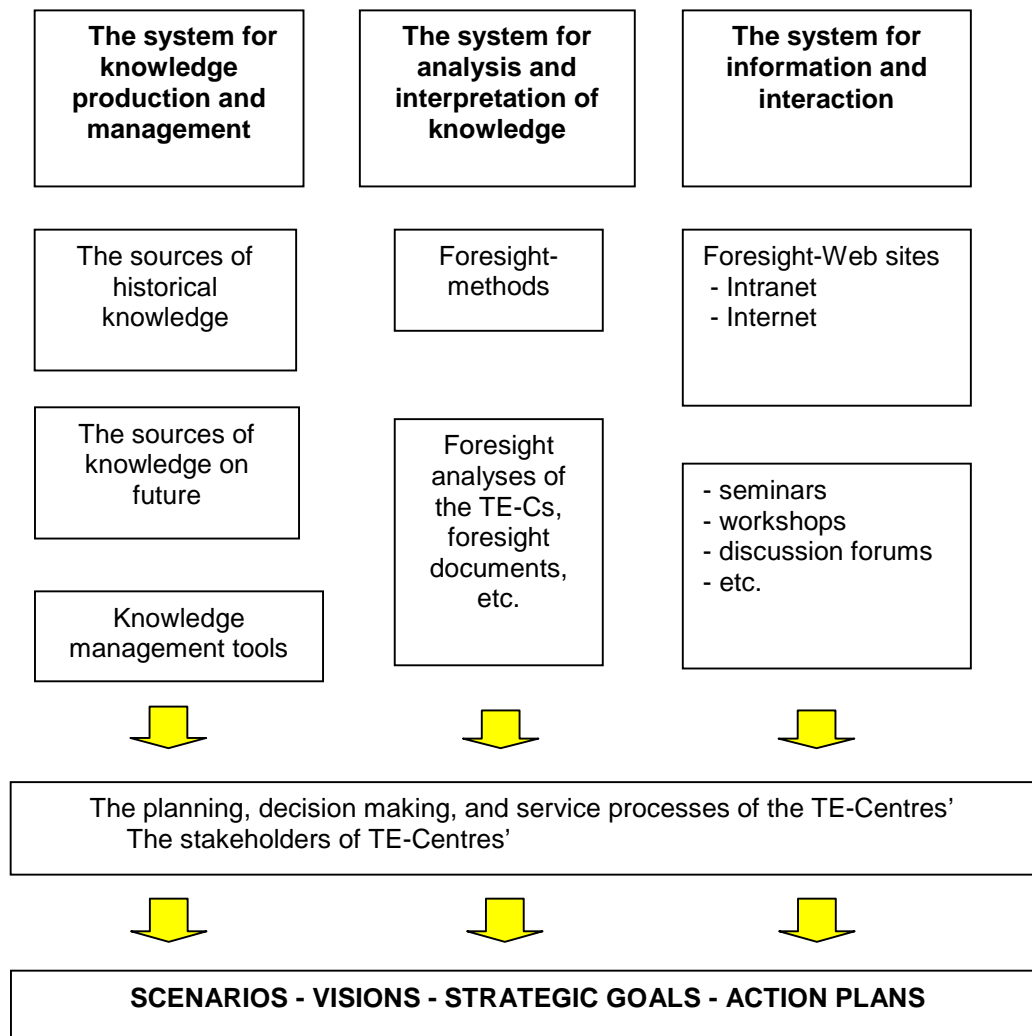


Figure 1. The regional foresight system of Finland

The regional foresight system for the TE-Centres' thus consists of three sub-systems: (1) the sub-system for knowledge production and management, (2) the sub-system for analysis and interpretation of knowledge, and (3) the sub-system for information and interaction. The sub-system for knowledge production and management gathers the relevant sources of knowledge on industry, labour market, and farming into a database. This knowledge divides into historical knowledge and knowledge on future. The main purpose of the sub-system of

analysis and interpretation of knowledge is that of turning the raw data found in the sub-system for knowledge production and management into a form that best serves the purposes of its users. The sub-system of analysis and interpretation of knowledge consists of different kinds of foresight methods (see below) and the foresight analyses and documents produced by TE-Centres and other relevant actors in the field. The main function of the sub-system of information and interaction is that of disseminating the existing foresight knowledge as well as other foresight competence acquired by the different actors taking part in the functioning of the regional foresight system for the TE-Centres. The Intranet and Internet Foresight-portals providing access to foresight knowledge are often a daily-used tool for officials working in the fields of foresight and business development (see Web site: <http://www2.te-keskus.fi/new/ennakointi>). More specialised knowledge is disseminated through workshops and seminars tailored to the specific needs of the different groups of actors using the system for regional foresight. Also the foresight experts in TE-Centres have an important role in promoting foresight activities in regions. The TE-Centre foresight is seen as a participatory, future intelligence gathering and vision building process aimed at present-day decisions and mobilising joint actions. The framework of the TE-Centres' foresight activities is described in the figure below.

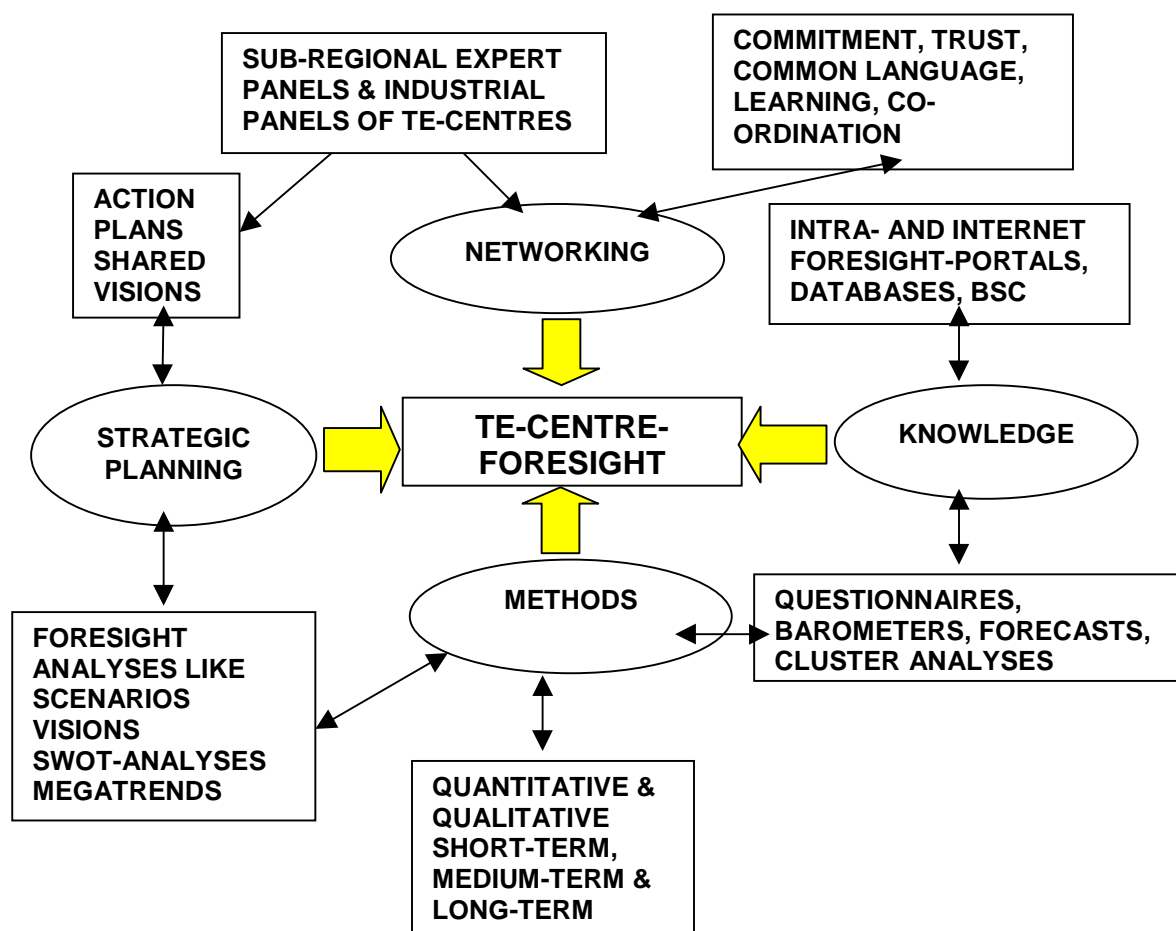


Figure 2. The framework of TE-Centres' foresight activities (a modified version of Miles 2002, see also Keenan, Loveridge, Miles and Kaivo-oja 2002)

5. THE REGIONAL LEVELS OF FINNISH FORESIGHT

One of the most important objectives of the TE-Centres' foresight activities has been to promote networking among local and regional actors. At the local level over 4700 small and medium-sized enterprises, 90 % of the employment offices, a number of educational institutions and municipalities are processing futures knowledge in about 60 sectoral expert groups co-ordinated by the TE-Centres and employment offices. The expert groups analyse relevant futures knowledge and produce shared visions, strategies, and action plans on the basis of their analyses. The local level organisations produce knowledge, visions, strategic plans and action plans for their own purposes and also for the foresight activities of the regional level (see Figure 3).

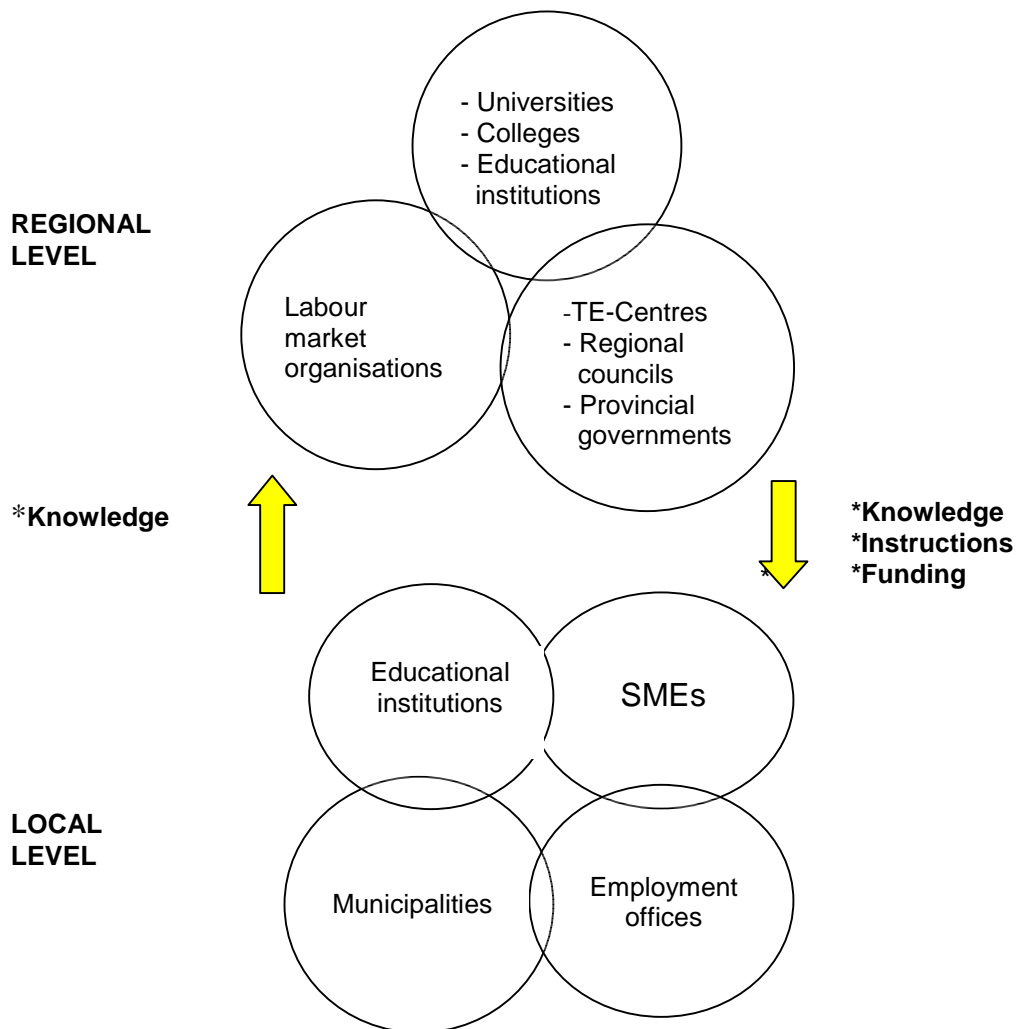


Figure 3. Regional levels of Finnish foresight

6. METHODS USED IN FINNISH REGIONAL FORESIGHT

The decisions concerning which methods to use in regional foresight are made in the TE-Centres. Individual TE-Centres have adopted those foresight methods that they consider as most suitable for their purposes. As a result of this, there are a great variety of both qualitative and quantitative foresight methods in use in the regional foresight in Finland (Nieminen 1999). In long-term foresight, the most used methods are trend analysis, scenario techniques, Wild Card analysis or weak signal analysis, and the Delphi panel studies. Medium term foresight mostly makes use of industrial cluster analyses (Mannermaa and Ahlqvist 1998). In 2001, a total of 20 of this type of cluster analyses were completed in TE-Centres. In short term regional foresight, the most common methods are futures barometers and survey studies. Among these is found the most widely spread foresight method in Finnish regional foresight, the Survey Study for Demand in Education and Labour Force (SSDEL). In 2002, about 140 employment offices of the total of 160 employment offices in Finland take part in carrying through the SSDEL and approximately 5000 firms will be interviewed. The survey study themes of the SSDEL include:

- ❑ Increases and decreases in labour demand by occupational groups,
- ❑ Recruitment problems by occupational group,
- ❑ Changes in professions and job descriptions,
- ❑ Demands for education,
- ❑ Ideas for networking, sub-contracting, and new companies,
- ❑ Age distribution of personnel,
- ❑ Export (target countries and problems),
- ❑ Plans for outsourcing,
- ❑ The firms economic situation now and a year ahead,
- ❑ Future investment plans, research and development plans, demand for premises, and
- ❑ Competence of the core occupational groups.

In addition to these themes common for all TE-Centres, individual TE-Centres may add themes and questions they consider as relevant for their own purposes. After these questionnaires have been carried through, local expert panels make SWOT-analyses of their results. In 2002, there will in total be about 60 expert panels, whose analyses will be used by the TE-Centres, employment offices, and other interested stakeholders in formulating their actions plans and futures strategies.

7. THE FOCUS OF REGIONAL FORESIGHT STUDIES IN FINLAND

The TE-Centre-foresight does not have a single focus but concentrates on different areas that are seen as central from the point of view of the strategic role of the TE-Centres. The dimensions of the foresight activities vary from one TE-Centre to another depending on the particular interests and problems of the regional centre. Most regional foresight activities do not have a single focus, but combine a number of different foci. Figure 4 presents a robust estimation of the location of the Finnish regional foresight activities along different dimensions.

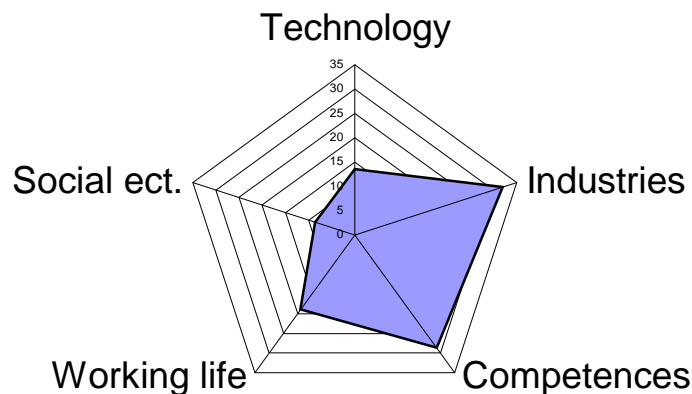


Figure 4. The foci of TE-Centre-foresight

The dimensions of foresight activities in TE-Centres thus are (see also Di Bartolomeo, Farhl, Gapriati, Gavigan, Keenan, Lecog, Miles, and Scapolo 2001):

(1) Industries: most of the Finnish regional foresight activities concentrate on the future development of clusters and industries. There are several quantitative foresight processes producing knowledge about production, demand for labour, business opportunities and so on.

(2) Competences and skills: Nowadays one of the most important areas in TE-Centre-foresight is anticipating changes in workers' qualifications and skills. There are a number of ongoing foresight processes aiming to identify future requirements in qualifications and skills. For example, two TE-Centres carry out barometer studies providing very detailed knowledge of the qualification needs of public and private companies. Qualifications and skills field is nowadays one of the most strategic questions in regional foresight studies. A

key challenge in this area is to promote co-operation between educational institutions and companies.

(3) Working life: This dimension of Finnish regional foresight concentrates on major changes in working life including the development of work organisations, working conditions, e-work, on-the-job-training, distance work arrangement, etc.

(4) Social life: In the dimension of social life the emphasis of foresight activities is on population development and issues such as demography, mobility, employment in voluntary sector, general equity issues and social marginalization.

(5) Technology: technology foresight has been involved for instance in cluster analyses, which make use of Porter's classical "Diamond Model" (Porter 1998). The TE-Centres have also produced technology scenarios for instance on metal industry, biotechnology, and ICT-cluster. Cluster analysis methodology is one the key methods used in the Finnish foresight analysis.

8. THE ROLE OF THE EMPLOYMENT AND ECONOMIC DEVELOPMENT CENTRES IN REGIONAL AND LOCAL FORESIGHT

In foresight, the role of regional and local actors depends on the surplus value they are able to produce to the foresight process. In Finnish regional and local foresight, the TE-Centres have been active in the following areas:

1. Co-ordination of regional and local foresight processes: one of the most important features of regional foresight in Finland is networking. Successful networking presupposes co-ordination. In many regions, the TE-Centres co-ordinate, for example, the work of the sectoral expert panels. In addition to this, all TE-Centres co-ordinate local foresight processes by auditing and managing the foresight activities of local employment offices. The employment offices implement questionnaires and form expert panels consisting of representatives from enterprises, educational institutions, municipalities and employment offices.
2. Foresight training and enhancing foresight-expertise: since 1998, the support project for the regional foresight of the TE-Centres arranged over 20 seminars and workshops in which foresight experts have been trained to the TE-Centres. The experts have command over the methods of foresight and the sources of futures knowledge. This expertise of the TE-Centres is used, among other things, in producing the foresight analyses and documents of TE-Centres.
3. Maintaining databases and producing and sharing knowledge openly: many databases and two information net portals of foresight knowledge have been developed during the support project for the regional foresight of the TE-Centres. These sources of futures knowledge are maintained by the TE-Centres. One of the most important tasks of the TE-Centres is to share the futures knowledge openly.
4. Developing practical applications of foresight studies and methods: during the last four years several foresight processes have been launched by the TE-Centres. Especially cluster analyses may be considered as process innovations. In these analyses the middle term future of the cluster is probed with Porter's diamond model. Thus, the TE-Centres have also been developers of practical applications of foresight studies.
5. Financing foresight processes: national and European Social Fund (ESF) funds for foresight activities have been channelled through the TE-Centres.
6. Together with other regional actors the TE-centres have established regional foresight units. These units produce information concerning growing and declining industries, changes in competence and training requirements, and development needs within industries for employment, educational, and other public authorities as well as SMEs. They also create interactive services and knowledge-based tools aimed at establishing comprehensive visions about changing needs in training and development policies with the ultimate target of improving labour availability, competence and competitiveness of SMEs.

7. Industrial teams of the TE-Centres gather together industrial expertise, analyse information, and produce visions, strategies, and action plans.

The TE-Centres have thus adopted a central and multifaceted role in Finnish regional and local foresight. This role is however not a stable one but develops as the foresight processes proceed.

9. KNOWLEDGE INPUTS AND OUTPUTS OF THE FINNISH REGIONAL FORESIGHT SYSTEM

In constructing the Finnish regional foresight system the emphasis has been on practical applications of foresight studies and futures knowledge. Figure 5 below shows that TE-Centres' foresight contains a very strong practical element so that relevant futures knowledge and foresight competence is used in formulating regional and local strategies and action plans.

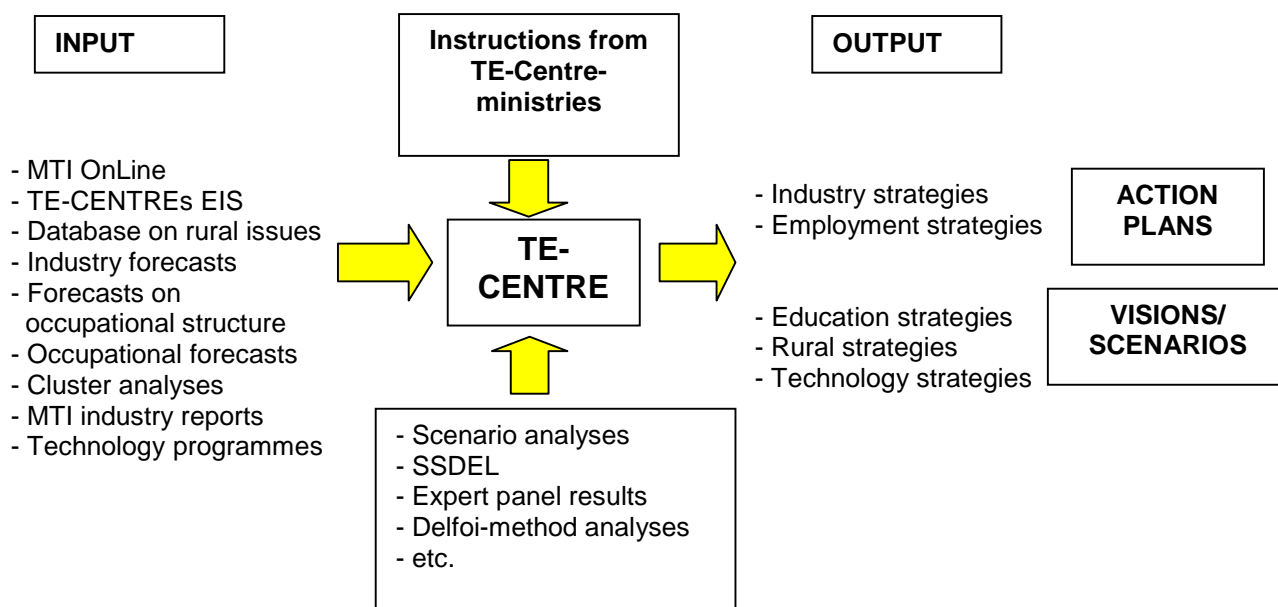


Figure 5. Input-Output flows in the Finnish regional foresight system.²

In addition to the immediate outputs in the form of regional and local strategies and action plans the Finnish regional foresight system's products include the varied effects of formulating these strategies and plans and implementing them into practice. These more mediate effects include such phenomena as better functioning of the labour market (better fulfilment of vacancies, better matching of the demand and supply of labour force, and less recruitment problems), instigation of continuous forward-looking dialogue between regional

² See MTI OnLine is an industry database of the Ministry of Trade and Industry, TE-CENTRES' EIS is the Executive Information System of the TE-CENTRES', MTI industry reports are reports on the state and development of industries produced by the Ministry of Trade and Industry, and SSDEL = Survey Study for Demand in Education and Labour Force.

and local actors, generating learning processes, enhancing futures understanding, and facilitating the construction of more coherent regional policy.

10. KNOWLEDGE MANAGEMENT IN THE FINNISH REGIONAL FORESIGHT

It is possible to think that foresight studies are always a part of larger knowledge management process. In a way by the foresight studies organisations and individuals want to widen the limits of knowledge and manage uncertainty. Much has been said and written about the public governance expects from science and scholarship. It is typical to expect that science and especially foresight analysis can resolve uncertainty, at least reduce uncertainty. There are simple and one-dimensional questions that can be unambiguously answered by science and scientific foresight studies, such as effects of smoking on lung functions. Today, however, the majority of urgent social questions or business decisions pertain to complex issues, such as increasing poverty, terrorism, globalisation of economic activities, climate change, social networking and European integration etc. Such complex issues involve inherent uncertainty. Of course, there are other human motivations to implement foresight studies than knowledge management needs, but often these kinds needs are important reasons for foresight activities.

As Herbert Simon, Nobel Prize winner has noted, the limits of knowledge and rational decision-making are imposed by

- the complexity of the world in which we live,
- the incompleteness and inadequacy of human knowledge,
- the inconsistencies of individual preference and belief,
- the conflicts of value among people and groups of people, and
- the inadequacy of the computations we can carry out, even with the aid of the most powerful computers.

Thus, the real world of human decisions is not a world of ideal cases, frictionless planes, or vacuums as many economists have proposed in their abstract theories. The rationality of decision-making on the basis of available knowledge is usually bounded (see e.g. Simon 2000).

However, in foresight research, when knowledge is used intensively it creates more added value to the stakeholders. Usually, the more knowledge is used, the more valuable it becomes, creating a self-reinforcing cycle. Very often, knowledge is only as good as an organisation's ability to share the learned things. According to Zack (1999) organisations, which can manage knowledge effectively

- understood their strategic requirements,
- devised a knowledge strategy appropriate to organisation's strategy,
- implemented an organisational and technical architecture appropriate to the knowledge processing needs of the organisation, enabling them to
- apply maximum effort and commitment to creating, explicating, sharing, applying, and improving their knowledge.

If we think critical issues of foresight intelligence, the social and technological contexts of knowledge management are important. Knowledge architectures exist within primary contexts that influence the impact knowledge management will have on the organisation's performance. Usually *strategic context* addresses an organisation's intent and ability to exploit its knowledge and learning capabilities better than competitors (Hamel and Prahalad 1989, Prahalad and Hamel 1990, Roth 1996). On the other hand, *knowledge context* addresses the competitiveness of an organisation's knowledge. Existing knowledge can be compared to what an organisation must know to execute its strategy. In this sense it is important to know, what is known and especially, what is not known inside a foresight project and networks. Where there are current or future knowledge gaps, knowledge management efforts should be directed toward closing them, assuring a strategic focus. *Organisational context* reflects the organisation's role and structure, formal and informal, as well as the socio-cultural factors affecting knowledge management such as culture, power relations, norms, reward systems, and management philosophy. Effective knowledge creation, sharing and leveraging requires an organisational climate and reward system that values and encourages co-operation, trust, learning and innovation and provides strong incentives for engaging in those knowledge-based roles, activities and processes. Usually lacks in these aspects can be major obstacles to effective knowledge management (Zack 1999). *Technology context* addresses the existing information technology infrastructure and capabilities supporting the knowledge management architecture. Many experts like Zack (1999) propose that knowledge management is 10 % technology and 90 % human relations. However, without ability to collect, index, store and distribute explicit knowledge electronically and seamlessly to where it is needed when it is needed, the organisational capabilities will not be fully exploited (Zack 1999). This is a relevant point in the context of foresight research, because the knowledge, insights, understanding, and practical know-how that we all possess are the fundamental resource that allows us to function intelligently. Knowledge is one, if not the most important factor that makes personal, organisational, and societal intelligent behaviour possible.

An important element of Finnish regional foresight system consists of knowledge management systems. In Finland there is not a unified knowledge management system, but many smaller knowledge management systems, which are combined together. The idea of knowledge management is to produce reliable information and knowledge concerning the general business environment of the companies (Figure 6).

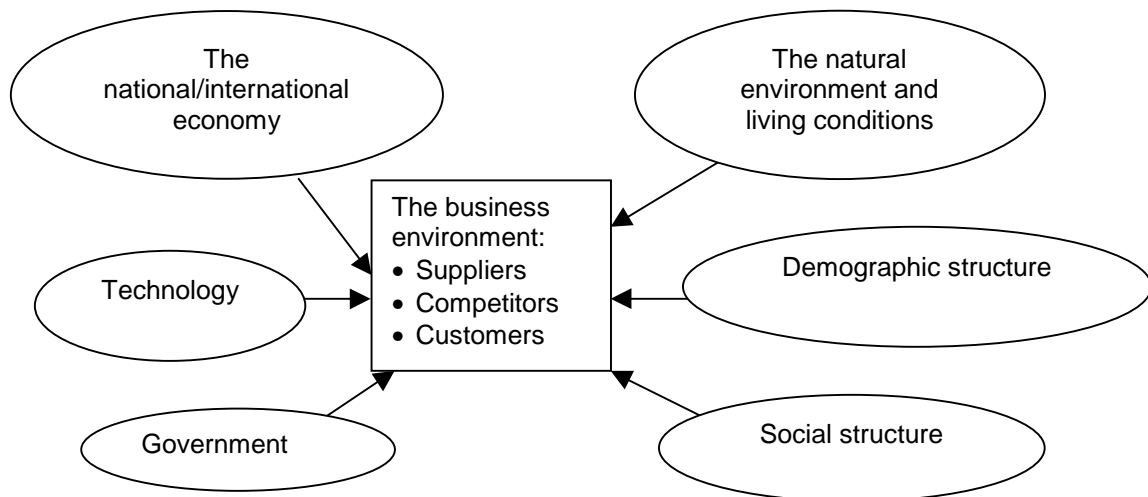


Figure 6. The business environment and foresight

Knowledge management caters to the critical issues of organisational adaptation, survival and competence in face of increasingly discontinuous environmental change. It also embodies organisational processes that seek synergistic combination of data and information processing capacity of information technologies and the creative and innovative capacity of human beings.

In Finland the knowledge management system of regional foresight system has many components. The most important of these are:

- ❑ Information net-portals of foresight: the foresight portals in the TE-centres' intranet and Internet portals provide access to foresight knowledge and methods as shown in Figure 1 above.
- ❑ EIS of TE-centres: the Executive Information System of the TE-centres gathers together different indicators crucial from the point of view of TE-centres' management.
- ❑ MTI OnLine: The Ministry of Trade and Industry's (MTI) online database containing knowledge about different industries (historical information, futures barometers and forecasts).
- ❑ Database of Barometers: this database contains relevant barometer-knowledge produced by ministries, labour organisations, and research centres.
- ❑ Database of Indicators of Regional Development: this database gathers together 15 of the most important indicators of regional development.
- ❑ BSC: The Balanced Score Card –system is an administrative monitoring and management system for the TE-centres and TE-centre ministries.

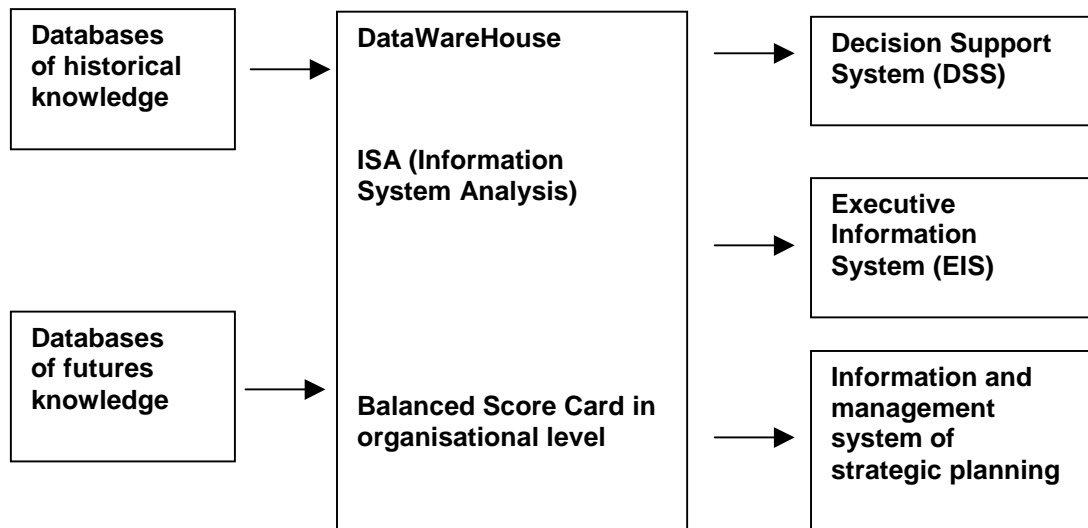


Figure 7. The knowledge management process in the Finnish regional foresight system

The typical problem here is that the vast number and range of factors influencing the development of the working environment makes it very difficult for actors to monitor and analyse this development. The globalisation and networking of economies makes this problem even more difficult. Another problem is that different actors usually need different kinds of information. The starting point of knowledge management systems in the development of Finnish regional foresight has been that there are diverse information needs among the foresight community members. Both too narrow and too wide perspectives to information needs have been seen as problematic. Practical experience has shown that education concerning knowledge management systems is a crucial part of knowledge management in foresight activities. One of the most important challenges in knowledge management of foresight studies is to find out whether practitioners of foresight can use foresight methods and available databases. By making interactive field studies, foresight coordinators can recognise potential, but also actual discontinuities of futures thinking and also actual discontinuities of available foresight technology infrastructures. It is very important to learn to organise information and knowledge flows, because there is always danger of information overflow — also in the foresight studies field. Of course, organisation of data set is needed in order to manage foresight knowledge. Though systematic, continuous scanning of the whole range of external factors might seem desirable, such extensive environmental scanning is unlikely to be cost effective and will probably create information overload for actors. One of the most important features of knowledge management in the foresight studies is that new knowledge helps stakeholders to manage uncertainty in their business environment. New pieces of knowledge, a better understanding of risks, their causes, interactions, probabilities and costs is needed in the field of foresight analysis. It is typical that some stakeholders seem to need more foresight knowledge than other is some special issue, while some others prioritise other type of information in the foresight knowledge pool. Fiol and O'Connor have proposed that in today's complex and hyper-competitive environments, linear forecasts of the future based on the past are not likely to be accurate.

Strategic foresight, rather than precise future planning, may become the key to effective environmental positioning and company level decision-making (Fiol and O'Connor 2002).

11. FUTURE CHALLENGES OF THE FINNISH REGIONAL FORESIGHT SYSTEM

According to current analyses of the Finnish regional foresight system, deepening mutual understanding within the field of foresight presupposes further strengthening of networking, co-ordination, commitment, and confidence between local and regional actors. Nowadays a lot of foresight knowledge is available, but in some cases the use of foresight knowledge in strategic planning and decision-making of the TE-centres' is still meagre. This is at least partly due to the fact that the individual level commitment to foresight activities in some TE-centres is still quite weak. In addition to these problems, the connections of foresight to administrative steering systems like the EFQM-system³ and the BSC-system⁴ are not fully developed and the evaluation of the efficiency and effectiveness of foresight activities is underdeveloped. Another field in need of development is the commitment of the co-ordinating TE-centre ministries into regional foresight. In the TE-centre ministries there quite often are wrong kinds of expectations concerning the nature and the actual results of foresight activities. This is partly due to the fact that the meanings of concepts like "foresight" and "anticipation" are unclear. Also the actual connections between foresight activities and innovation systems, regional planning systems, and regional strategy processes are not fully clear for all stakeholders (Marttinen, Varelius and Honkanen 2001). It seems that different experts use different concepts and approaches in foresight processes. This is, in a way, natural because in the general field of foresight organisational learning and routines have a crucial role.

We can summarise the future challenges of the Finnish regional foresight system in the following way:

- 1) As new kind of activity, foresight must be integrated with the other planning and management activities of TE-centres. In this issue a central challenge is to provide foresight knowledge to various activities of TE-centres.
- 2) There are still large competence lacks in regional foresight system. The competence lack must be identified and by continuous education programmes these competence lacks can be eliminated.
- 3) Many interesting foresight studies are made, but they are just partly utilised in other regions foresight processes. Many regional foresight analyses are not fully utilised in national ministry level planning processes. This situation must be changed in the future.

³ The EFQM-system is framework for quality improvement along the lines of other quality management (QM) models. European Federation of Quality Management (EFQM) has been driven by a vision of helping to create a European organisation with excellent quality of service and production systems. EFQM model has been developed for organisational self-assessment in improving the customer satisfaction, employee satisfaction and impacts on society and business.

⁴ Balanced Scorecard (BSC) is a management system - not only a measurement system that enables organisations to clarify their vision and strategy and translate them into action. See Kaplan and Norton (1996, 2001).

- 4) Knowledge management systems have already been developed, but still there are some large challenges.
- 5) Foresight activities cannot be implemented without adequate material and immaterial resources. In some activities like in research and development work, more resources are going to be needed.
- 6) The time scale of foresight studies tends to be too short, also long run analyses are needed.

12. SUMMARY

In this article we have described the regional foresight system of Finland. In Finland, it has been taken that foresight is a participatory, future intelligence gathering and vision building process aimed at present-day decisions and mobilising joint actions (see key definition of Di Bartolomeo, Farhl, Gapriati, Gavigan, Keenan, Lecog, Miles and Scapolo 2001) and the Finnish regional foresight system has been developed to this direction in the TE-centres. In Finland, foresight studies (or in a limited sense futures studies) are seen as a necessary condition for rational decision-making and rational human action. Networking, planning and the target-minded use of futures studies methods are three key elements of sense-making process in foresight studies. An important feature of rational human action is new knowledge concerning alternatives and alternative development paths. That is why, in Finland, very much emphasis is paid on knowledge management of foresight studies. Efforts to promote effective dissemination of crucial results and outputs of foresight studies are seen as part of rational action process. However, it is important to understand that foresight studies cannot provide perfect knowledge, which is often seen to be a pre-condition of ideal rationality.

It is typical that in many public sector organisations the "*this is the way things are done around here*" mentality is very strong. Historical habits and routines often prevent to use foresight analyses in planning and decision-making. However, foresight activities aim to influence others' thinking to effect some measure of change. Usually this involves the introduction of previously new insight (previously missed or ignored) or successful challenges to long-held assumptions. In this sense, we expect that the Finnish regional foresight system has succeeded in this kind of "silent" influencing process.

However, foresight is still relatively new issue in Finnish ministries and public administration. Many experts are still studying what foresight is. There are still many challenges in the development of the regional foresight system. Many of them are connected to knowledge management and further education of planners and experts. Regional politics is on the rise but socially inclusive policy institutions are still quite underdeveloped. Still many planning approaches do not handle well middle- and long-term prospects and multiple stakeholders' views. However, step-by-step foresight studies in Finland have broken down barriers, and in some special cases articulated long-term strategies and visions.

REFERENCES

Castells, M. and Himanen, P. (2001) *The Finnish Model of the Information Society* (In Finnish.), SITRA. Vantaa.

Castells, M. and Himanen, P. (2001) The Finnish model of the information society, Sitra Report series 17; SITRA, Vantaa.

Di Bartolomeo, T., Farhl, F. F., Gapriati, M., Gavigan, J.P., Keenan, M. Lecog, D., Miles, I. and Scapolo, F. (Eds.) (2001) *A Practical Guide to Regional Foresight, FOREN*, Foresight for Regional Development Network. European Commission Research Directorate General, STRATA Programme.

Fiol, C.M. and O'Connor, E.J. (2002) Future Planning + Present Mindfulness = Strategic Foresight, in *Probing the Future: Developing Organisational Foresight in the Knowledge Economy*, An International Conference at the University of Strathclyde Graduate School of Business in Glasgow, 11-13th July 2002.

Hamel, G. and C. K. Prahalad, C.K. (1989) Strategic Intent, *Harvard Business Review*, Vol. 67, No. 3, pp. 63-76.

Hjelt, M. Luoma, P. de Linde, E. Ligtvoet, A. Vader, J. Kahan, J. (2001), *Experiences with Technology Foresight Studies*, Reports of The Finnish National Fund for Research and Development, SITRA publication 4/2001. SITRA, Helsinki.

Kaplan, R.S., and Norton, D.P. (1996) *The Balanced Scorecard: Translating Strategy into Action*. Harvard Business School Press, Boston.

Kaplan, R.S., and Norton, D.P. (2001) *The Strategy-Focused Organization*. Harvard Business School Press, Boston.

Keenan, M., Loveridge, D., Miles, I. and Kaivo-oja, J. (2002) Handbook of Knowledge Society Foresight. Draft report. August 2002. European Foundation.

Kuparinen, A. (1999) Future Steps toward European Forward thinking. Keys to the Future in Education and Research, in *Forward Thinking Conference*, Proceedings Report, Hamburg, Germany.

Mannermaa, M. and Ahlqvist, T. (1998) *The Real Knowledge Society* (In Finnish Varsinainen tietoyhteiskunta). ESR-julkaisut 36/98, Oy Edita Ab, Helsinki.

Markkula, M. (1999) *Linking Foresight into National Knowledge Management – A View from the Finnish Parliament*. Helsinki 29.-30.11.1999. The Finnish Parliament, Helsinki.

- Marttinen, J., Varelius, J. and Honkanen, P. (2001) *The TE-CENTRES as Makers of the Future* (In Finnish), ESF-publications 85/01. Ministry of Labour, Helsinki 2001.
- Miles, I. (2002) *European Knowledge Society Foresight - Towards a Handbook of Methodology*. European Foundation for the Improvement of Living and Working Conditions. Dublin 6th of March 2002.
- Morgan, K. (1997) *The Learning Region: Institutions, Innovation and Regional Renewal*, *Regional Studies*, Vol. 31, No. 5, pp. 491-503.
- Mäkelä, K. (1999) *Methods for Anticipation Changes in Working Life.*' (In Finnish.) *Työelämän tutkimus (Finnish Labour Review)*, Vol.10, 2/1999, pp. 5-7.
- Nieminen, J. (1999) *Methods and Practices of Regional Anticipation in Finland*. Ministry of Labour, ESF-publications 45/99, Helsinki.
- Porter, M. (1998) *Clusters and the New Economics of Competition*. *Harvard Business Review*, Nov/Dec 1998, 77-90.
- Porter, M.E. (2000) *Location, Competition and Economic Development: Local Clusters in a Global Economy*, *Economic Development Quarterly*, Vol. 14, No. 1, pp. 15-34.
- Porter, M.E., Sachs, J.D., Cornelius, P.K., McArthur, J.W. and Schwab, K. (2001) *The Global Competitiveness Report 2001-2002*. World Economic Forum, Oxford University Press, Oxford.
- Prahalad, C.K. and Hamel, G. (1990) *The Core Competence of the Corporation*, *Harvard Business Review*, Vol. 68, No. 3, pp. 79-91.
- Roth, A.V. (1996) *Achieving Strategic Agility Through Economies of Knowledge*, *Strategy & Leadership*, Vol. 24, No. 2, pp. 30-37.
- Salo, A (2001) *Needs Assessment of Technology Foresight* (In Finnish), Research and Reports from the Ministry of Trade and Industry Reports 2/2001, The Ministry of Trade and Industry, Helsinki.
- Saxenian, A. (1994) *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*, Harvard University Press, Cambridge, Mass.
- Simon, H.A. (2000) *Bounded Rationality in Social Science: Today and Tomorrow*. *Mind & Society*, Vol.1, No. 1, pp. 25-39.
- Zack, M.H. (1999) *Developing a Knowledge Strategy*, *California Management Review* , Vol. 41, No. 3, Spring, 1999, pp. 125-145.

PREVIOUS TUTU PUBLICATIONS

- Luukkanen, Jyrki & Kaivo-oja, Jari (2002) Economic Development and Environmental Performance: Comparison of Energy Use and CO₂ Emissions in OECD and Non-OECD Regions. Tutu publications 5/2002. Finland Futures Research Centre. Turku School of Economics and Business Administration. 21 p.
- Ahokas, Ira (2002) Tietoyhteiskunnan vaikutukset ammattirakenteeseen nykyisissä Euroopan Unionin maissa sekä jäsenehdokasmaissa. Tutu-julkaisuja 4/2002. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 93 s.
- Hietanen, Olli & Heinonen, Sirkka (2002) SIS 2010. Kouvolan kaupungin kestävän tietoyhteiskunnan visio. Tutu-julkaisuja 3/2002. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 37 s.
- Hietanen, Olli (toim.) (2002) Taitoyhteiskunta osallistumisen edistäjänä. Tutu-julkaisuja 2/2002. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 59 s.
- Hietanen Olli, Kaskinen Juha & Takala Anu (2002) KEKETU-verkostoanalyysi. Seudulliset strategiset verkostot innovaatiotekijöinä ja sosiaalisena pääomana. Tutu-julkaisuja 1/2002. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 29 s.
- Kaivo-oja, Jari & Rajamäki, Risto (2001) Kuntien strategisen yhteistyön trendit maakunnissa vuosina 1995-2000 Aluebarometriaineiston perusteella. Tutu-julkaisuja 5/2001. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 34 s.
- Tapio, Petri & Willamo, Risto (2001) Environmental Problems – What, Why and How? Tutu publications 4/2001. Finland Futures Research Centre. Turku School of Economics and Business Administration. 21 p.
- Tapio, Petri & Hietanen, Olli (2001) Futurist in policy making process: Philosophical foundations and methodological considerations on the role of professionals analysed by the Futulogic method. Tutu publications 3/2001. Finland Futures Research Centre. Turku School of Economics and Business Administration. 30 p.
- Kaskinen, Juha (2001) Kuntien ympäristöbarometri – indikaattorijärjestelmä kuntien ympäristöpoliittisesta edistymisestä. Tutu-julkaisuja 2/2001. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 57 s.
- Kaivo-oja, Jari & Rajamäki, Risto (2001) Suomalaisten charter-matkustamiset Välimeren alueelle vuosina 1975-1998: trendi- ja suhdannekehityksen analyysi sekä markkinakehitystä koskevia tilastollisia perustarkasteluja. Tutu-julkaisuja 1/2001. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 45 s.
- Kaskinen, Juha (2000) Kuntien ympäristöbarometri – hyvän indikaattorijärjestelmän perusteet. Metodinen harjoitus. Tutu-julkaisuja 6/2000. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 117 s.
- Kaivo-oja, Jari (2000) Asiantuntijakäsityksiä tietoyhteiskunnan tulevasta kehityksestä. Tutu-julkaisuja 5/2000. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 38 s.

- Kaivo-oja, Jari & Rajamäki, Risto (2000) Valuuttakurssi ja suhteellinen hintataso ulkomaalaisten matkailijoiden yöpymistrendien muokkaajana: Valuuttakurssien ja suhteellisen hintatason yhteydet 16 ulkomaan matkailijoiden yöpymiseen Suomessa vuosina 1972-1997. Tutu-julkaisuja 4/2000. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 46 s.
- Otronen, Merja (2000) Vertailututkimus tietoteknologiayritysten ympäristöasioiden hoidosta ja käsityksistä kestävä kehityksen tietoyhteiskunnasta: Ericsson, Motorola ja Nokia. Tutu-julkaisuja 3/2000. Tulevaisuuden tutkimuskeskus. Turun kauppakorkeakoulu. 47 s.
- Tapio, Petri (2000) Scenarios for Traffic CO₂ Policy in Finland for 2025. Tutu publications 2/2000. Finland Futures Research Centre. Turku School of Economics and Business Administration. 25 p.
- Luukkanen Jyrki, Kaivo-oja Jari, Vehmas Jarmo & Tirkkonen Juhani (2000) Climate change policy options for the European Union: analyses of emission trends and CO₂ efficiency. Tutu publications 1/2000. Finland Futures Research Centre. Turku School of Economics and Business Administration. 49 p.