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STRATEGIC PLANNING FOR REGIONAL DEVELOPMENT:
AN INTRODUCTORY TEXTBOOK

Kostas Žymantas Svetikas

MYKOLAS ROMERIS UNIVERSITY

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Strategic Planning for Regional Development:

An introductory textbook

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CONTENTS

INTRODUCTION

This textbook is intended for Master degree students and students planning to obtain their PG degree. Moreover, the book would be useful for researchers, practical specialists and politicians, involved in regional development policy, also strategy planning and programming of regional development.

This textbook gradually presents a concept of a 'region' and its identification for solving problems of uneven regional development, it also introduces the main theories, models and strategies of regional development and changes of regional development policy paradigm with its base component – regional development strategic planning and programming. The book could be divided into two relative parts: the first part comprises chapters Nos. 1, 2, 3, and the second part consists of chapters Nos. 4 to 9. Each chapter has its thorough pedagogic structure consisting of learning objectives, study content, questionnaire and a list of literature used as well as one of literature for further studies. Different sources have been used to different extents. The main sources were: recent studies of *Armstrong, Hoover, Izard, Cooke, Ascheim, Roberts, Yuill et al.* and OECD regional development researches.

The first chapter presents a brief overview on a concept of 'regions', identification of homogenous and functional regions, its role in solving problems pertaining to the disparities of regional development.

The second chapter gives a brief explanation of development theories, models and strategies, starting with the classical location theory and covering *NEG Krugmans,* regional business clusters and regional innovation system models.

The third chapter describes the evolution of regional development policies and gives an overview of changes in the paradigm of regional development policies.

The fourth chapter explains the changes in regional planning strategies, analyses the model of integrated regional development strategic planning, and reveals the features of realisation of its separate stages.

The fifth chapter describes the essentials and the role of regional strategic foresight into regional development strategic planning, the main task, the elements, and the methodology used.

The sixth chapter outlays the main traditional quantitative tools for regional analysis, regional multipliers, shift –share and input-output methods.

The seventh chapter explains the role of regional business clusters in Porter's diamond model, qualitative and quantitative methods used in business cluster analysis and main methods for setting business cluster development priorities.

The eighth chapter presents multisectoral qualitative analysis technique to identify and evaluate which factors in which industries contribute to regional competitive advantages, such as core competencies, strategic infrastructure, and risk management.

The ninth chapter is devoted to the regional innovation system analysis, demand and supply side, SWOT analysis technique and regional innovation strategy design.

PART 1

REGIONAL DEVELOPMENT THEORIES, STRATEGIES AND POLICIES

Chapter 1. The Nature of Regions and Regional Disparities

Learning objectives

After reading this chapter, you should be able to:

1. Describe the increasing importance of regions and regional development.
2. Classify and characterise the descriptive and normative, functional and homogenous regions.
3. Describe the EU NUTS system.
4. Appreciate how to identify homogenous and functional regions for regional development.

1.1. The increasing importance of regions

Various reasons exist for the increasing importance of development on the regional level:

- The most important reason is increased globalisation, which shifted competition to the regional level
- In the 1990s, the decentralisation of duties "from above" to municipal and regional level started. Regions became the main territorial level actors in the implementation of EU regional policy.
- Increased necessity of cooperation between municipalities - "regionalisation from below". Municipal partnerships are growing in many development activities and service delivery. In particular, the importance of city regions in global competition increases, where only city municipalities often have specific conditions needed for research and development.
- Increasing regional social and economic disparities increase pressure on the governments (national or EU level) to implement regional policies with all forms of public intervention in order to reduce regional disparities often with two interrelated objectives in mind: economic growth and improved social distribution.

1.2. Definition of regions

The word "region" is used in many spheres, such as politics, economy or public sphere. The word "region" has its origin in Latin. Understanding this word depends on different perspectives. Generally, a region is a more open area of a larger territory and can be created for many purposes.

For regional development purposes, Cooke *et al* (2000, p. 480) state that a region should be defined as "… a territory less than its sovereign state, possessing distinctive supralocal administrative, cultural, political, or economic power and cohesiveness, differentiating it from its state and other regions" It is a territory under level of state but mainly above municipal level. Sometimes a region can also be a territory of a supranational entity.

The identification of regions is dependent on the chosen criteria. Generally, on basis of a survey in regional geography, homogenous and functional regions are defined. Homogenous regions have homogenous structure and may be created for regional development purposes by combining, for example, municipalities according to one or more criteria (unemployment level, GDP level, language spoken, natural conditions, etc.). Functional regions are defined on the basis of stable functional interactions between territorial units. Sometimes they are called nodal regions (city region) defined on the basis functional interactions often based on market interrelations, transport, labour markets, etc. of city and surrounding areas. Functional regions with a population of more than 500 thousand are often called metropolitan regions.

On the basis of homogenous or functional regions, as are result of political decisions territorial administrative units, planning regions, statistical regions (EU NUTS system) should be created. The Nomenclature Units for Territorial Statistics (NUTS) is a standard for referencing the subdivisions of EU countries for statistical purposes. For each EU Member State, a hierarchy of three NUTS levels is established by Eurostat and is instrumental in the EU's Structural Fund delivery mechanism. Though the NUTS regions are based on existing national administrative subdivisions, the subdivisions at some levels do not necessarily correspond to administrative divisions within the country. The following thresholds are used as guidelines for establishing the regions, but they are not applied

rigidly: NUTS 1 region (3 million to 7 million inhabitants), NUTS 2 region (800 000 to 3 million inhabitants) and NUTS 3 region (150 000 to 800 000 inhabitants).

1.3. Demarcation of regions

The demarcation of regions is more dominated by functional interrelations than by administrative borders. Specifically, a functional region is characterised by high intensity of economic interaction and consists of nodes, such as municipalities, connected by economic networks and networks of infrastructure. The borders of functional regions are determined by the frequency or intensity of economic interaction, as shown in Figure 1.1.

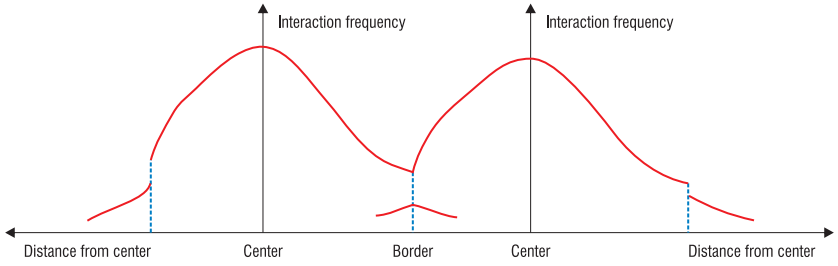

Figure 1.1. Demarcation of functional regions (based on Johansson, 1998)

Examples of economic interaction upon which the borders may be determined are intra-regional labour commuting, business collaboration and business – applied science collaboration trips, stable contacts. Commuting patterns is a common source for empirically identifying functional regions. The labour market is of special importance, as the links between employers and employees create a rigid foundation of the economic network in a functional region. These links are a kind of ties that form a regional economic system. It is also recognised that flows of knowledge are embedded in regional labour networks. For these reasons, commuting patterns can be regarded as the appropriate type of interaction to base the borders. A region therefore can be defined as a territory in which interaction between market actors and flows creates a regional economic

system, the borders of which are determined by the point at which the magnitude of these interactions and flows change from one direction to another (Anderson, Karlson, 2004 p. 7).

In regional economics the fact that interaction decreases with distance or travel time is widely accepted. Figure 1.2 shows the number of business trips in percentage terms of aggregate domestic regional business trips. That figure shows that the percentage of business trips declines very rapidly as the time distance increases.

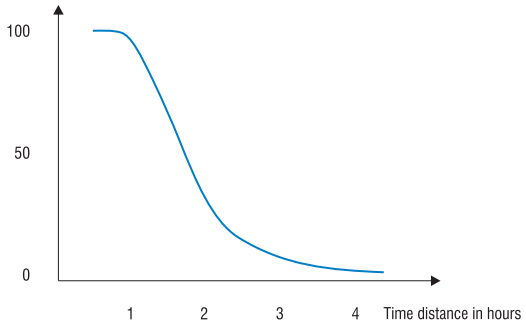

Figure 1.2. The cumulative percentages of interregional business travel over time distances (Hugosson, 2001)

Johansson and Klaesson (2002), Anderson and Karlson (2004) show that there is a threshold time distance for commuting, approximately around 50 minutes.

Table 1.1. Accessibility and approximate time distance (Anderson and Karlson 2004).

Accessibility	Approximate time distance	Range
Local	5-15 minutes	several unplanned per day
Intraregional	15-50 minutes	contacts and travel on a regular basis (commuting), once per day planned contacts, such as business meetings
Interregional	> 50 minutes	low frequency

However, it is approximately possible to identify regions with high potential for tacit knowledge spillovers, which arise from direct, face to face contacts by commuting, for example, regional accessibility to jobs.

Functional city regions are "homes of business clusters and regional innovation system and is characterised by its agglomeration of activities and by its intraregional transport infrastructure, facilitating large mobility of people, products, and knowledge spillovers within its interaction borders. The basic characteristic of a functional region is the integrated labour market, in which intra-regional commuting as well as intra-regional job search and-search for labour is much more intensive than in the inter-regional counterparts" (Anderson, Karlson, 2004, p.7)

These two different definitions of homogenous and functional regions also characterise different approaches to regional development: equity – the lagging regions to "catch up" development and efficiency – to strengthen international competitiveness of all functional regions of the state.

Study questions

- *What are the main reasons for the currently increasing relevance of the regional level?*
- *What are the main reasons of regional disparities?*
- *What are the differences between homogeneous and functional (nodal) regions and their catch up and balanced regional development?*
- *What are the differences between descriptive and normative regions?*
- *What are the main characteristics of the EU NUTS system?*

Literature

Required reading

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Chapter 2. Regional Growth and Development Theories

Learning objectives

After reading this chapter, you should be able to:

1. Explain the concept of exogenous or top down regional development, the main theories and external development strategies.
2. Understand the role of agglomeration factor in regional development, main types of agglomeration economy and diseconomy.
3. Explain the concept of endogenous or bottom-up regional development, the main theories and internal development strategies.
4. To describe the concept of entrepreneurship and regional business clusters as a key elements in endogenous regional development.
5. To understand a concept of a learning region and collective learning process and explain local knowledge spillovers as a form of agglomeration economy.
6. To understand the concept of regional innovation system and its related strategies.

Regional growth and development theories can be classified according to schools of thought, traditional and modern theories and according to other parameters. We divide the main regional growth and development theories into four major directions, depending on the regional exogenous and endogenous development factors or dimensions dominating each of the theories: traditional exogenous neoclassical models, agglomeration models, regional endogenous growth and development models and regional innovation models (Table 2.1). The first two groups of models reflect more the top-down regional development concept and the last groups reflect more the bottom-up regional development concept. Traditional exogenous development models dominated in the 1950s, the agglomeration models were prevalent in the 1960s, regional endogenous growth and development models were dominant in the 1970s, and regional innovation models have took pace from the 1990s.

Table 2.1. Classification theories for regional growth and development

	Regional development concept	Basic theories	Basic development factors
Traditional exogenous neoclassical models	Top-down	Neoclassical exogenous growth theory. Export base theory	Physical capital, labour, exogenous technological progress
Agglomeration models	Top-down	Cumulative causation theories. Growth pole theories. NEG and Krugman's theory	Agglomeration effects, due to external scale economies or diseconomies
Endogenous growth and development models	Bottom-up	Neoclassical endogenous growth models. Porter's theory on the competitive advantage of Nations. Regional business cluster theories	Human capital, endogenous technology, networks, social – relational capital, geographic proximity, clusters
Regional innovation models	Bottom-up	Theory of the innovative milieu. Learning region. Innovation system theories. Regional innovation system theories	Entrepreneurship, innovation capacity, innovation process, knowledge diffusion, knowledge spillovers, localised interactive learning

2.1. Traditional Exogenous Neoclassical Models

The main theories in this group are the neoclassical growth theory and the export base theory.

Neoclassical growth theory. The neoclassical regional (for open economies – trade, foreign investment) economic growth theory is based on a popular model of Solow

(Solow, 1956). According to this theory, production is determined by two inputs – physical capital and labour. It is a supply-driven growth theory. Technological progress is assumed to be exogenous and will spread with capital flow and become equal in every region. Scale economy is

constant. Regional disparities depend on interregional mobility of capital and labour. Capital will move to regions where labour wages are low and return to capital will be higher. Labour will move in the opposite direction to more developed regions. These flows continue until prices of capital and labour become equal in each region. In perfect competition and interregional capital mobility and labour differences. the price of labour and other factors across regions will diminish and regional production outputs will tend toward convergence. However, convergence can be disturbed by restricted interregional mobility of labour and capital – often by trade barriers, transport costs or different regional agglomeration effects.

Development strategy. Regional integration strategy to make better conditions for interregional mobility of labour and capital, more investments in infrastructure development.

Export base theory. The essence of the export base theory is the division of the economy of a region into export and local sector. The term 'basic' is often applied for the export sector and the term of 'non-basic' activities – for the local sector. Export (specialisation) sector produces goods for sale outside the region and the local sector produces goods for regional internal consumption. According to this theory, regional growth depends on the volume of export and the multiplier – the stable ratio between total activity and export activity is mostly measured in employment or income terms. Changing the unit of measurement of activity from employment to income produces a framework similar to Keynesian income multiplier analysis. This theory is a demand-driven growth theory and is based on the increase of demand from outside a region that determines the increase of export possibilities.

The criticisms of this theory can be related to its basic assumptions that growth in local non-basic sector is induced only by changes in the export sector and that it ignores the impact of import, household and government expenditures or agglomeration effects on regional growth.

2.2. Agglomeration Models

In the group of agglomeration models, we include location, cumulative causation, growth pole and NEG theories, where regional growth depends not only on the availability of capital and labour, but also on external scale or agglomeration economies or diseconomies, which may arise due to a concentration of labour and capital in specific locations.

Location theories. Location theories propose that firms locate in specific locations and seek to minimise costs or maximise profits. These theories answers to the questions of how activities are geographically distributed and which factors impact the geographic location of firms. The classical location theory contains three streams: the von Thünen (1826) analysis of land rent and land use, the industry plant location theory of Weber (1909) and the central place theory of Christaller (1933) and Lösch (1940). The location theory of the 1960s was subsequently developed by Walter Isard, the founding father of regional science. These theories have mainly been focused on transport costs, labour costs, other production costs, scale of operation, and particularly on factors of agglomeration economics – external economies of scale.

Location theories are important for regional development strategy formulation and implementation, particularly for understanding the advantages or disadvantages of a region for activity location in it with respect to their locational factors, such as transport costs, labour and other costs, the impact of economy of scale and agglomeration economies and others.

Undoubtedly, the theory of Christaller (1933) has been widely used in many countries in planning urban settlement systems, for example, in the territorial planning of Lithuania (1964), where (until 1980) a hierarchy of central (urban) places and its surrounding service areas (economic regions, administrative districts and microdistricts) was determined and developed. This regionalisation also became the background for recent Lithuania's territorial administrative units system.

Cumulative causation theory (Myrdal, 1957). According to Myrdal, in this theory, some developed regions attract capital and labour force, by accelerating competitive advantages compared with other lagging regions. Myrdal explains that increasing returns to scale produces agglomerating economic activities in developed regions and the process of growth tends to be the process of cumulative causation. The lagging regions offer the advantage of low-wage labour, but these benefits are compensated by the major part of agglomeration economies found in the developed industrialised regions. The lagging regions only acquire some advantage from the developed regions for innovation diffusion, but their activities decline because of the movements of capital and labour to the developed regions and the divergence among regions is the expected result.

The elements and linkages of Myrdal's theory are set out in Fig. 2.2.

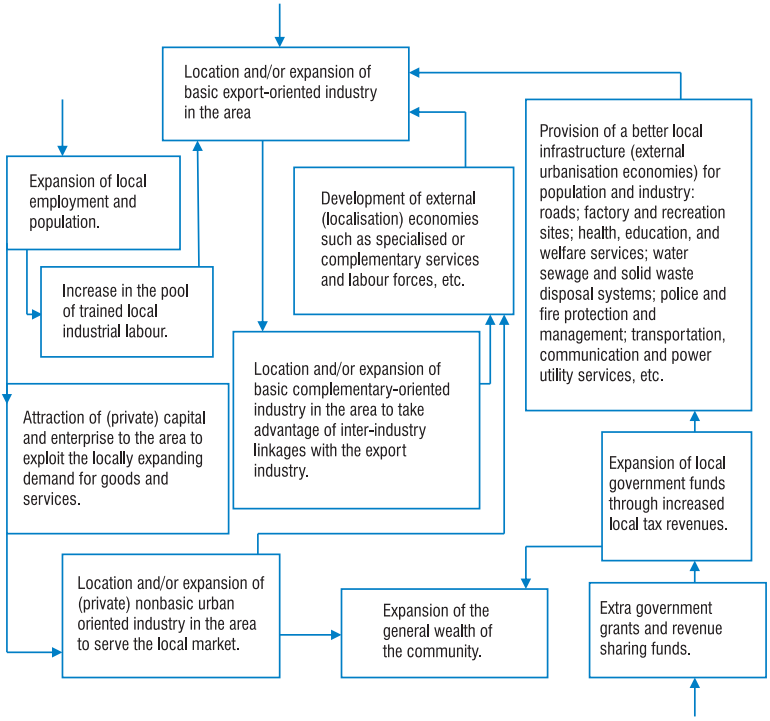

Fig. 2.2. Myrdal's accumulative causation model (Source: Myrdal, 1957)

Development strategy. Active policy intervention and institutional factors can be used to stop the process of cumulative causation. Myrdal emphasised "the importance of institutional factors in shaping development trends and argued for active policy intervention in order to promote greater equality which he thought would also contribute to greater economic growth." (Myrdal, 1957:13).

Kaldor (1970) expands Myrdal's theory of cumulative causation by introducing concepts from the export base theory and efficiency wage. Kaldor also assumes that increasing returns to scale gives advantage for export in industrialising regions. Cumulative causation begins with increased demand for the export of manufactured goods. Export growth depends on the efficiency wages, defined as monetary wages divided by a measure of labour productivity, and is lower in industrialised regions due to external scale economies. Regions with lower efficiency wages can produce more output, which leads to further decrease of efficiency, wage and growth increasing in spiral.

Growth pole theories (Perroux, 1950). The growth pole theory contributes to Myrdal's theory of cumulative causation in a more spatial context. Perroux's "space as force" defines space as a type of network that links centripetal forces. In growth pole theory, a growth pole refers to linkages between firms and industries. "Propulsive firms" are those larger than other firms, they act as a growth pole and generate growth through inter-industry linkages and multiplier effects for other, smaller firms and overall regional development in a particular growth centre. According to this theory, in order to stimulate the development of lagging regions, economic development strategies should focus on a certain development pole or contributions of sector capital. Perroux also believed that with appropriate policies, urban centres can become growth poles in a multi-regional context.

Development strategy. According to this theory, to stimulate economic growth in lagging regions, the development strategy should focus on the pole, the establishment of propulsive or leading firms in such regions.

The "new economic geography" (NEG) theory (Krugman (1991)**.** The theory was developed on the basis of Myrdal and Kaldor models and was linked to newer trade theories. Regional development aspects, such as agglomerations, economic regions and economic activity concentration in regions are explained. Krugman determined that the choice of firm location is based on the three main economic factors: transport costs, increasing returns and migratory flows – which determine "a geographic concentration" – agglomeration.

The theoretical overview briefly presented above constitutes the fundamental basis for contemporary regional development theory, with the focus currently shifted more towards the complex relations of competitiveness, cohesion and sustainability. For the purposes of this chapter, the main theoretical points brought to bear are concentration and agglomeration, as well as importance of institutions and structural considerations, while recognising the economic importance of certain locations (regions) and their developmental effects (positive as well as negative) on the surrounding territory.

2.3 Regional Endogenous Growth and Development Models

Endogenous growth theories. In contrast to the convergence tendency among regions in the neoclassical growth theories, endogenous growth theories assume divergence as a result of differences in the level of endogenous technology. The main difference from the neoclassical growth theories, where technological progress is exogenous, in these theories technological progress is the basic endogenous factor. In endogenous growth model production, (Y) is produced not only by capital (K) and labour (L) inputs, but also by endogenous factors, such as technology (T) and other endogenous variables:

$$Y = f(K, L, T\ldots) \tag{2.3}$$

In the so-called endogenous growth theories, also known as new growth theories, the specific growth factor – technical progress my may consist of human capital, R&D or public infrastructure. According to

the early models of endogenous growth theories presented by Lucas (1988), human capital is introduced into the model. The accumulation of knowledge is the basic factor in Romer model (1986). Thus, new growth theory allows for both concentration and divergence subject to regional disparities in technical progress.

Endogenous regional development models are mostly based on spatial dimension: industrial districts and business clusters.

Industrial districts are the areas of industrial growth (especially in southern Europe), "with dense concentrations of interdependent small and medium-sized firms (SMEs) in a single sector and in auxiliary industries and services. These districts were interpreted as the result of two sets of forces. The first were a set of economic forces that included: (1) scale economies that result from a high degree of specialisation and division of labour; (2) external economies that arise from the existence of shared infrastructures, services and information; and (3) the availability of special skills and the pooling of the workforce. The second were the interactions between the economic and social system that generated a social atmosphere and communities of firms and people conducive to industrial development, whose consideration opened the door to models dealing with the 'regional production culture', social and relational capital.' (Dunford, Regional Development Models, 2006, p. 11).

These developments indentify new engines of regional development: the focus was shifted to endogenous factors (investments in human capital and in research and development, the diffusion of knowledge and social, relational capital) and to bottom-up development as an alternative to top-down development.

Storper's theory on the region as a nexus of untraded interdependencies. In Storper's theory, firms interrelate through formal input and output linkages and also through important untraded interdependencies – labour markets, public institutions, legal rules, values. These untraded interdependencies develop different regional production cultures or 'worlds of production' among regions with different competition.

The cluster concept came from studies of industrial districts and ***Porter*** then developed the ***cluster theory*** (Porter, 1990). He concluded that when several highly competitive economic subjects appeared in regional economy, they fostered growth of competitiveness of suppliers and consumers operating in that regional territory. Porter argued that in the modern global market, competition is implemented not by means of separate economic subjects, but with the help of groups of economic subjects (clusters). Porter's concept of clusters describes a business industrial cluster as unification of several industries based on buyer and supplier relations, similar technologies, distribution channels, similar employee qualifications. Porter offers definitions of vertical and horizontal relation clusters, but does not take into account the importance of geographic location.

For Porter (1990), the main source of competitive advantage of nations is success industries in international markets. To explain the determinants of firm success, Porter developed the 'diamond' with the following major factors: demand conditions; related and supporting industries – clusters; firm strategy, structure and rivalry; factor conditions; government public policy; (1) Chance.

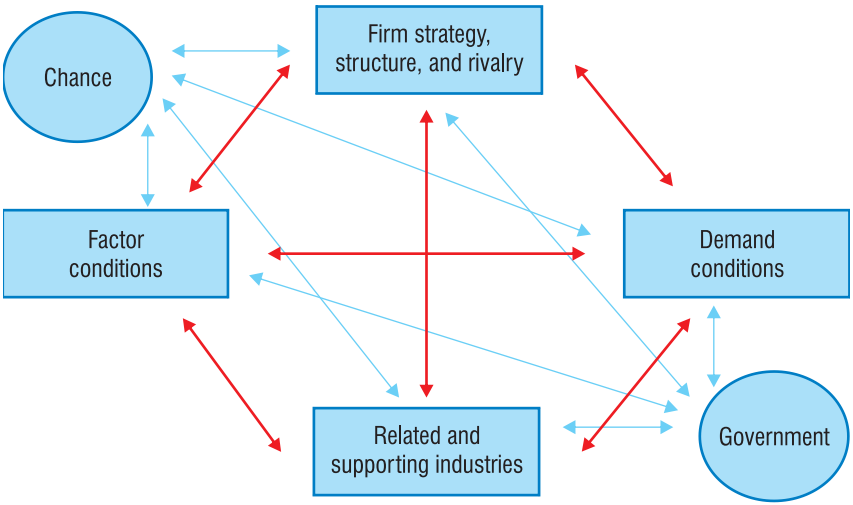

Figure 2.3. Porter's diamond (Source: Porter, 1990)

Development strategy. The competitiveness of firms should be enhanced with the determinants of the diamond. Government should provide infrastructure, training, information support technology, social and relational capital development.

Porter's cluster concept was criticised by other researchers, emphasising the lack of precise formulation of the most important concepts used in the definition of a cluster, such as regional proximity and others. Regional business cluster. Porter's cluster theory was reviewed by another American scientist Enright, who observed spatial clustering of regional business enterprises and defined regional business cluster as follows: "A regional cluster is an industrial cluster, in which the enterprises- participants of the cluster are geographically proximate to each other. A regional cluster is a geographical conglomeration of enterprises and organizations, which function in one or several close branches of economy" (Enright, 1992, p. 23). Geographical proximity of similar group enterprises in a cluster making it possible for direct, face to face contacts that are the prerequisites for tacit and non-codified knowledge spillovers, collective learning process – learning by doing and using, and innovations. The notion of a "cluster" embraces the territorial aspect, which has become topical and many researchers emphasise that functional regions are the homes of clusters. A cluster is a form of economic interaction of judicially independent economic actors with different statuses concentrated in a functional region, which is formed in order to make its participants competitive in global markets. This is the main difference of a regional business cluster from other forms of interaction, such as networks, strategic alliances, economic associations, etc.

A regional business cluster is a form of economic interaction of judicially independent economic actors with different statuses concentrated in functional economic region, which is formed in order to make its participants competitive in the global market. Clusters are important, as if production is organised in clusters, regional economic subjects can be competitive in the global markets, manufacture goods and offer services for export. Export is an aim and empirical index of the work of a cluster whose efficiency can be quantitatively evaluated.

The main features of a cluster are as follows:

- a cluster is a subject rather than a legal person (participants of a cluster are legal persons themselves);
- although the participants of a cluster have legal independence, they are economically interrelated by vertical and/or horizontal relations;
- participants of a cluster differ according to the type of activity and their economic status;
- participants of a cluster are geographically proximate and operate in the same functional economic region.

Apart from the main characteristics, the following features may also be distinguished:

- specialisation – basic activity that stipulates formation of a cluster;
- competition and cooperation: this combination characterises the link between the participants of a cluster;
- cluster 'life cycle': clusters and cluster initiatives are not short-term phenomena, but are created with long-term prospects;
- innovation: participants forming a cluster are involved in the process of collective learning and knowledge exchange.

2.4 Regional Innovation Models

Apart from labour, capital and regional, local environment factors, regional innovation models emphasise the importance the diffusion of innovations in regional growth. Innovation includes not only product, process and organisational innovation of the firm, but also regional social and institutional innovations. The regional innovation theory was founded by Schumpeter and later developed by GREMI (*Groupe de Recherche Européen sur les Milieux Innovateurs)* as innovative milieu and regional innovation system theories. Schumpeter defines entrepreneurship as an innovator engaged in "creative destruction". In the theories of innovation millieux and regional innovation systems, collective entrepreneurship through partnership between business, scientific and academic actors and regional government ("the triple helix") become the basic innovator

and driver of regional growth and development. The innovation process becomes more important than innovation itself.

Research studies cover local conditions and regional differences of entrepreneurship and formation of new firms, effects on local and regional development, terms of employment and economic growth, barriers for setting up new firms and the related policies (OECD, 2003). Entrepreneurs play an important role as knowledge filters in innovation diffusion process over space, as they are interested in adopting innovations quickly. As a result of their considerable spatial immobility, it is also efficient to support entrepreneurs for the sake of boosting the innovative strength of the region. The research on entrepreneurship also shows the limits of endogenous regional development. Underdeveloped regions have limited entrepreneurial potential and effects on regional economic growth will be small.

Regional learning theories. The basis of these theories is that the competitive advantage of regions increasingly results from local unique competencies, skills, tacit knowledge, sharing of know-how and best practices between regional firms and organizations. Such knowledge and competencies are generated through informal relations. Regional learning is not to be found in every region, such as the existence of thrust for knowledge exchange. "The key mechanisms of collective learning have been identified: the mobility of qualified labour, knowledge exchange through informal networks and the setting up of spin-off businesses" (Morgan, 1997, p. 26). A basic problem of regional learning as a regional development strategy is that it only leads to incremental innovations, less often to more radical innovations.

Innovation system theory. In the last decade, the traditional linear model of innovation or the Schumpeterian view of firms innovating in isolation was replaced by the innovation system approach. The essence of this approach is that (for an overview, see Edquist, 1997, 2001, 2005) innovations are an evolutionary, nonlinear and interactive process, requiring intensive interactions between different actors, both within companies as well as between firms and other organisations such as universities, innovation

centres, educational institutions, financing institutions, standard setting bodies, industry associations and government agencies (for an overview, see Edquist, 1997, 2001, 2005).

The key feature of the concept of innovation systems is that regional economy's ability to generate innovations does not only depend on how individual actors (firms, universities, organisations, research institutes, governmental institutions, etc.) perform, but rather on how they interact as the parts of a system. Therefore, innovation is seen as a social process that evolves most successfully in a network in which intensive interaction exists between the suppliers and buyers of goods, services, knowledge and technology, including public knowledge infrastructure organisations, such as universities and public knowledge producing agents. Recent research suggests that much upgrading of productive capacity and most innovation is most effectively achieved through networks of interactions between firms, often linked into clusters of activity.

Primarily, the theory of innovation system was applied at national level (Lundvall, 1992; Nelson, 1993; Niosi *et al.*, 1993; OECD, 1999). In the literature on national systems of innovation it was pointed out that the performance of national economies could not be explained only in terms of strategies and performance of firms. Beyond the latter, other factors and actors play a vital role in favouring the generation and diffusion of knowledge, among which are inter-organisation networks, financial and legal institutions, technical agencies and research infrastructures, educational and training systems, innovation policies, etc. (Fig. 2.4.) This NIS approach highlights the importance of interactive learning and the role of nation-based institutions in explaining the difference in innovation performance and hence, economic growth, across various countries. The national innovation system (NIS) literature has revealed huge differences between countries in such attributes as economic structure, R&D base, institutional set-up and innovation performance (UNESCAP, 2006, p. 3).

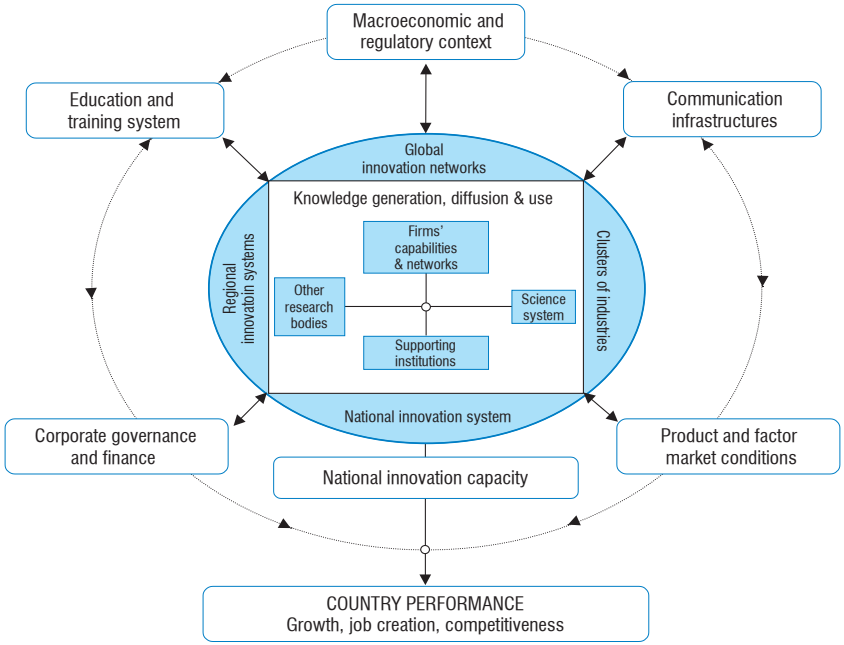

Fig. 2.4. National Innovation System (Source: Lundval, 1992)

In the 1990s, other types of innovation systems were established, such as technological systems with stable interrelationships in technology fields (Carlsson, 1994; Carlsson and Jacobsson, 1997; Carlsson and Stankiewicz, 1991) and sectoral systems with systemic interrelationships for generation and utilisation technologies in those sectors (Breschi and Malerba, 1997; Malerba, 2002; Mowery and Nelson, 1999).

Concept of a regional innovation system.

The significance of a regional innovation system has recently increased. The importance of tacit and non-codified knowledge, face to face contacts, localised learning and common culture at the local, regional level has been recognised.

"More recently a growing interest in regional innovation systems (RIS) has emerged. Whilst not denying that national (as well as international), technological and sectoral factors are essential, it is argued convincingly

that the regional dimension is of key importance. Several reasons are supporting this view:

First, regions differ with respect to their industrial specialisation pattern and their innovation performance.

Second, it was shown that knowledge spillovers, which play a key role in the innovation process, are often spatially bounded.

Third, the ongoing importance of tacit knowledge for successful innovation has to be mentioned. It is now well understood that its exchange requires intensive personal contacts of trust based character which are facilitated by geographical proximity.

Finally, policy competences and institutions are partly bound to subnational territories.

A RIS is made up by two subsystems, the actors of which are systematically engaged in interactive learning (Fig. 2.5.). The knowledge application and exploitation subsystem comprises companies, their clients, suppliers, competitors as well as their industrial cooperation partners. These constellations are usually referred to as business clusters of a region. Ideally, these firms are linked by horizontal and vertical networking. The knowledge generation and diffusion subsystem as the second main building block of a RIS consists of various institutions that are engaged in the production and diffusion of knowledge and skills. Key elements include public research institutions, technology mediating organisations (technology licensing offices, innovation centres, etc.) as well as educational institutions (universities, polytechnics, vocational training institutions, etc.) and workforce mediating organisations. Additionally, we include the regional policy dimension neglected in Autio's model. Policy actors at this level can play a powerful role in shaping regional innovation processes, provided that there is sufficient regional autonomy (legal competencies and financial resources) to formulate and implement innovation policies. In the ideal case, there are intensive interactive relationships within and between these subsystems, facilitating a continuous flow or exchange of knowledge resources and human capital.

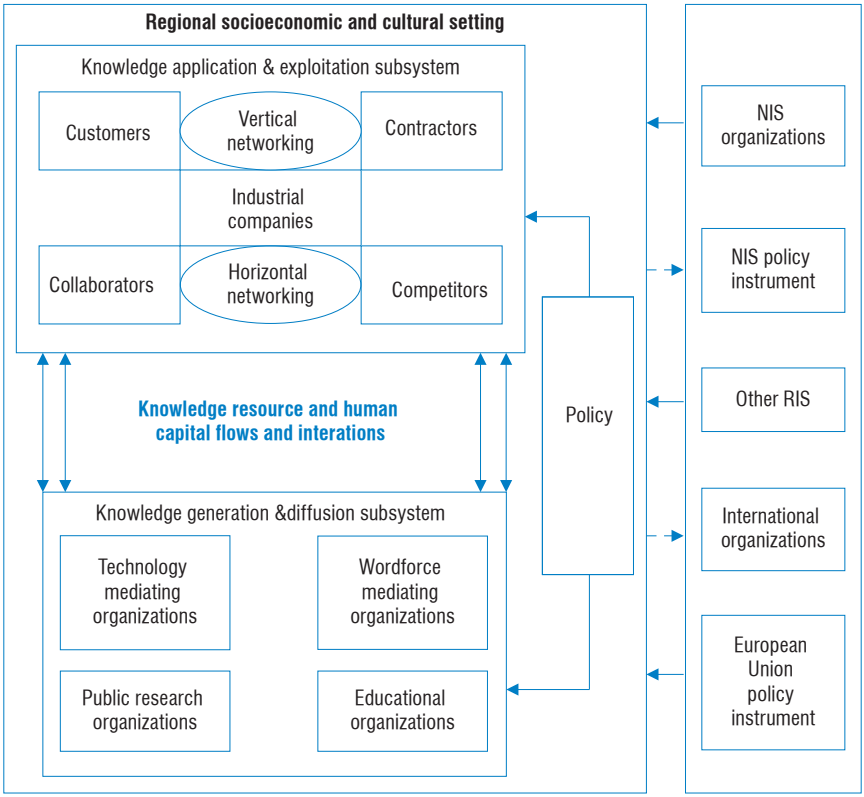

Figure 2.5. The main structure of regional innovation systems (Source: Todling and Tripl , 2005, p. 7)

Conceptual clarity requires emphasising that RIS overlaps with, but is different from a cluster. Clusters are central elements of the knowledge application and exploitation subsystem, whilst RIS is a wider concept in the sense that (1) there are usually several clusters and many industries in a RIS and (2) that institutions play a larger role (Todling and Tripl, 2005, p. 5-7)

This means that clusters and RIS may co-exist in the same territory and the regional innovation system may contain several clusters. But a cluster is not necessarily a part of a regional innovation system.

The development of innovation requires knowledge inputs. The distinction between analytical (science-based) and synthetic (engineering-based) ideal types knowledge bases was made (Asheim *et al.*, 2007) and STI (Science, Technology, and Innovation) and DUI (doing, using and interacting) modes of regional innovation system were developed (Lundvall and Lorenz, 2006)

An important contribution of regional innovation systems framework is to use them for designing regional innovation strategies and programmes.

Comparative analysis demonstrate that in the practice of various European regions (Asheim *et al.*, 2003; Braczyk *et al.*, 1998; Cooke *et al.*, 2000; Nauwelaers and Morgan, 1999) there is no single "best practice" innovation strategy approach applicable for every region, but there are some basic principles concerning specific regional innovation system development strategies for two different types of regions.

"For peripheral problem regions the main policy agenda usually is the strengthening and upgrading of the regional economy. Given the innovation deficits of firms (mostly SMEs), innovation policy should give priority to organisational and technological "catching up learning" (new organisational practices, product and process technologies) and should target SMEs and their innovation weaknesses. This implies also behavioural changes, such as the stimulation of innovation attitudes.

- To strengthen potential clusters in the region may be an important step to overcome low levels of innovativeness. As the endogenous potential is weakly developed, to attract innovative companies from outside and, most important, to anchor them to the cluster or the regional innovation system is often a key element of such an approach in peripheral regions. This does not mean that policy makers should rely solely on inward investment as motor of growth and innovation. To support new firm formation and enhance the innovation capabilities of existing companies is important too. However, in many cases an approach combining endogenous and exogenous elements seems to be useful. This includes the attraction of innovative firms from abroad and linking regional firms to business partners and knowledge sources both inside and outside the region.

- Given the often weak endowment of peripheral regions with innovation support organisations, "institution building" is an indispensable element of a proper innovation policy for these areas. In order to improve the regional knowledge infrastructure, branches of national research institutions or research centres, which match the needs of the regional economy, could be attracted. Regarding education and training a focus on medium level skill provision (for example, by establishing technical colleges, engineering schools, management schools, etc.) and mobility schemes (e.g. "innovation assistants" for SMEs) seems to be adequate for peripheral areas.
- Finally, policy measures to improve the network dimension and to enhance social capital are central. Firms have to be supported actively to build up relationships with regional knowledge suppliers and transfer agencies, whereby it should be secured that knowledge transfer is designed in a demand-led way Even more important than fostering local ties seems to, be to, link firms to knowledge sources (firms, research organisations) outside the region, i.e. to help them to "import" ideas and knowledge not available in the region. This requires not just brokering activities, but also a strengthening of the "absorption capacity" of regional firms, i.e. strengthening their internal R&D activities.
- For fragmented functional metropolitan regions the key development goal is to overcome their low level of integration and to position themselves in the global knowledge economy. Innovation policy can be a powerful tool in this respect provided that it contains three core elements: First, a focus on the generation of new ventures and radical innovations in science based industries might constitute a key priority. Second, policy makers should tackle the problem of fragmentation by enhancing the level of communication and cooperation among firms and between industry and knowledge providers. Third, it is of key importance for the metropolitan regional innovation systems to be well connected to international knowledge providers and companies since such systems fulfil important gateway functions for the respective regional and national economies.

- To adopt an explicit cluster strategy seems to be a crucial step in this context. Relevant policy actions are to identify newly emerging regional complexes of related industries which have a strong local knowledge base in the region and to promote their growth and dynamic development. In order to enhance the synergy potential in the rising clusters and to improve their international visibility measures directed towards the development of complementary activities along a common knowledge base are asked for. Attracting innovative firms and leading global companies may be an important stimulus for the further growth of the emerging clusters. At the same time the endogenous potential should be strengthened by assisting business start ups and spin offs in knowledge intensive economic branches.
- With respect to the RIS subsystem of knowledge generation and diffusion, policy should be directed at closing gaps and the further improvement of the institutional infrastructure. Establishing research centres with high level, specialised expertise and setting up educational organisations which could provide specific, high level skills in the respective economic and technological fields become important tasks in this respect.

The main role of policy makers in fragmented functional metropolitan regions, however, becomes the improving of the systemic innovation capabilities of the RIS. As the crucial weakness of these regions lies in the low level of interactive learning, policy instruments geared to promoting innovation networks among firms and encouraging local university-industry partnerships are of crucial importance" (Todling and Tripl, 2005, p. 16-17).

Study questions

➢ What are the main differences between exogenous and endogenous regional development concepts, top-down and bottom-up regional development approaches?

- Explain the main exogenous regional development theories, external factors and development strategies?
- What are the main types of agglomeration economies (diseconomies)?
- Explain the main endogenous regional development theories, internal factors and development strategies?
- How does entrepreneurship influence regional development?
- Define the main characteristics of regional business clusters and the importance of spatial and relational proximity factor in the development of clusters?
- What are the main differences between a regional business cluster and a business firm network?
- Explain the concept of regional learning and local knowledge spillover as a form of agglomeration economy?
- Define the main characteristics of regional innovation systems and its development strategies?
- What are the main differences between a national innovation system, regional innovation system and regional business cluster?

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Chapter 3. Evolution of Regional Development Policy

Learning objectives

After reading this chapter, you should be able to:

1. Describe the basic changes in the evolution of regional development policies.
2. Appreciate the old and new paradigm of regional development policy.
3. Identify the elements of old paradigm of regional development policies.
4. Identify the elements of new paradigm of regional development policies.
5. Explain the co-existence of old and new paradigm elements in EU and national regional development policies.
6. Understand the role of strategic planning and programming in endogenous regional development.

3.1. Basic Changes in Regional Development Policies

The basic changes in concepts of many EU and other countries regional development policies followed the evolution of regional development theories presented in the second chapter.

In most countries regional policies were developing after the Second World War. Regional development disparities were perceived as a problem. The basic task of the central government became the reduction of regional inequalities. The objective of regional policy was the development of greater territorial equality. Regional inequality was linked to a centre/periphery distinction. It was assumed that government intervention could impact demand conditions to foster export sector in the lagging underdeveloped regions – the lagging regions catch up development policy.

During the 1970s, when unemployment increased in many countries, regional policy evolved rapidly to address this new challenge. Reducing disparities in employment and reducing disparities in income and infrastructure became the main objective. Government policy provided direct support to firms and influenced supply conditions essentially

through production subsidies and incentives for industrial firms and new investments.

By 1980s, regional policy, mainly EU regional (cohesion) policy focused on regional infrastructure support, with policy interventions targeted at aiding areas, mainly lagging regions.

From 1980s, reducing market-disruptive direct intervention for supported firms became a central task. The development of entrepreneurships, industrial districts, human recourses, business clusters and regional endogenous factors became a central element of regional development policies. The top-down approach was partially replaced by a more bottom-up place-based regional development approach.

The new ideas about innovation systems influenced regional policy in the 1990s. Regional policy was defined as innovation policy and the development of regional innovation systems became a central element in regional policies of many developed countries.

3.2. Paradigm Shift of Regional Development Policy

Regional policy that has developed during the past years is different from the policy that evolved after the end of the World War Two. The original regional policy was a regional equalisation policy within most nations. It was governmental 'catch up lagging regions development' policy. However, these long-term national government efforts did not significantly reduce regional disparities. Regional policy has evolved from a top-down subsidy-based group of interventions designed to reduce regional disparities into regional policies designed to improve the competitiveness of all national regions and more territorially balanced national development. In many countries, decentralisation started growing to the regional level. Multi-level governance of regional development with many stakeholders (national, regional, local governments, business and science and others) changed previous dominated central government governance The paradigm shift of regional development policy thus involves new objectives, a new geographical scope, new governance and new policy instruments (Table 3.1).

Table 3.1. Paradigm shift of regional development policy (author's modification of Bachtler J., Yuill D., 2001 and OECD, 2010)

	Old paradigm	New paradigm
Problem recognition	Region disparities in income, infrastructure stock, and employment	Lack of regional competitiveness, underused regional potential
Objectives	Equity through balanced regional development	Competitiveness and equity
General policy framework	Compensating temporally for location disadvantages of lagging regions, responding to shocks (e.g. industrial decline) (*Reactive to problems*)	Tapping underutilised regional potential through regional strategic planning and programming (*proactive for potential)*
- theme coverage	Sectoral approach with a limited set of sectors	Integrated and comprehensive development projects with wider policy area coverage
- spatial orientation	Targeted at lagging regions	All-functional regions focus
- unit for policy intervention	Administrative areas	Functional areas
- time dimension	Short-term	Long-term
- approach	One-size-fits-all approach	Context-specific approach (place-based approach)
- focus	Exogenous investments and transfers	Endogenous local assets, knowledge, innovations
Instruments	Subsidies and state aid (often to individual firms)	Mixed investment for soft and hard capital (business environment, labour market, infrastructure)
Actors	Central government	Different levels of government, various stakeholders (public, private, NGOs)

"A paradigm shift is an ongoing transition process which tends to take time. The co-existence of "old" and "new" paradigms can be observed in

most countries. Regional policy based on the new paradigm is relatively new compared to regional policy based on the old paradigm and sectoral policies. Many developed countries have adopted the new paradigm in their policy objectives, but its implementation remains much more challenging." (OECD, 2010. p.12) The main conclusions of OECD review of regional developments policies in developed countries may be presented: within regional policy, more emphasis is put on international competitiveness and productivity and on the role of regional competitiveness in contributing to national growth and development. Most countries now stress the efficiency goals of regional policy rather than, or as well as, equality objectives. In many cases, productivity improvements have become a central policy goal. A number of countries have moved away from lagging regions targeted intervention to the broader support of economic development in all regions. Each individual region is responsible for its own development and its own regional strategic planning and programming, shifted towards more regional endogenous and business environment development (OECD, 2010).

Study questions

- What are the main stages in the evolution of regional development policies?
- What are the main differences between the old and the new paradigm of regional development policies?
- What are the main elements of the old paradigm of regional development policies?
- What are the main elements of the new paradigm of regional development policies?
- Assess a paradigm shift in EU's and Lithuania's regional development policies?
- What is the role of strategic planning and programming for regional development?

Literature

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PART 2

REGIONAL DEVELOPMENT STRATEGIC PLANNING

Chapter 4. Integrated Regional Development Strategic Planning

Learning objectives

After reading this chapter, you should be able to:

1. Explain the comparative, competitive and collaborative advantages in regional development.
2. Describe the basic changes in the evolution of regional development planning.
3. Understand the importance of integrated regional development strategic planning.
4. Understand the limitations of formal and hierarchical way of strategic planning for regional development.
5. Appreciate how the collaborative process of regional external and internal stakeholder groups added value to the effectiveness of integrated strategic regional development planning.
6. Identify the basic elements of integrated strategic regional development planning and its objectives.

4.1. Evolution of Regional Development Planning

Over time, regional development planning strategy has played a key role in the implementation of regional policies discussed in chapter 3.

Before 1970s, planning was focused on comparative advantage towards achieving the lowest labour, materials, infrastructure and other elements of production cost relative to competitors in domestic and international markets. After Porter's works on competitive advantage of nations, regional planning strategy started to be more focused on competitive advantage. From 1990s, regional planning strategy tended to more collaborative advantage with greater collaboration and partnership, integration of many regional stakeholders. Figure 4.1 presents some of the planning strategy characteristics under the umbrella of comparative, competitive and collaborative advantage.

Fig. 4.1. Changing focus for the development planning strategy (Stimpson *et al.*, 2006).

"In the 1960s, regional planning focused on goals and objectives to achieve strategic outcomes. Governments played major roles in setting goals and objectives for regional economic development plans, but involvement of and support from the industry was also sought in providing expected deliverables. This goal and objectives planning was intended to establish direction and targets for economic development. The role of regions in meeting national goals and objectives became important, but the autonomy of regions to shape economic futures was still largely determined by central, national or state government economic policy agendas. Goals and objectives were determined through various analytical approaches and economic visions were largely based on the future being a continuum of the past.

By the mid 1970s, strategic planning in business began to influence planning in other sectors of the economy, including planning for regional development. Strategic planning involved the preparation of goals, objectives and strategies for organisations, businesses and regions to gain a position of advantage in the context of the environment in which they operated. In most cases, those environments were still considered to be relatively stable, as the effects of globalisation and the opening of national and regional economies to competition were not yet felt. However, strategic planning continued to provide a valuable tool for economic development after the effects of globalisation became more noticeable. Strategic planning for development began to evolve in the late 1980s to address broader social and environmental issues.

Growing concern about the environment, social issues, and economic sustainability led to the emergence of integrated strategic planning for development in the 1990s. In the late 1990s, the focus on integrated strategic planning for economic development led to a renewed interest in industry clusters and the role of soft infrastructure and innovation systems in economic development processes. Industry cluster, soft infrastructure and innovation systems development is dependent on multi-sector inputs, which might be best managed under an integrated planning system" (Stimpson *et al.*,2006).

4.2. A Framework for Integrated Regional Development Strategic Planning

The structure of regional integrated planning framework is presented in Fig. 4.2.

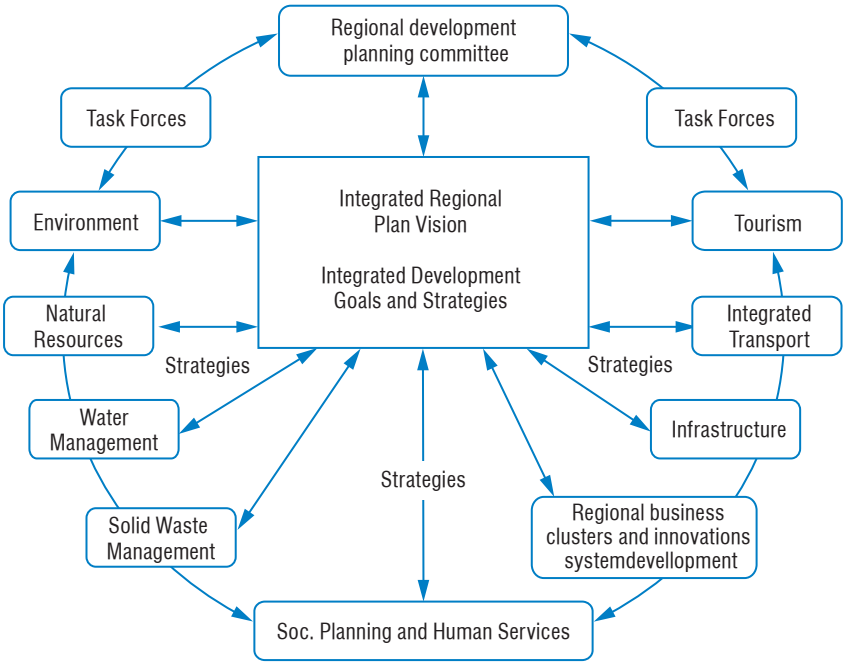

Fig. 4.2. Integrated regional planning framework

Through regional integration different sectors, collaboration and cooperation between the main stakeholders for innovative ideas can be developed and available resources can be used in a more efficient way. A partnership makes the implementation of results and strategies possible, which would not be achieved through administrative management. In this context, integrated regional development strategic planning (IRDSP) is considered as an adequate response and an essential complement to the formal and hierarchical way of strategic planning. The need for integration of different sectors and participation and collaboration of stakeholders' regional development planning process is evident in all European countries and also at the community strategic planning level.

There is no general rule for the structure of IRDSP. The next part of the chapter may be seen as a summary of the paper "Integrated regional developments concepts. A practical guide". Brussels, 2006.

IRDSP consists of the following five elements:

- Demarcation of the region – *"How do we define our region?"*;
- Regional analysis –*"Where are we now?"*;
- Vision and objectives – *"Where do we want to go?"*;
- Strategies and priorities – *"How can we ensure we get there?"*;
- Action programme with concrete projects.

This chapter explains how each of these elements can be elaborated. The different elements and concrete steps to their formulation are described. However, the elaboration of IRDSP is not a linear process. Although it is advisable to start with the demarcation of the region and to end with the deduction of concrete projects, in some cases the change of sequence may be necessary. Generally, work can and should start on the other elements, while the first steps are still developed. Feedback is needed between and after different elaboration steps.

1. Demarcation of the region

The first step to develop an integrated regional development planning concept is to decide on the borders of the region the IRDSP should address. This has to be done before the actual process can start. More information about the demarcation of the region is given in the first part of this book.

2. SWOT analysis

Before a concept or a strategy of a region can be developed, it is important to know the specific strengths and weaknesses and to find out the competitive advantages of the region. This helps not only to conclude first ideas and topics for working groups, but also is a precondition for finding suitable aims, projects and measures that will help the region in its future development. The following chapter explains how to conduct a SWOT analysis. First, the background and the aim of this method as well as the four constituting elements are described, second, the necessary steps and sources of data are presented. Finally, a list of recommendations is given.

	POSITIVE	***NEGATIVE***
INTERNAL	Strengths	Weaknesses
EXTERNAL	Opportunities	Threats

2.1 Aim and Background

The SWOT analysis is an analysing and decision-making tool, owing its name to the fact that it examines the strengths and weaknesses within a region, as well as the opportunities and threats faced by the region. The aim of the SWOT analysis is to incorporate the internal characteristics of the territory as well as the determining factors in the external environment which influence regional development. The strengths and weaknesses are internal factors, whereas opportunities and threats are influencing regional development from the outside. The two different perspectives can be distinguished by different levels of control that the region has on them. While the dynamic and unrestricted nature of the external factors might not be influenced by the region, the internal factors are more easily manageable.

SWOT is originally a business and economic concept. As a region is more complex than a company, the SWOT analysis for a region is consequently more difficult to undertake. In the field of regional development, the main advantages of a SWOT are:

- SWOT analysis is useful in order to get a detailed overview of the situation of the region;

- It enables multiple perspectives (of different regional actors) to be brought together into a single coherent document (Erisa, 2004);
- It allows a process of sharing different understandings and perceptions amongst representatives of different groups and sectors. This common discussion base of regional potentials can be used as a basis and a starting point for regional policy;
- The result of the process constitutes an agreed basis for subsequent analysis and decision-making. It is therefore an incentive to concentrate regional power into areas where it is strong and where the greatest opportunities lie.

A SWOT can contribute to a learning process in the region.

2.2 Definition of the Four Elements

The four components of a SWOT analysis:

Strengths

Strengths are resources or capacities a region can use to achieve its objectives effectively. For example, a region may have excellent existing infrastructure, closeness to market, accessibility to industrial land, skilled workforce, some economically dynamic clusters, well-educated people or good soft location factors, such as high quality of the environment or social and cultural infrastructure, large number of SMEs, large number of business support services, population balance, etc.

Weaknesses

A weakness can be a limitation or fault in the region that will keep it from achieving its objectives. This can be, for example, poor transport infrastructure, dispersed population or lack of cooperation.

Opportunities

Opportunities are external conditions, which, if seized, could enable the region to improve its results significantly. This may include access to improved transport infrastructure, increasing demand for regional

products, access to EU funding, tourism growth, technological changes, government policy changes, lifestyle changes, etc.

Threats

Threats are any unfavourable situations in the region's environment that are potentially damaging to its strategy. For example, delay in national development plan, declining demand for traditional products, economic downturn, ageing population. The actions that can be deduced from these four elements are:

- Build on strengths;
- Eliminate weaknesses;
- Exploit opportunities;
- Mitigate the effects of threats.

Strengths

What advantages does a region have? In which fields does it do well? What relevant resources does a region have access to? What do people (inhabitants and external) see as regional strengths? Which are the strengths in relation to competing regions?

Weaknesses

What could be improved? In which fields does the region do badly? What should be avoided?

Opportunities

Where are good opportunities facing the region? What are interesting trends for regional development?

Threats

What obstacles does a region face? What are competitive regions doing?

2.3 Elaboration Process

Ideally, a SWOT analysis should be carried out on your own. External experts can give valuable assistance in this process, but they should never do the analysis individually. The best way to elaborate a SWOT is to get

in direct contact with regional actors, either by one-to-one interviews, or by regional conferences that are at the same time a good end-point of the SWOT analysis as well as a good starting point for the next steps. There are basic six steps that should be taken to elaborate a SWOT analysis:

1: *Brainstorming*

Brainstorming process on strengths, weaknesses, opportunities and threats.

2: *Collection of data*

The major trends and problems likely to affect the future of the territory have to be detected. Therefore, socio-demographic, economic, political and physical indicators should be used. Indicators of regional disparities and benchmarks are particularly useful for revealing opportunities and threats. This step should not be exhaustive as the aim is to obtain an overall picture to illustrate the key issues that the region will have to face.

In general, there are three different sources of data for the SWOT analysis:

- The first step is to evaluate the existing data and concepts on regional development, some of this might be found at the regional planning agencies or institutions.
- Additionally, some new data can be collected. Here it is very important not to collect a huge amount of data that is not needed in the end. Therefore, the points relevant for the analysis are to be defined.
- Interviews with key actors from the region complete the analysis.
- Key actors are, for example: chambers of commerce, enterprises, credit institutions, universities and other educational institutions, local and regional initiatives and associations. They have to be asked about the existing situation, the strengths and weaknesses of the region, the instant and future call for action, wishes and expectations of regional development.

3: *Identification of possible actions*

In this step, the database has to be structured by defining the main fields of action for the region (such as nature and landscape, economy, infrastructure, etc.).

4: *Analysis of external factors (= opportunities and threats)*

Parameters of the environment that are not under the direct control of the public authorities and that will strongly influence regional development have to be listed. External demands and trends have to be regarded and the main development trends discovered.

5: *Analysis of internal factors (= the strengths and weaknesses)*

An inventory of the factors that are at least partly under the control of the public authority and that may either promote or hinder development is made. It is useful to focus on the previously defined fields of action.

6: *Classification of possible actions to reduce development problems*

The phase of analysis is not completed with the compilation of results. Rather a summarised description of the situation and its evaluation is vital. Possible actions should focus on the strengths and on reducing or even eliminating weaknesses, with a view to maximising opportunities and minimising threats. A good SWOT analysis leads directly to the necessary actions within the region. A SWOT should provide the relevant argument for the regional development process and help to focus all efforts on the core points of the region.

It is important to present the most important points and "outcomes" of the analysis in a comprehensive structure. The result can be either a list of strengths and weaknesses, or a strengths-weaknesses profile with marks, or a cross-classified table. A SWOT should be very brief (about two pages are sufficient) and it should have a clear arrangement. It is important to assess mutual linkages of various aspects collected in the table and to analyse the existence or absence of prerequisites or hindrances to others.

The outlined steps do not present a linear process. The analysis phase should start while collecting the data and the results should be reflected with the new inputs. Furthermore, the order of steps 3 and 4 is not defined. Many experts of regional development propose to undertake the analysis of internal endogenous development factors first. Furthermore, they outline that sometimes the analysis of strengths and weaknesses is sufficient. A focus only on those two components may avoid complicating the analysis. In the analysis, qualitative findings have special meaning, as many crucial

problems of the region cannot be measured by statistical data. These are, for example, constellations of regional conflicts, such as conflicts between mining of resources or construction of traffic infrastructure and environmental protection. Information on such conflicts and their intensity, on who is holding which position and what has been done already, can often only be won by conversations with the involved persons. In addition, the links between different areas have to be clarified and interrelations need to be shown. Current and planned projects are also of interest. The reasons for the failure of important projects should also be analysed.

Guidelines

A SWOT analysis must be as objective as possible to ensure that adequate solutions can be developed. The involvement of partners in the classification of activities enhances the credibility and usefulness of the analysis. The employment of external facilitators (i.e. from outside the region) is another solution.

Although on a superficial level a SWOT seems to be primarily a descriptive exercise, it has an important function in the process of strategic and political-economic decision-making within the region.

All stakeholders involved in the process should be able to feel that they can truly commit themselves to the key parameters. A SWOT should be elaborated as the "shared opinion of the region". A SWOT should concentrate on the characteristics that are common to the whole region. Still, in large and diversified regions it may be necessary to analyse issues that are of importance to certain subregions. The external and internal analysis should be balanced. This is one of the weakest points in most programmes. Many analyses are largely concerned with external factors that can be hardly influenced by regional actors. A SWOT should be conducted in partnership. However, in most cases actors outside administration, such as social partners or voluntary organisations are left aside. It has to be kept in mind that a SWOT analysis can and shall not include everything that may have an impact on the region. It should focus on the key factors that can actually be influenced by the RDSP. Commitment is needed for the analysis, same as for the entire regional development strategic planning.

Relevant actors should be able to accept the analytical section of the programme and be committed to it. This may lead to consensual decision-making and some compromises in formulating the analysis. This should not be seen as a weakness, but as an integral part of programming work based on partnership.

3. Regional Vision and Objectives

The next step after the SWOT analysis is the development of a regional vision that provides a picture on what a region wants to achieve. This chapter starts with an explanation what a regional vision is, gives an overview on the functions and components and finally explains how a regional vision can be developed.

3.1 Definition of a Vision

A regional vision formulates a notion of the future of the area. It can be described as an aspired situation that is different from the actual state and from the trend, and that can be reached through coordinated and purposive action and behaviour. It provides orientation for the planner, but it does not give concrete instructions for action. There is no clear-cut vocabulary for "regional vision" in English. The expressions "perspectives for spatial development 1", "mission statement", "vision statement" are also found. The last two are also used by enterprises. Furthermore – and maybe interrelated to this – is the fact that there is no concrete definition of the term "vision". The term is used with slightly differing sense in theory and practice even within the field of spatial planning and even more so in other sectors. Nevertheless, visions are a very common tool in planning practice. Visions can contain very different aspects and levels of concretion. The content evolves from the specific conditions of the region in order to guarantee uniqueness. It can vary from economical and social to cultural and ecological aspects.

As visions and development perspectives can be defined on every spatial level, the degree of abstractness depends on the spatial scale. On a wider spatial level, they are more abstract than on a regional or local level. An example of a very broad vision is "sustainable development" and "polycentric spatial development" as a European or national wide vision

of spatial development. However, also on local level, a vision should not define the aspired future situation in too concrete terms. It is not reasonable for spatial planning to set a fixed and final aim, as life in space and time continues.

A vision is normally made up of three main elements: a future vision process, the future vision itself and finally the implementation of the future vision into objectives and measures. Thus, a vision is not only a slogan for a region, but rather a means to foster a discussion process about the region's future. Many actors have to be integrated in the process, which should be cooperative, consensus-orientated and concentrated on the main issues.

Generally, it can be said that a future vision for a region should be unique, achievable, communicable and motivating. 'Unique' means that the vision differs from the other regions' visions. 'Achievable' means that it makes no sense to develop a vision if it is impossible to achieve. 'Communicable' means that a vision should not be too abstract and too academic. Last, but not least, 'motivating' means that each participant and regional inhabitant should be able to identify oneself with the vision. The vision shall define the aim of regional development in a short and understandable way.

Finally, it must be kept in mind that visions are not prognoses. In many areas, prognoses are a precondition for visions, but the vision itself never contains a prognosis that this situation will be achieved in a certain time. The claim that a vision should be realisable should not be confused with a prognostic statement. Furthermore, visions are different from utopia and predictions. They do not show what could be or will probably be. They show a situation different from the trend that should be achieved.

3.2 Functions of a Vision

A vision has many different functions. These are:

- Coordination: The elaboration of a vision leads to the coordination of all important and interested actors and to a common development of the aim.
- Orientation: A vision defines the direction and aim of the whole RDSP process. It answers the question "Where does the region want to go?"

- Reflection: The development of the region has to be regarded in the context of the past, the present and the future.
- Innovation: A vision shows the uniqueness of the region, new ideas are encouraged, mental blocks are broken and new interrelations created.
- Motivation: The motivation of the participants is enlarged.
- Marketing (internal and external): In practice, internal marketing, which is aimed at regional actors and inhabitants, has more importance. This is interrelated to the integration of the regional actors in the frame of the coordination function. The external marketing – aiming at investors and sources of funding – is often a verbal aim, but is mostly not implemented consequently. Still an easily communicable vision can be used to lobby for a region.
- Regional awareness: Via the coordination of the regional actors and internal marketing, a regional vision helps to create regional awareness, which is again an important prerequisite for regional cooperation.
- Visions have high political acceptance. Easy understandability facilitates an objective and if needed a political discussion and thus democratic legitimation. At the same time, the main aim of a vision needs to be its implementation by measures and projects and its integration into a broader regional development process. If today's future vision is tomorrow a back number, the RDSP process has been successful.

3.3 Components of a Vision

The main components of a vision are a logo, a slogan, the main objectives, a philosophy and principles, values or beliefs. The contained verbal and visual elements are important in order to make the vision communicable. But not all components are always needed. For example, it is not a must to create a slogan. A slogan or motto should ideally be a compact guiding principle, which is both catchy and stimulating. As this is not always realisable, a motto is not always formulated. The main objectives, which can also be called guidelines or guiding ideas, are needed to define the vision.

They should be unambiguous in order to provide orientation and help participants to find the right measures. Objectives are clear when they relate to a clear target and can be measured with the help of indicators. In addition to the general regional vision, sector visions and regional development principles can be formulated for individual sectors. Sometimes a sketch is made to visualise the spatial vision of a region. But generally a vision does not need to contain spatially concretised information, but rather general statements of regional development. A vision is not a plan. A vision has no fixed timeframe for its realisation and it contains no measures and no other information on how the aimed situation shall be reached. But it serves as a basis for the development of measures. A vision makes clear which action and behaviour is necessary to attain the wanted situation and not the trend.

3.4 Elaboration Process

As outlined above, the main functions of a vision evolve from a cooperative and motivating elaboration process. Thus, the organisation of the working process is a vital element for the success of the vision. Whereas the results of the analysis only need acceptance of the actors, the vision needs a regional consensus on how the strengths can be enforced and the weaknesses overcome. The consensus on the measures that are developed in the RDSP is dependent on the consensus on the vision. Generally, the acceptance of the RDSP can be increased through different participation measures for the region during the development of the vision. With the help of this, a vision gains a completely new quality as it is not only developed from a professional point of view but also from the point of view of all actors of the region. **Developing a RDC step by step**

Possible methods for the development of a vision can be regional conferences, working groups, creative workshops, public participation and a panel of experts, etc. involving all interested actors. Later on workshops are held on different thematic subjects. The structure of a working process is combined by possible methods. The elaboration of the vision is an iterative process and a good moderation of the regional actors is vital for its success. The following three questions are helpful to formulate a vision: Where do we come from? Who are we? Where do we want to go? To answer

them, the development of a regional vision usually begins with an analysis of the actual situation and a prognosis of the development trend. In the frame of IRDSP these steps have already been made during the phase of a regional analysis. However, in addition to the analysis, there are other sources of information for the vision. These are intended planning projects by municipalities, regional development plans, while country development plans and development ideas of regional politicians are less important. Furthermore, one-to-one conversations and/or moderated discussion with committed people from the region and people from outside the region are useful to gain an external view, available expert opinion and historical background.

As a next step, notions of a differing and realisable future development can be developed. Often several possible visions are created and in the next step a "vision" is chosen that shall be aspired. Instead of developing different visions, "the scenarios method" can be applied. Scenarios are images of different future situations that emerge when certain development variables change. The difference between a vision and a scenario is that scenarios can demonstrate "different futures" of one area. They do not contain information on the fact if the situations are possible and if they can or should be achieved. Often different scenarios are developed at first and then one of them is chosen as a vision – sometimes in a modified way and sometimes a combination of two scenarios lead to the vision.

As the vision has to be attainable, it has to be assessed if it is realistic in terms of its political, economic and social circumstances as well as social and moral ideals. In the process of developing a regional vision, contrary ideas of different actors and conflicts of objectives will generally evolve. Such conflicts should be discussed and possible solutions elaborated. In this context, it is important to create win-win-situations, for example, through the definition of prioritised actions for the region. In the whole process it has to be considered that a vision is not the final aim, but that it is only one step to achieve vital regional development. When the search for a vision leads to a dead end, the process management has to change the strategy before the participants are too frustrated. This can either be when the process is long and tedious or when the expectations have been too high and in the end there is only a weak compromise.

4. Strategies and Priorities

When the visions and objectives have been developed, appropriate strategies have to be found, which show how the agreed aims can be achieved. The development strategy involves:

- planned efforts for the development of the region;
- prioritised development projects;
- their contribution to superordinate topics;
- their effect on other areas;
- their interrelation to other programmes.

The strategies should take the strengths of the region as a starting point, find ways to improve them and extract new development possibilities from them. The opposite approach – i.e. to compensate for existing weaknesses – costs a lot more energy and resources. As each region has its own specific starting point and circumstances, very different paths can and should be taken to achieve the agreed aims. Therefore, a very careful assessment should be made if strategies that have been applied successfully in other regions can be transferred to the region or whether it is more advisable to use the possibilities that arise from the specific situation in the region. Generally, it is important to be creative and to find innovative solutions, which might evolve through the linking of sectors that have been previously separated.

Strategically important areas have to be defined. These can be, for example: diversification strategies that support new product lines in the predominant economic sector (agriculture, manufacturing industry, tourism) and promote the extension of the range of products; strategies for joint action which imply that companies or suppliers from networks or other forms of cooperation carry out integrative projects; strategies for the revival of traditions and historical heritage; win-win strategies with which conflict-ridden projects are brought together and mutual beneficial solutions are developed; qualification strategies; marketing strategies; cluster strategies; innovation strategies.

The aims should be realistic. If the strategies are too ambitious, the success of cooperation may be questioned. Strategies that are easy to

implement and achieve can lead to a learning process and a culture of cooperation which is the base for further cooperation.

5. Fields of Action, Projects and Measures

As implementation is the main aim for the description of strategies and priorities, the development of an action programme is of vital importance. However, it entails more than a collection of projects and ideas, as it involves an important strategic component. Therefore, the projects need to be deduced from visions and objectives.

This part tries to explain how appropriate projects can be developed from objectives and visions. The development of measures from a vision and strategies is not only a question of detail.

The *first* step should be a creative process where the best ideas can be won in a team. Therefore, procedures like working groups, cooperative workshops, conference on shaping the future etc. are a good means to elaborate adequate measures. Communication techniques, such as short input-lectures, brainstorming, etc. can also be used to develop project ideas. It is also possible to take up the existing projects and ideas and to develop them further. But generally innovative ideas are needed. Therefore, projects not normally considered should be included. On the basis of regional innovation, a region can develop new forms of products, services or forms of cooperation and participation.

The *second* step**,** after the project ideas have been developed, is to define prioritised measures and key projects. In order to concentrate all forces, it is advisable to focus on a small number of projects that are realisable and financially feasible. Experience shows that the number of proposed projects ranged between 16 and 180. However, in the implementing phase, they generally encompass from 15 to 20 measures from which three to five are prioritised. In the beginning of cooperation, one should choose projects that can be implemented rapidly and easily and that show obvious results. Success motivates the participants to continue with other projects. Difficult and conflicting topics and projects should not be tackled, so that the cooperation that needs time to strengthen is not overstrained. After the development of a "culture of cooperation" and the necessary trustfulness, more complex projects can be started. Guiding

projects should be symbolic for the regional development aims and thus contribute to the creation of regional awareness. They produce motivation in the region and lead to imitation by other regional actors. Furthermore, those projects should especially support the development process and lead to synergy effects with other projects. Projects should only be included when their realisation helps the region as a whole. It is not enough, when a single project is successful, but the combination of projects has to represent the strategy with which the aims of regional development can be achieved. Another important criterion for choosing key projects is that the projects can continue once the initial financing through funding ends. Different opinions exist on the so-called lighthouse projects. These are especially innovative projects and thus they generate a reaction inside as well as outside the region. On the one hand, they can be important "initiators" for cooperation, but on the other hand, they are mostly very cost-intensive (often the region cannot finance them) and there is the danger that the cooperative process is only concentrated on one project and long-term trustfulness is not built up. With this perspective, it may be more adequate to focus on projects that are more easily implemented and that have less pressure to succeed.

Finally, a realistic assessment of the possibilities of realisation is needed. Thus, it is not enough to include the list of collected projects. Rather, a project description with detailed information should be prepared for each project, which can be discussed and enhanced in the working groups. There are no rules as to the level of detail in describing the projects; this has to be agreed between the actors. However, it is advisable to give detailed hints for the realisation, including ideas for the financing and a clear order of priorities.

Packages of measures and actions have to be defined. They should include short-term and complex measures and actions important for the improvement of the region's situation. An integrated approach should be followed, which means that measures from different sectors are combined and therefore cooperation between the different stakeholders is stipulated.

Study questions

- *What are the definitions of comparative, competitive and collaborative advantages in regional development?*
- *What are the main stages in evolution of regional development planning?*
- *What are the limitations of formal and hierarchical way of strategic planning for regional development?*
- *What are the advantages of integrated regional development strategic planning?*
- *What are regional external and internal stakeholder group collaborative technology benefits for*
- *integrated strategic regional development planning?*
- *What are the basic steps of integrated strategic regional development planning and what are their objectives?*

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Chapter 5. Regional Strategic Foresight

After reading this chapter, you should be able to:

1. Understand the role of foresight in regional development strategic planning.
2. Define regional foresight and its objectives.
3. Describe the roles of participants in regional foresight process.
4. Appreciate the methodology used in regional foresight activities.
5. Describe the essentials of basic methods used in regional foresight activities.

5.1. Role and Objectives of Regional Foresight

Activities supporting future foresight are seen as an important element for coping with current and forthcoming challenges. International companies use foresight activities to define their future corporate strategies. In the field of regional development, foresight technique is used to prepare for long-term trends, develop regional visions and predefine promising spheres of action.

Foresight's added value to the existing strategic planning procedures involves the exploitation of the 'perceptiveness' and the 'insight' on which it is based. Foresight becomes an important source of information for strategic planning. In parallel, it facilitates better understanding of the points of view of other immediate or intermediate interest groups and supports the transition from hierarchy-based procedures to more horizontal and participatory ones. It encourages the networking and participation of all and aims at the achievement of consensus, commitment and alignment of all the efforts for the definition and exploitation of an extremely complicated but commonly accepted future.

Foresight activities are recommended by the European Commission as an appropriate tool to stimulate long-term thinking. To encourage those activities, a comprehensive paper of 120 pages was published by the European Commission (FOREN 2001). It contains theoretical information as well as practical advice for the implementation of foresight activities in large, well-financed and long-running projects. But even small foresight

activities implemented on a regional level with small resources may have important impact on the involved protagonists/ institutions and their environment: thinking about alternative futures opens the awareness for long-term trends and enables actors to respond to them early.

To encourage the implementation of foresight activities on a regional level, the following part is designed as a practical guide for this project. The next part of the chapter may be seen as a summary of the FOREN paper ((FOREN 2001).

What is Regional Foresight? Regional Foresight may be defined as a systematic, participatory, future intelligence gathering and medium-term vision-building process aimed at present-day decisions and mobilising joint actions' (FOREN 2001: V).

The activities will pursue four objectives:

- Stimulate common discussion about the future and therefore support long-term thinking;
- Collect and combine widespread information by gathering important protagonists and improve shared knowledge in consequence;
- Support creation of networks and therefore stimulate common action;
- Provide information and therefore qualify present-day decisions.
- In consequence, foresight activities differ from (simple) future prognosis activities. They are more focussed on participation and networking and will initiate joint activities.
- Scenarios as 'descriptions of possible futures that reflect different perspectives on the past, the present and the future' could be seen as similar.
- Foresight activities could differ widely: in terms of their aim, time horizon, thematic focus, financial and personal resources, organisational and methodological efforts and in regard to favoured results and final products.

Objectives of Foresights. The first step to create foresight activities is to define own objectives and to pose questions for the vision building process. Are we dissatisfied with governmental strategies and solutions? Is it necessary to adapt to general changes and new demands? Do we expect any threats for the local economy?

Based on these reflections and considerations, the pivotal question is: what would we like to achieve by using the foresight technique?

In regular foresight activities pursue two objectives:

- Qualifying present-day policy-making and political decisions, and
- Informing and mobilising involved protagonists (inhabitants, local government, entrepreneurs, etc.).

Combining these objectives by using foresight activities supports the achievement of more complex objectives, like building networks (see Fig. 5.1.).

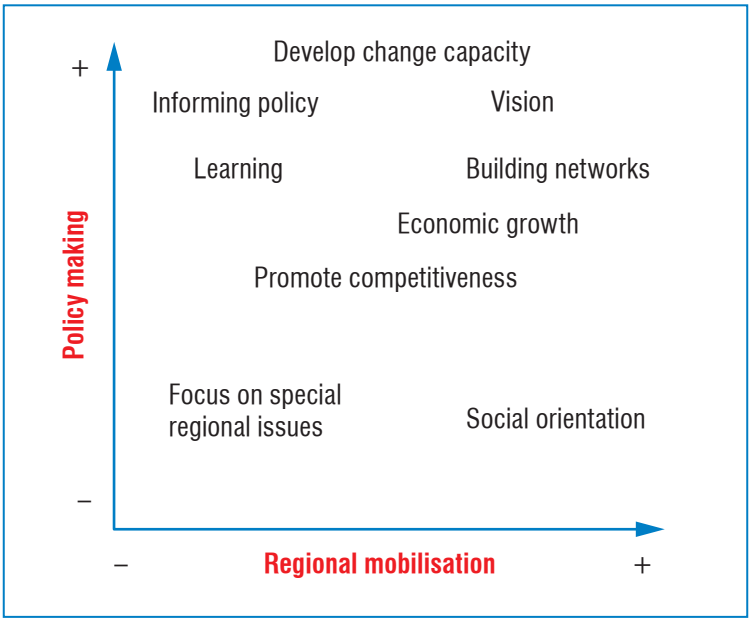

Figure 5.1. Objectives of foresight activities (Source, Foren, 2001):

Time Horizon. In common present-day decisions (political or administrational), focus on a short time-scale. Paying attention only to the development of the next months ignores certain changes and trends that will be much more significant by looking into the medium-term future.

Therefore, foresight activities support long-term thinking and open new time horizons for planning and political decisions. Foresight activities should work with a time horizon of at least 10-30 years.

Focus. Most regional foresights are not focussed on a single issue, but are predominantly oriented towards a specific set of issues. There are a number of ways to classify the focus of foresight activities – Figure 5.2 represents one possible way.

What is to be focussed depends on various facts: political situation, financial recourses, institutional and social capital, intentions of the involved organisations. It is wise to concentrate on those fields being the most significant for/within the region and that could be influenced by the involved regional protagonist.

Concentrating on those focuses does not mean ignoring other facts. Looking at long-term problems, necessarily assume an analysis of the framework conditions. The sectors and themes to be included vary depending on the foresight's objectives.

For example, in peripheral areas fields of action could be learning and qualification processes, information policy, competitiveness of SMEs, education, culture, mobility *or* healthcare.

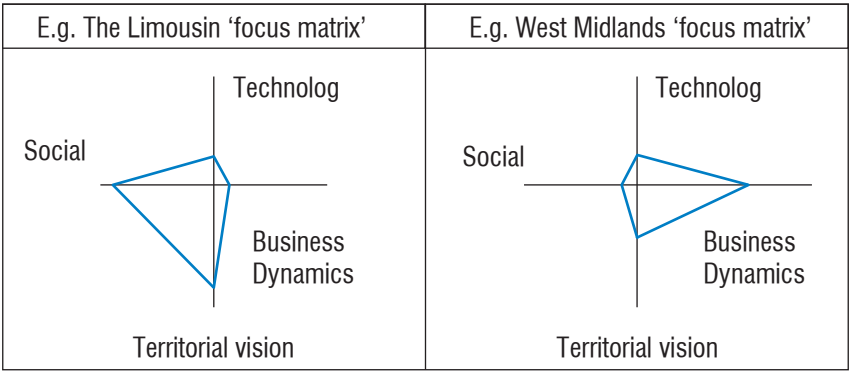

Figure 5.2. Focuses of foresight (*source: FOREN, 2001)*

- *Social: emphasis on human development (demography, settlement, mobility, identity, networks, human capital, education and training, healthcare)*
- *Science and technology: emphasis on technological development and market opportunities*
- *Business dynamics: stress on economic development (e.g. enterprise clusters, SMEs)*
- *Territorial vision: a region is considered as a whole for four main global issue areas: geography (resources, environment, etc.), geopolitics, economy and human development*

5.2. Essentials of Regional Foresight Methodology

Practical advice for implementing foresight activities. Foresight processes should be embedded into existing measures and processes (in the region and/or of the leading institution). Therewith, the use of financial and personal resources is optimised and the results of the foresight processes may influence (and hopefully improve) every-day work.

How to choose and recruit participants. Selecting adequate participants for the activities is a crucial but difficult task. It is important to find those having the relevant knowledge and those who may support the project (on political/ administrative level or amongst certain social groups). Furthermore, actors involved from the very beginning should be those that are expected to put the results finally into practice.

The inclusion and mobilisation of regional protagonists is the key to successful foresight. Accordingly, participants from the following fields of work should be considered: official local institutions, research and educational institutions, enterprises and entrepreneurs, organisations of the third sector (civil society, local networks, NGOs, etc.), journalists.

External protagonists may be included, if they may contribute to the content and/or implement the results on transregional level.

But how to find the participants referred above? Different options exist to recruit participants. Three possible ways are described in Figure 5.3 below.

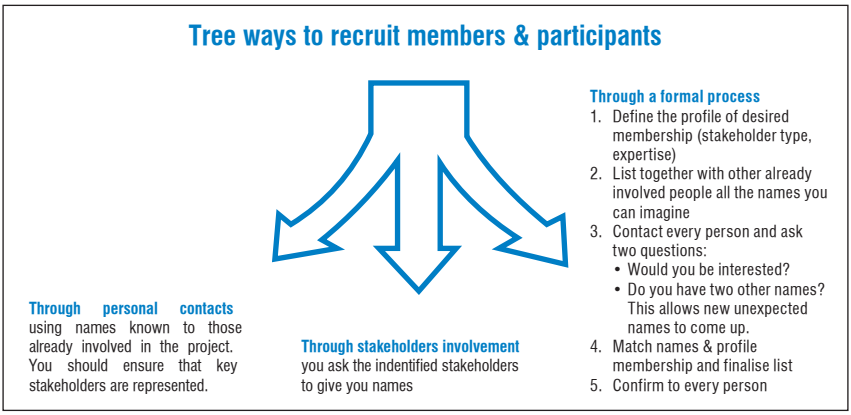

Figure 5.3. Three ways to recruit members & participants (Source, FOREN, 2001)

Possible benefits for participants could be:

- to obtain new information on the demand for products and services (entrepreneurs)
- participation in decision-making (entrepreneurs and inhabitants)
- provision of new adapted services (entrepreneurs and inhabitants)
- long-term prevention of living and working environment (entrepreneurs and inhabitants)
- rising legitimacy, efficiency and effectiveness of public services (official institutions).

However, even by trying to convince the participants pointing out their advantages, it is a must to keep clear the expected contributions of the participants; promoted benefits should be achievable as well. Losing credibility in this step will minimise the protagonists' willingness to participate further on or at other times.

Keeping in mind that the present economic, ecologic and social situation in the region has a long history and needs long time for change will reduce the danger of disappointment by using foresights as a tool. Foresight activities are only a small step into new directions.

The use of formal methods.

The use of formal methods will help generating knowledge and make the results more comprehensive and convincing. Transparent discussion and decision about useful methods for collecting existing and generating new knowledge is an important step. Table 5.1 summarises the methods that seem to be the most practicable and useful.

HINTERLAND Project. The methods are not explained in detail; for further information see FOREN (2001)

Table 5.1. Broad classes of formal methods (*Source, FOREN, 2001)*

Criteria	Methods
1. Quantitative methods making use of statistics and other data	• Trend extrapolation • Simulation modelling
2. Methods based on eliciting expert knowledge	• Expert panels • Brainstorming • Mindmapping • Scenario analysis workshops • Delphi method
3. Methods to identify key points of action to determine planning strategies	• SWOT-Analyses • Relevance trees

It is important to embed the use of the listed methods in a broader, participatory discussion process aiming to link protagonists and activities.

If you decide to work with workshops, you should first determine the number of meetings in combination with the expected results by bringing together various participants. In addition, it is necessary to discuss and decide about the design of the meetings. The main questions are: Which methods do we want to apply? Who is involved in which part? What are possible tasks for and functions of the involved actors? How do we integrate those meetings into our every-day work in the end – e.g. in combination with ongoing activities *Final outcome and products*

Measuring the success of foresight activities and their implementation is a difficult task. There are of course formal products (codified knowledge), which are recognisable and easy to measure: reports, videos, poster presentations, lists of priorities and arrangements and concrete follow-up projects (in ideal). But above all, the foresight process influences

the thinking and work of the protagonists – this may be due to the newly created networks opening new horizons for cooperation or through better understanding the long-term consequences of present day decisions. Even though those effects are difficult to be measured, they are at least as important as the formal outputs.

The importance of products and results will differ from case to case. It depends on the actors and processes, where to put more or less efforts: focussing more on formal results or on raising awareness and networking.

Guiding Questions to Design your Foresight Process

Summing up the activities described above, the following questions will assist you to design a foresight process in practice:

- What is our aim and objective?
- Which time horizon do we want to look at?
- What are our available financial and personal resources?
- In which way could we integrate our foresight activities into our everyday work?
- How do we want to bring together the relevant knowledge? May formal methods help us?
- Do we want to gather all the relevant protagonists at a round table? When and how?
- Who should take part in meetings and processes? How do we convince them to join our activities?
- Which results do we want to achieve? Who will benefit? To whom will the results be of value?

Study questions

- *How can foresight be used at regional development level?*
- *What should the objectives of foresight be in the region?*
- *What is the role of different participants in the regional foresight?*
- *How should regional foresight process be organised?*
- *What methods should be used in regional foresight?*
- *What weight should be put on quantitative as opposed to more qualitative foresight methods?*

- *Why should regional foresight activities be evaluated?*
- *What sorts of benefits should be expected from regional foresight?*
- *How can you manage the expectation of the participants of a regional foresight?*

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Useful websites

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http://www.sfutures.com/web-lnk1.htm#Consult:
http://www.jrc.es:
http://www.wired.com/wired/scenarios/build.html:
http://www.gbn.org/
http://gwforecast.gwu.edu/index.asp
http://morris.wharton.upenn.edu/forecast/
http://www.eurofore.org
www.cordis.lu/rtd2002/foresight/home.html

Chapter 6. Traditional Tools for Regional Analysis

Learning objectives

After reading this chapter, you should be able to:

1. Understand the basic quantitative tools commonly used in regional analysis and development strategy planning.
2. Explain the location quatients and shift-share models used in regional economic base analysis.
3. Explain the input-output modelling used in regional economic analysis and development strategy planning.

Methods and tools of regional analysis are vital both for research and to inform local and national policy makers and industry leaders in assessing the performance of a region and to formulate strategic planning frameworks to enhance a region to position itself to build and maintain competitive advantage. In addition, over the last decade, regional economic development has taken place in the context of increasing concerns over sustainability.

In this part we review the tools commonly used in regional analysis and development strategy formulation and planning. In particular, we emphasise the approaches and tools that are applicable to regions, seeking to strategically position themselves to be competitive and to pursue sustainable development in the context of the rapidly changing and increasingly competitive global economy.

6.1. Measuring the Economic Base of a Region

Economic base analysis was developed by Robert Murray Haig in his work in 1928 (Haig, 1928). Briefly, it posits that activities in an area are divided into two categories: basic and non-basic. Basic industries are those exporting from the region and bringing wealth from outside, while non-basic (or service) industries support basic industries. But while using this analysis a number of assumptions for conducting the economic analysis must not be forgotten. These include (1) that exports are the sole source of economic growth (investment, government spending, and household

consumption are ignored); (2) that the export industry is homogeneous (i.e., that an increase or decrease of one export does not affect another); (3) the constancy of the export/service ratio; (4) that there is no inter-regional feedback; and (5) that there is a pool of underutilised resources (Craig, 1990).

A variety of techniques have been developed to separate economic systems into their basic and non-basic parts. The most ordinary method is to sort industry sectors into those that are primarily basic and those that are primarily non-basic. While relatively easy to apply, this method of measuring the basic and non-basic parts is very crude.

Subsequent efforts have relied on location quotients, which are measures estimating the importance of industry sectors to the regional economy relative to their importance in a larger reference area, for example, a national economy. Two types of location quotients have been developed:

- One is measuring the minimum requirements approach, where that locality which has the lowest employment (earnings or some other indicator of scale) in a sector becomes the base against which the same sector in all other regions is compared. Here it is assumed that the locality with the smallest sector under consideration is the minimum required. All other localities will have more than the minimum and that increment above the minimum is viewed as a basic contribution to a locality's economy.
- Alternatively, location quotients can be computed in terms of some reference area, (e.g. the nation), whereby the contribution to the basic part of the economy is measured as the part that is greater than the proportional amount found in the reference area.

Various information about a region's economic structure is needed to inform regional economic development planning and strategy development. Emphasis is often placed on identifying those industry sectors that are fast growing, restructuring and/or underdeveloped:

- Fast growing sectors of concern are relatively large sectors that recently have exhibited rapid growth.
- Restructuring sectors are those that are relatively large but have experienced little or no growth or decline over the recent past.

These are important because often they account for a relatively large proportion of a region's employment base. It is important to determine if there is a way to renew or accelerate these restructuring sectors.

- Underdeveloped sectors have relatively low levels of activity but could become large in terms of employment, income generation or production levels in relation to the whole regional economy.

For an initial industrial targeting analysis, three types of data are helpful. These are measures of size (employment, earnings or regional gross domestic product), measures of the change in size (changes in employment, earnings or regional gross domestic product) and measures of the relative importance of sectors.

Location quotients are well-known measures of the relative importance of sectors in a region, compared to their importance in a larger frame of reference area, for example, national area. The formula for computing location quotients can be written as follows:

$$LQ_{ir} = (E_{jr} / E_r) / (E_{jN} / E_N) \quad (6.1)$$

where:
E_{ir} = employment in sector i in region r
E = total employment in region r
E_{iN} = employment in sector i in the national area
E_N = total employment in the national area.

Measures of scale other than employment can be used; for example, earnings and gross regional domestic product GRP. Economic base ideas are easy to understand, as are measures made of employment. For example, it is well known that the economy of Seattle, Washington, is tied to aircraft manufacturing, that of Detroit, Michigan, to automobiles, and that of Silicon Valley – to high-tech manufacturing. To forecast, the main procedure is to compare the region with the nation and national trends. If the economic base of a region is in industries that are declining nationwide, then the region faces a problem. If its economic base is concentrated in sectors that are growing, then it is in good shape.

6.2. Shift-Share Analysis

A relatively inexpensive technique for analysing regional growth and decline over time is a shift-share analysis. This technique enables assessing a region's overall performance relative to other regions. Focusing on regional employment or output by industry sector, this tool has been used widely to assess a region's performance relative to other regions and to assess the relative importance of an industry sector in a region. It can readily identify a region's industrial sector problems that might require more detailed attention. In particular, shift-share analysis has been especially useful to demonstrate how industry structure affects regional economies, to review regional economic trends, and to advise policy makers on industrial targeting.

The traditional shift-share model measures regional growth or decline by decomposing it into three components:

- national share (NS), that is, the part of change attributable to overall national trends
- industrial mix (IM). that is, the part of change attributable to the industrial composition or mix of the region
- regional shift (RS): that is, the part of change attributable to regional advantage or competitiveness.

Typically the analysis uses widely available and easily accessible data on regional employment, income, output, population or other economic factors available at different territorial levels—national, regional, county, municipal, city, etc.

Early shift-share models focused on total regional employment and had two components:

Total shift (TS):

$$TS = e_i\, e_{i,t} - e_i\, e_{i,t\text{-}1}\, (E_t / E_{t\text{-}1}) \tag{6.2}$$

Differential shift (DS):

$$DS = e_i\, e_{i,t\text{-}1}\, (e_{i,t} / e_{i,t\text{-}1} - E_{i,t} / E_{i,t\text{-}1}) \tag{6.3}$$

where:

e_i and E_i respectively are regional and national employment in industry i; e and E respectively are regional and national total employment in all industries; t-1 is the initial period and t – the end period of the analysis.

A three-component model of regional change, incorporating *national share* (NS), *industry mix* (IM), and *regional shift* (RS) was introduced in 1967 (Ashby, 1967). This shift-share analysis model became a traditional tool in regional science for dividing regional employment changes into various three components. The analysis compares regional and national changes in employment levels across various economic sectors. Regional changes in employment are then assigned to national, sectoral, and regional factors.

Thus:

$$e_{i,t} = e_{i,t-1} + (NS_i + IM_i + RS_i) \quad (6.4)$$

$$NS_i = e_{i,t-1} (E_t / E_{t-1} - 1) \quad (6.5)$$

$$IM_i = e_{i,t-1} (E_{i,t} / E_{i,t-1} - E_t / E_{t-1}) \quad (6.6)$$

$$RS_i = e_{i,t-1} (e_{i,t} / e_{i,t-1} - E_t / E_{t-1}) \quad (6.7)$$

This classical shift-share model – which has been used extensively by economists, regional scientists and planners in regional analysis – thus emphasises not only the role of regional change for a region-specific industry, but also regional shift or competitive component as a measure of relative performance of the region for a specific industry. A position shift is interpreted as being associated with the comparative or competitive advantage of the region for that industry. The partition of regional change into the three components – NS, IM and RS – was intended to enable researchers to study the sources of change separately.

The shift-share analysis uses statistical methods. Now researchers have incorporated the shift-share model into other statistical forecasting methods, including the multiplicative model of shift-share (Kurre and

Weller, 1989), a linear model of shift-share analysis (Knudsen and Barff, 1991). Another direction consists of using statistical regression methods for shift-share analysis and adaptation for total factor productivity analysis.

Many of those tools use practicals for analysing regional performance over time relative to other regions and assessing the industry sectors that are performing well or poorly in a region, both relative to other regions and relative to other industries within the region.

6.3. Input-Output Analysis

Another important consideration in regional economic analysis is the inter-industry linkages existing within a region and the evaluation of the impact of changes (growth or decline) in one industry sector on other sectors. Typically, this has been done with the help of an input-output analysis.

Input-output analysis (I/O) is a methodology named for a modelling framework in the 1930s (Leontief, 1941). The primary purpose of input-output models is to model the interdependence between industrial sectors at national or regional level. Sometimes the input-output approach is also known as interindustry economics. Regional input-output models describe transactions not only among activities within the region but also between the region and other regions or countries. *These models produce a multiplier index or ratio that measures the total effect or impact of an increase in demand on employment or income. They can also be used for predicting and forecasting the impacts of the potential future performance of regional economy and changes in interindustry transactions.* The input-output model provides a more detailed vision of the working of regional economy than the export base model. The similarity between the input-output model and the export base model is that both of them are driven by demand for export. The input-output model is more disaggregated than the export base model.

The basic element of the input-output model is the transactions table, which is simply a matrix of the inputs and outputs for various activities and, in particular, for the intermediate sector. This table shows relationships between all sectors of the region's economy included in the model.

Table 6.1 shows a hypothetical three-sector model to illustrate some principles of the model (Svetikas, 1989), assuming that the economy of the region is divided into three sectors: industry, agriculture and other sectors. At the left yellow corner of the table is the transaction matrix. For practical purposes, the model contains large number (sometimes about 700 or more sectors) of relationships.

Table 6.1. Simple form of a regional input-output table (source: Svetikas, 1989)

		Intermediate consuming sectors			Total intermediate purchases	Final demand (Y)	Total output (X)
		Industry	Agriculture	Other sectors			
Intermediate producing sectors	Industry	32	13	64	109	50	159
	Agriculture	16	40	-	56	80	136
	Other sectors	-	27	85	112	100	212
Total intermediate purchases		48	80	149	277		
Primary value added inputs		111	56	63		230	
Total input (X)		159	136	212			507

Consider this simple table of the region. We observe that industry consumes 32 units of industrial products, 13 units of agricultural products and 64 units of other sector products. Production of 159 units of industrial goods requires the use of 32 units of industrial goods and 16 units of agricultural products. The 'agriculture' column shows that to produce 136 units of agriculture products, the agricultural sector requires consumption of 13 units of industrial products, 40 units of agricultural products and 27 units of other sector products. This relationship indicates the interdependency of production processes. To the right of the transaction matrix is the final demand column (vector Y). It contains household consumption, gross private capital formation, national, regional and local government purchases and the region's export activity that is produced for sale outside the region. Total output column (vector X) is the horizontal addition of all the intermediate purchases and final demand columns. The 'primary value added inputs' row contains imports, wages, salaries and other values added. Total input row (vector X) is the vertical addition of

total intermediate purchases and total value added. For each sector, the column 'total output' is the same as the row 'total input'.

The input coefficients (matrix A) and multiplier effects (matrix B) are useful products from the construction of an input-output model. Table 6.2. shows the matrix of technical input coefficients based on figures of Table 6.1.

Table 6.2. Technical input coefficients for activities in the intermediate sectors (A)

	Consuming sectors		
Producing Sectors	Industry	Agriculture	Other sectors
Industry	0.2	0.1	0.3
Agriculture	0.1	0.3	-
Other sectors	-	0.2	0.4

This figures show the amount of the output of one sector needed by another sector to produce one unit of output. For example, if 136 agriculture output requires 13 units of industrial products, the technical coefficient is approximately 0.1 (13/ 136 = 0.996). This matrix of technical coefficients is useful in that it indicates the strength of interindustry relationships and for obtaining total direct and indirect effects of an increase in final demand per unit of increased sales to final demand (matrix B). The input-output problem expressed in matrix form with symbols used in Tables 6.1 and 6.2 is shown below. Using these symbols, we obtain the following:

$$AX + Y = X, \text{ in this example}$$

$$\begin{pmatrix} 0.2 & 0.1 & 0.3 \\ 0.1 & 0.3 & 0 \\ 0 & 0.2 & 0.4 \end{pmatrix} \cdot (159\ 136\ 212) + \begin{pmatrix} 50 \\ 80 \\ 100 \end{pmatrix} = \begin{pmatrix} 159 \\ 136 \\ 212 \end{pmatrix}$$

$X\text{-}AX = Y$

$(E - A) \cdot X = Y$

$X = (E - A)^{-1} \cdot Y$

Where $B = (E - A)^{-1}$

or $(E - A)^{-1} = E + A + A_2 + A_3 + \ldots$

In our example, the coefficients of matrix B are presented in Table 6.3.

Table 6.3. Total direct and indirect effects of an increase in final demand per unit of increased sales to final demand (B)

	Consuming sectors		
Producing sectors	Industry	Agriculture	Other sectors
Industry	1.293	0.3679	0.6481
Agriculture	0.1832	1.476	0.092
Other sectors	0.061	0.492	1.6975

The values in this table show the amount by which each activity's sales are increased as the ultimate result of per unit increase in the final demand sales of any intermediate activity. The effects of a change in demand are the highest for the activity that experiences the increase in external demand, as that increase in demand is part of the total effect (direct and indirect). Consequently, it should be of no surprise that the figures on the diagonal in the table are by far the largest.

The ratio of export in final demand increase to the initial demand increase is called the export multiplier. For example, suppose that we now raise the question of what regional economy will look like if final demand in export for industrial products rises from 50 to 70 units.

Then, to obtain total output, we simply multiply as follows:

$$(E - A)^{-1} Y = X,$$

$$\begin{pmatrix} 1.293 & 0.3679 & 0.6481 \\ 0.1832 & 1.476 & 0.092 \\ 0.061 & 0.492 & 1.6975 \end{pmatrix} \cdot \begin{pmatrix} 70 \\ 80 \\ 100 \end{pmatrix} = \begin{pmatrix} 184.752 \\ 138.04 \\ 213.38 \end{pmatrix}$$

Thus it is clear that meeting export in final demand of 70 for industrial products will increase production from 159 to 185 units of industrial products and from 134 to 138 units of agricultural products and also from 212 to 213 units of other sector products.

Assume that each output unit has a market value of LTL 1 million. Also assume that it takes one industrial worker for every LTL 25 000 of

industrial products and one agricultural worker for every LTL 50 000 of agricultural products and also one other sector worker for every LTL 100.000 of other sector products. Now we can compute the increase in employment of the region resulting from the increase in export of final demand. The increased export of LTL 20 million in industrial products will rise to LTL 29.725 total industrial output. This will require additional 1189 workers (29725000/25000 = 1189).The increase in agricultural production will require additional 42 workers (2104000/ 50000 = 42) and increase in other sector production will require 13 workers (1318000/100000 = 13). Thus, total employment will rise by 1244. In this instance, a LTL 20 million increase in industrial final demand has resulted in the creation of a total of 1244 new jobs (1189+42+13 =1244).

Input-output modelling helps measuring and evaluating the impact of expansion or contraction of an existing industry or a firm and estimating the impact of a proposed new development on a region's economy. Typically, this is achieved by generating input-output tables to measure direct and indirect effects. Direct effect means the economic categories directly affected by the business activities of the industry, or by development. Indirect impacts are those caused by inter-industry purchases of goods and services as they respond to changes in the business activities of the industry or those caused by development.

In summary, increased final demand can, in effect, be created from within a region, it can also be external to the region. This is an important consideration to be taken into account when formulating regional development policy. When the objective is to increase regional product, both endogenous and exogenous policies must be considered. In the above introductory discussion of input-output analysis, regional economy is viewed as experiencing an exogenously driven increase in demand; that is, from outside the region. However, as we present regional endogenous growth theories in the second chapter, the demand can also arise from endogenous forces, that is, from within the region. For example, learning on the job may lead to new process and/or product innovations that make local regional firms more productive and, in turn, create a relatively larger external market. In addition, different types of endogenous effect may be generated by a process known as import substitution, whereby a local

region invests in the development of a local producer of an input to a local production process of a basic good. By eliminating the need to import this input, more of the return on output is retained locally.

This introduction to input-output analysis has necessarily been short to provide the space needed to full application of this methodology to real planning and analysis cases. The reader will find a more detailed description of regional and interregional input/output models in many other works (for example, Izard, 1985; Donald and Blair, 2009 and others).

In many practical cases, input-output modelling was used as a predictive tool to inform regional economic development strategy planning to evaluate potential impacts and outcomes of alternative future development scenarios for a region into the future (Blakely *et al.*, 1991, Green, 2013). As part of a broader strategic planning study (Stimson, 1991b) looking at the future development potential of the regions, input-output analysis was employed as one of the tools in a broader analytical framework to estimate the economic implications of a number of strategic development options and opportunities for the region over a planning period.

Questionnaire

- *What are the essentials of regional economic base analysis?*
- *Explain the location quotient and shift-share analysis models?*
- *What are the basic elements of regional input-output economy modelling? Please explain*
- *What are the main applications of input-output modelling in regional development strategy planning?*

Literature

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Chapter 7. Regional Business Cluster Analysis

Learning objectives

After reading this chapter, you should be able to:

1. Understand how to apply input-output, location quotient and other quantitative methods for regional business cluster analysis.
2. Describe the limitations of quantitative methods used for cluster analysis.
3. Understand how to apply surveys, focus groups and other qualitative methods for regional business cluster analysis.
4. Describe the main differences between cluster and network.
5. Discuss the top-down and bottom-up approaches of cluster selection.

7.1. Quantitative and Qualitative Analysis Approaches

This chapter may be seen as a summary of the IRE group scientific work "Regional clusters as innovation drivers: Emergence, identification and mapping of clusters - review report" http://www.innovating-regions.org/download/Emergence,identification and mapping clusters.pdf.

Regional business clusters are groups of competing and collaborating industries in a region networked into horizontal and vertical relationships involving strong common buyer-supplier linkages, and relying on a shared formulation of specialised economic institutions, so that their components (sectors or industries) are usually geographically concentrated in specific functional regions. As they are built around core export-oriented firms, business clusters bring new wealth into a region and help drive the region's economic growth. Regional business clusters, the geographic concentration of economic activities in a specific field connected through different types of linkages, from knowledge spillovers to the use of a common labour market, are increasingly viewed as an interesting conceptual tool to understand the economic strength or competitiveness of a region. In recent years, this view has also motivated more and more policymakers and economic development practitioners to turn to cluster-based concepts as new tools to strengthen regional economies.

Although numerous methods are used to analyse and measure the size and importance of regional clusters, there is no universally accepted method of cluster assessment and measurement. Different countries and regions tend to define clusters in a variety of *ad hoc* ways, using a wide variety of research techniques and criteria. Indeed, there is a large cluster 'tool box' from which clusters can be identified: for example, industry-based input-output relationships, shift-share analysis, location quotients, industry growth forecasts, case studies and predictions about the business potential of particular products and technologies The variety of different cluster analytical techniques also owes much to the different techniques deployed by various economic development bodies and consultancies working in this growing field.

The following are only some of the techniques utilised to measure and assess clusters:

- Input-output analysis is used to identify trading relationships between different actors within an economy. It is used to illustrate buyer-supplier relationships within and between clusters. Regional economists use a range of methodologies, such as triangularisation and factor/principal components analysis for sorting industries into input-output linkages.
- Graph analysis, founded in graph theory, is similar to input-output analysis and identifies cliques and other network linkages between firms or industry groups.
- Location quotient is the share of jobs that one industrial sector has in a region in proportion to the sector's share of all the jobs in the country or region as a whole. Location quotients exceeding 1.25 are usually taken as initial evidence of regional specialisation in a given sector.
- Revealed comparative advantage measures the region's share of exports from each sector in relation to exports of all manufacturing sectors, and compared to the average in the country
- The majority of cluster-related research into regional clusters/ production systems often deploys a case study approach or expert opinion approach. Regional experts – industry leaders, public officials, and other key decision-makers – are important sources of

information on regional economic trends, characteristics, strengths and weaknesses. This approach is often applied using Porter's diamond approach. The microeconomic business environment, sometimes referred to as the 'diamond' of competitiveness, integrates a number of different perspectives:

- First, factor input conditions in a given location, like the quality of the infrastructure, the skill base of the labour force, and access to capital, are clearly important for the level of productivity that companies can reach there.
- Second, rules and regulations surrounding the nature of competition at this location, such as competition laws, trade policy, incentive effects of taxes as well as the strategies that companies compete with, the transparency of their corporate governance, and the presence of dominant business groups are critical to enable and push companies to use existing assets and factor input in the best way.
- Third, clusters (local presence of specialised suppliers, service providers, etc.) are catalysts for providing companies with inputs, pressure, and incentives in the most effective way. The portfolio of clusters present in a given location creates unique opportunities for new activities to emerge at their intersections.
- Fourth, local demand conditions, sophistication of advanced local needs that foreshadow global preferences, are another driver to push companies to higher performance and, even more importantly, to generate an environment in which new ideas can develop.

Growing and innovative cluster environments are typically driven by a strong diamond (see Figure 7.1), which involves:

- Intense local rivalry involving battles of prestige and 'feuds,' stimulating continuous upgrading creating a foundation for a more advanced and diverse supplier base;
- Dynamic competition emanating from the entry of new firms, including spin-offs from larger incumbents;
- Intense cooperation organised through various institutions for collaboration, such as professional organisations, chambers of commerce, cluster initiatives, etc.; dynamic clusters also exhibit intense informal interaction based on personal networks;

- Access to increasingly specialised and advanced factors of production (human capital, financial capital, infrastructure) and for many clusters, linkages with universities and public and private research institutions;
- Linkages to related industries, sharing pools of talent and new technological advancements;
- Proximity to sophisticated and demanding buyers.

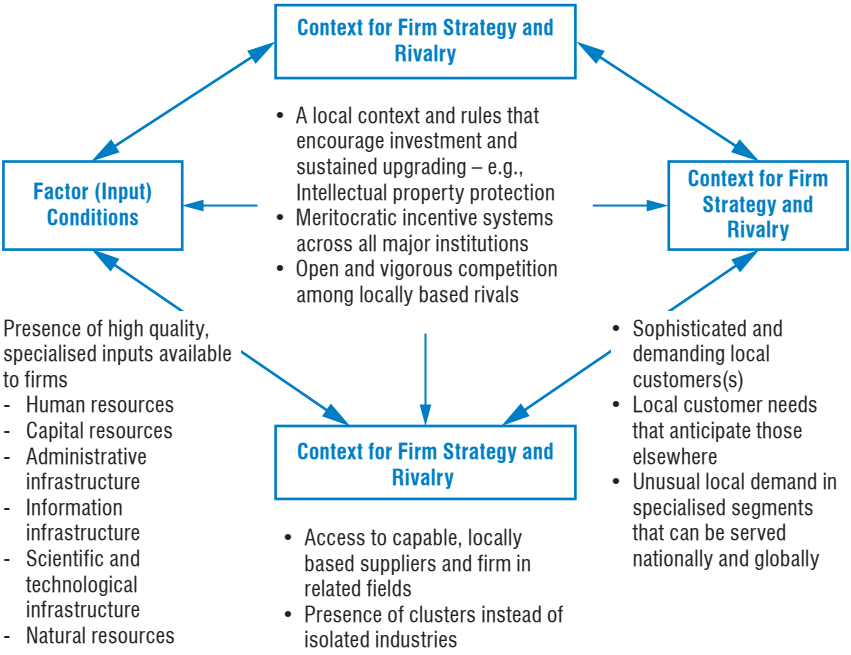

Figure 7.1. The role of clusters in the 'diamond' of competitiveness (Source: Michael E. Porter, 2004)

7.2. Basic Practical Problems of Cluster Analysis Methodology

Each measurement technique has limitations in itself. Input output analysis is only useful for identifying clusters made up of buyer-supplier value chains which include final market producers and first, second and third tier suppliers that directly and indirectly engage in trade. The same

criticism also applies to graph analysis. Location quotients say little about the inherent characteristics of regional industry clusters. Furthermore, cluster studies that rely solely on location quotients to identify clusters are simply sector studies in disguise, as they offer no insight into interdependencies between sectors. Revealed comparative advantage is only useful in certain circumstances, owing to the fact that data is often only available for national rather than regional economies. Meanwhile, case study analysis provides us with in-depth insight into the mechanisms that have created various clusters and the methods of production used. However, case studies alone cannot provide information on the quantitative importance of regional clusters.

One of the main problems that can hinder cluster analysis is the lack of available regional quantitative data.

In addition to these problems, some authors warn against an overly mechanistic approach towards cluster identification, as such an approach may fail to recognise rapidly emerging or embryonic clusters that have not yet reached a critical mass and may require support from public policy to maximise their potential.

Practitioners generally favour the use of both quantitative and qualitative analysis towards cluster identification. They advised to adopt a mixed methodology when measuring clusters. This approach will make use of various official data sources as well as close liaison and interviews with regional business leaders or RDAs, etc. Such an approach attempts to marry 'hard' quantitative analysis with 'softer' forms of qualitative understanding. Clearly, some clusters are more difficult to define than others.

There is no standard methodology for the analysis of regional business clusters. Researchers and practitioners using the concept have utilised and explained a variety of approaches, both quantitative and qualitative, with the more useful ones utilising both approaches. The quantitative approaches typically analyse industrial sector data using methods that range from measures of industry size and change – for example, employment, wage level, establishments and related dynamics – to measures of inter-industry linkage levels – for example, by using input-output models. Qualitative analysis – using techniques such as interviews, focus groups and surveys –

is needed, however, to learn about the structure of supply chains and to describe the supporting hard and soft infrastructure. The *multi-sector analysis* (MSA) technique presented in the next chapter is an example of such an approach.

Qualitative cluster approaches should also seek to examine the inter-relations between companies and support agencies within those clusters. It is beneficial to integrate the need and supply analyses when studying clusters, as both perspectives are relevant. The supply and demand analysis in particular should not be assessed solely as distinct activities, if it is possible to adopt a cluster perspective; they should rather be analysed as an interactive system. If possible, it is wise to determine from the information collection phase whether a company or organisation can be allocated to a specific cluster. This could be the object of a discrete assessment. The results of surveys and interviews can thus be used to undertake cluster analyses. "If a cluster exists in a region, it is likely to be characterised by: (i) a large number of SMEs and large companies; (ii) trading relationships between the companies in terms of suppliers and customers; (iii) common customers in the same broadly defined market place; (iv) the fact that it has been created over a long period of time. Moreover, some of the following attributes usually characterise a cluster: geographical boundaries; vertical division of labour; tailored infrastructure; specialised services; support industries; demanding customers; labour markets; learning and innovation; entrepreneurial energy; co-operation and trust; reputation; competition and inter-company rivalry." (Bergman and Feser, 1999 p. 34).

Clusters have life cycles and the characteristics of 'young' clusters will be quite different from those of more mature ones. In the case of an early stage cluster, the emphasis should be placed on identifying the ways to promote the kind of social capital identified in the literature on clusters as necessary for taking advantage of a critical mass of interdependent companies. As clusters can be seen to arise from innovations, inventions or inward investment, the analysis of technological trends will provide pointers as to the potential development of early stage clusters. At the same time, in the case of older clusters facing difficulties through global competition and product cycles, an assessment of strengths will determine whether and how a regional innovation strategy can make a meaningful

contribution to rejuvenating such a cluster through providing assistance in the search for alternative markets and products.

Where an initial analysis suggests that a region does not have a critical mass of interdependent firms in a particular sector, a deeper analysis may reveal less obvious clustering aspects. Steps that could be taken include:

- expanding the assessment area to include surrounding areas;
- looking for connections to clusters in adjacent areas;
- considering less obvious commonalities and more generic needs;
- considering micro-clusters that represent unique local competencies;
- changing the focus from a commonality of the production process to a commonality related to knowledge, innovation or entrepreneurship.

The results obtained from cluster analyses can also help identify the existence of networks operating amongst firms in the region. The difference between a cluster and a network is a fine distinction but, in terms of the exercise, it is very important as there are likely to be many networks operating amongst companies in the region but only few are clusters. Networks can exist within a region in a much more *ad hoc* fashion than a cluster:

- networks come together as a means of responding to a particular need: collaboration in RTD, a marketing exercise, etc;
- collaboration in the network may not often result in a trading relationship;
- contacts within the network are many and varied and will change over time;
- network activities are often stimulated by a public institution playing a supportive role.

Knowledge of existing networks will, as a minimum, help ensure that the results of the strategy are well communicated. Networks can also play a strong role in implementation.

Following the process of cluster analysis and identification, policy makers are then faced with the difficult task of deciding which clusters to work with. The process of selecting clusters is one of the most controversial

aspects facing development practitioners. There are two principal routes to cluster selection:

1. The first is the **'top-down'** approach in which a list of clusters is drawn up on the basis of cluster analysis. This approach faces the problem of justifying why certain clusters were included and others were excluded. Enright (2000) claims that policy makers often find it difficult to resist 'fashionable' clusters (e.g. biotechnology, multimedia etc.) even when there is little genuine background in these areas. Even if this temptation is resisted, the process of cluster selection will always be based on certain arbitrary choices.
2. The second is the **'bottom-up'** approach which sees the initiative being taken by actors within the sector themselves. Bottom-up approaches generally benefit from existing inclinations to undertake joint action and to cooperate. This type of approach involves a process of self-selection and may only suit strong clusters with existing patterns of horizontal/vertical cooperation, ignoring weak clusters with strong development potential.

In reality, the majority of clusters selected for policy help and support involve a combination of these two approaches.

Study questions

- *What is the difference between business network and regional business cluster definitions?*
- *What are the main characteristics, types and actors in a business cluster? Porter diamond model.*
- *What are the main quantitative and qualitative methods used to identify and assess a regional business cluster?*
- *What are the basic limitations of a quantitative analysis approach?*
- *What are the top-down and bottom-up approaches of cluster selection? Please explain*

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Chapter 8. Multi-Sector Regional Economic Analysis

Learning objectives

After reading this chapter, you should be able to:

1. Understand the limitations of quantitative methods used for regional multi-sector analysis and planning development strategy.
2. Explain the weakness of traditional SWOT technique for multi-sector regional analysis
3. Identify the key elements of regional competitiveness.
4. Explain qualitative technique used in regional multi-sector analysis.
5. Describe how to asses core competencies in regional development.
6. Describe how to asses regional infrastructure or architecture.
7. Describe how to asses risk and its management in the context of regional economic development and strategic planning.

8.1. Importance of Qualitative Analysis Approach

In chapter 6 the application of quantitative tools of regional analysis using secondary data was shown, which can provide us with an understanding of both change over time in the performance of regional economy and the interdependencies between sectors of the economy. That may include the use for foresights of regional development futures. Quantitative tools are powerful analytical tools, but they have limitations in gaining access to quantitative statistical data and in enabling us to reliably forecast regional futures. Qualitative tools may also be used to predict regional futures based largely upon the collective judgmental experience and predictions.

In view of the increasing level of uncertainty and competitiveness in regional business environments, it is necessary to use more accurate qualitative methods for measure and access relationships between business industries or clusters, regional risks, sectoral and regional competencies as well as regional competitiveness.

A challenge in regional analysis is how to use more improved new quantitative and qualitative tools for regional analysis which help give

us a better perspective to develop regional development strategies and implementation programmes.

8.2. A Framework for Multisectoral Regional Development Qualitative Analysis

The next part of the chapter may be seen as a summary *of multisectoral qualitative analysis (MSA) technique* presented in the scientific works of Stimson , Roberts, Stough (Stimpson et al., 2006 ,p. 288-303).

MSA is a tool developed from mostly different qualitative analytical techniques, involving panels of experts or focus groups to undertake the qualitative assessment of industry sector performance and risk factors assessment. MSA was applied in many practical cases, in both developed and developing nations.

The objective of MSA is to identify and evaluate factors that contribute to the underlying competitiveness of regional economies, such as core competencies, strategic infrastructure and risk management and to identify new opportunities and markets for regional economic development. The role of the strategy is to capitalise upon these advantages by stretching and leveraging resources, competencies, and strategic infrastructure within and across industry sectors and clusters. The section that follows discusses these elements in detail.

Elements of regional competitiveness and risk. Competitiveness is a function of many factors. Regional competitiveness can be conceptualised as a function of three key elements: core competencies; strategic infrastructure or architecture and risk management.

The notion of core competencies is derived from Hamel and Prahalad (1994). In the context of regional economic development, they refer to specific applications or unique ways that regions use resources, technologies, skills, infrastructure, etc., for competitive advantage.

Strategic infrastructure is the hard, soft and smart infrastructure which supports value adding activities. Not every infrastructure is strategic. Strategic infrastructure may include endowed resources—such as natural, fiscal, technological, human and other forms of capital with

which a region is endowed—enabling a region to compete for investment, development and trade. Strategic infrastructure also includes elements of physical infrastructure that facilitate production, transportation and trade export or value adding sectors.

Risk management refers to elements of risk, natural, human, market elements, etc., that impact upon the performance of a region's economy. The management of risk significantly affects the competitiveness of regional economy. The ability to manage risk is a significant competitive advantage.

MSA attempts to measure, in a systematic way, a region's competitiveness with respect to these elements. The elements of the MSA technique are discussed below.

Industry sector and core competency indices. Assessing regional core competencies requires the development of two indices. These are:

(a) an index measuring industry sector competitiveness; and
(a) an index measuring regional core competence.

These are derived from the assessment of industry sector performance against sets of core competency criteria, which may relate to regional competitiveness and/or attractiveness factors. Using the MSA matrix framework (Table 8.1), a quantitative *index of industry sector competence* is generated for the region by summing the column scores and dividing by the maximum score. That enables different regions (for example, a region and its designated competitors) to be compared on an equal basis, provided the same criteria are used for the analysis. Similarly, an *index of core competencies* may be generated by summing the rows and applying the same technique to define the index. This analysis graphically brings into focus the features of a region's economy that are critical in supporting development; and it provides a basis for driving the economy in the future. It highlights also the weaknesses that need to be addressed if the region is to be more competitive.

Evaluation criteria. Industry sectors

	Isi	Is_2	Isn		Max Isn=3 (Esn=3) 15	Index of importance of evaluation criteria
Eca	0	1	0	1	15	0.07
Ec_b	1	3	0	4	15	0.27
Ecc	0	0	2	2	15	0.14
Ec_d	2	4	3	9	15	0.6
Ecm	2	4	6	12		0.8
E	5	12	11			
Max (where Ecm=5)	25	25	25			
Index of industry sector performance	0.2	0.48	0.44			

Fig. 8.1. Matrix framework used for MSA (source: Stimpson *et al.,* 2006)

There are no clear guidelines for developing a list of the core competencies that underlie the competitiveness of a region's economy. However, to develop a list of factors to be used in MSA to derive an index of core competencies, reference can be made to the World Economic Forum's (WEF) Competitiveness Index (IMD- WEF), which is compiled annually by this services-based economic think-tank to analyse the competitive performance of nations) and specifically to those factors that represent competitive core competencies applicable to regional development and competitiveness. The WEF has developed over 380 factors of competitiveness, listed in 8 categories.

Strategic Infrastructure

Strategic infrastructure is well recognised as playing a critical role in the economic development and competitiveness of regions. Even minor weaknesses in strategic infrastructure can have significant impact on the competitiveness of industries and organisations involved in economic and trade development. Using the WEF factors referred above, it is possible to identify strategic infrastructure factors that contribute to economic competitiveness, and to evaluate and compare these for different industry sectors. From this analysis, two further indices can be developed:

(a) an index measuring industry strategic infrastructure competitiveness, and
(b) an index measuring factor strategic infrastructure competitiveness.

These indices show the strongest elements of strategic infrastructure supporting regional development processes. The latter index is important in developing marketing strategies for regions to promote endowed factors that give a region a particular competitive advantage, and also for identifying infrastructure investment priorities. The identification of key strategic infrastructure factors is particularly useful for investors seeking locations for industries that can capitalise upon these advantages.

Risk Assessment and Management

Another important element of the MSA involves assessing regional risk, which is crucial in strategic planning.

How might regions assess risk and develop strategies to manage regional risk? There is no single answer to this complex question that is becoming more and more important to address. Indeed, it is difficult to define precisely what is meant by risk in the context of regional development and performance, and it is not easy to reach an agreement on the specific criteria that might constitute risk factors in a region and for a region. Nonetheless, the importance of incorporating risk assessment within regional development strategies is increasingly recognised.

We would suggest a reasonably good general definition that might be applied to most types of risk:

Risk is a real, perceived or fabricated event or activity that has the potential to cause uncertainty, harm or disruption to economic, natural, or social systems.

This definition recognises that risks are both real and perceived phenomena. They can also be fabricated and based on rumour. Factors or occurrences that cause risks range from life threatening situations to natural and environmental disasters, fluctuations in energy prices and exchange rates, civil unrest, competition, changes in consumer behaviour, beliefs and superstitions, and gossip.

To develop strategies for regional risk management, it is useful to categorise risks. Seven broad categories might be considered important in assessing risk and its management in the context of regional economic development and strategic planning (Stimpson, Stough, Roberts, 2006). These are the following:

Economic risk, which relates to the impact of global markets, trade factors, inflation, transportation and communication affecting goods and services.

Production risk, which relates to access to resources, profits, and production costs, such as labour disruptions, changes in material and energy prices affecting production, and corruption.

Governance risk, which relates to sovereign risk, government instability and loss of control over economic development processes by government.

Environmental risk, which relates to resource depletion, pollution, disease, natural and man-made disasters, and quality of life.

Societal or social risk, which relates to public liability claims against businesses and community attitudes towards development and pressure groups.

Technological risk, which relates to risks associated with the applications of technologies used in production processes.

Behavioural risk, which relates to the behavioural characteristics of people. The level of trust, sense of security and attitudes to work affect the performance and efficiency of firms, organisations and industry sectors.

Each of those seven broad categories of risk carries a range of specific risks factors that have the potential to impact upon regional economy in some way.

Developing strategies to manage risk requires regions to understand the risk factors that need management and then to develop appropriate instruments to manage these. Regional risk management requires an approach to the development of strategies that manage both *exogenous* and *endogenous* risk.

Exogenous risks are particularly important to assess. Four approaches may be applied to reduce exogenous regional risk. These are: collective hedging; industry protection support; regional information systems; and networks and alliances.

Collective hedging. Collective hedging involves industries or industry associations working with financial organisations to lock in advance the prices for goods and possibly services, such as tourism-using futures and options. Those instruments provide greater surety on income to producers and may permit producers to adjust or diversity production in advance of the next trading cycle. Prices can be locked in for both exchange rate fluctuations and market prices. This strategy is particularly useful for resource and primary production regions.

Industry protection support. In some regions, loss of a large important regional industry may lead to the collapse of a large network of industries attached to it. If an important core regional industry is linked to knowledge-based industries that have significant long-term value-adding potential, short term government assistance may be necessary to tie an industry over a short period of time for a new metamorphosis to occur to replace the old technology. Defensive strategies of this type need to be considered very carefully, as they will involve public money that may have to be forgone to develop other sectors of regional economy.

Regional information systems. The development of an accessible regional information system can reduce risk to producers and traders in regions by warning them in advance of exogenous changes in technology, markets, agreements and industry changes that are likely to have an adverse impact on local industry. Because of the lead times often associated with change, the more advanced warning that can be given to industry, the

more time there will be to respond to events once they begin to impact upon regional economy and its specific industries.

Networks and strategic alliances. Strategic alliances play a critical role in business development and trade in the global economy. Alliances can assist regions to maintain access to markets. Alliances can also maintain effective blocking of potential competitors' entry into well-established markets. For alliances to work successfully, these need to be created through networks with other regions on an industry basis, if they are to be effective. Management of *endogenous risk* may be improved by adopting strategies focusing on developing clusters, enhancing local partnerships and networks, improving consultation processes.

Clustering. Industry clustering is an important strategy for supporting economic development. It leads to more efficient use of slack institution and business resources and collective effort to develop research and markets. Clustering can also be used as a risk management tool. The same resources used to support development can also be used in the defence of regional business and competitiveness. By pooling resources, industries can strategically work towards offsetting risks, such as collective hedging and discounting from competitors.

Enhancing local partnerships and networks. The shift of economic competitive theory from competitive to collaborative advantage is also a part of an overall strategy to reduce risk. Industry partnerships and networks enable business and other organisations take a more collective approach to risk management. Regional networks, combined with information systems give early warnings of events, enabling quicker and more collective and coordinated responses.

Improving consultation processes. Improving consultation processes with communities can significantly overcome hostilities, and xenophobia in regions. Social risk factors can significantly reduce returns as well as add to development costs for new industries in regions. Public benefit from major projects is financial risk issues that will become more significant in the future, as local communities seek to extract greater public benefit from international investment by major organisations.

Measuring regional risk. Risk is largely perceptual, thus qualitative techniques can be employed, again through survey and Delphi methods

using expert panels or focus groups drawn from industry sectors and/or selected organisations in the region. As discussed above, it is important to stress that ideally risk assessments should be both internal (endogenous) and external (exogenous) to the region, as most regions are relatively highly dependent on actors and agents external to a region for some if not much of the decision-making that occurs with respect to investments in many economic activities – as well as in some aspects of publicly financed infrastructure in the region. Thus, we strongly recommend that the panels or focus groups consist of industry sector experts and investment decision-makers both internal and external to the region. Thereby we may scale the perceived risks for each industry sector against categories of risk.

We would suggest also that the seven risk categories discussed above might be used, with a list of specified risk criteria being identified within each of those broad categories. Those criteria would then be used by the panels or focus groups to assess the risk criteria for the industry sectors.

Again, using the MSA matrix framework, the members of the panels or focus groups would be asked to evaluate all of the risk criteria for each of the industry sectors in order to generate assessments of both the perceived likelihood and the perceived impact of different risk events. Once more, the technique involves a score system of perception using a Likert scale of, say, one to five, where, for example:

5 = very strong or very significant (total loss of assets or business)

4 = strong or significant (prolonged shutdown/slowdown with setback to profitability)

3 = moderate (reduced output or performance for several months)

2 = weak or discernible (inconvenience to business for short period)

1 = insignificant (minor inconvenience).

For both the likelihood and the impact risk assessments, an economic risk analysis matrix may be generated. From the matrix, two further indices may be derived, using the column and the row summation procedure.

(a) an industry risk index, derived by summing the weighted scores in the column; and

(b) a risk factor index, derived by summing the weights in the matrix rows.

However, the raw scores for risk impact developed in the matrix used to derive those indices assume that the perceived impacts or likelihoods fall equally across the region's industry sectors. But in reality, this would not be true, as some sectors of a region's economy are more important than the others. It is advisable, therefore, to weight each score in the matrix by some measure of the relative importance of each industry sector. For example, weights could be applied in proportion to the significance of each industry sector to regional gross domestic product (GDP), or the proportion of regional employment by industry sector, or the proportion of regional exports generated by each industry sector. That would give a better indication of sectors in the economy that will be likely to be most affected by the impact of different types of risk. The weighted risk impact is calculated by multiplying the raw impact score by the weight. The advantage of this weighted scores adjustment approach is that it enables a better assessment to be made in regard to the risks that should receive precedence by reflecting the relative importance of various industry sectors. The method of developing the index is the same as that described above, except that the total maximum score for the risk column is multiplied by the average weights applied across all sectors; for example, if there are five sectors, the maximum score would be multiplied by 1.2.

While the measurement of the potential risk impact and likelihood is important, they do not provide us with an indication of the risks that should be given priority as far as risk management is concerned. Most regions and industry sectors will be concerned with managing risks that have the greatest potential to cause harm. If the likelihood of a high impact risk event occurring is very low, then it might be better to apply resources to the management of more frequent events that could have moderate impacts.

The intention of risk management is to apply resources to those risks that have the greatest potential impact and likelihood of occurring. To do that, we need to develop another measurement of risk referred to as anticipated risk. This is an assessment of how prepared a region or industry sector should be to manage specific types of risk. The technique involves multiplying the MSA weighted impact by the likelihood of the risk matrix to give the measure of anticipated risk matrix, with weights.

Identifying potential trade development opportunities

Typically, regional economy exhibits a degree of dependence on selected industry sectors, and the strategic issues are the diversification of industry sectors and their export performance. The MSA process can incorporate the development of a relative market potential for export matrix, which is derived by assigning a weighted score to indicate 1 = insignificant through to 5 = very high market potential. Each industry sector is evaluated against key market destinations, for regional products and services. The matrix scores represent a market potential that needs to be derived through both a qualitative and a quantitative analysis of trade flows and market intelligence scoping.

From the matrix, two indices may be derived:

(a) an index of potential industry development derived by summing the matrix column scores; and
(b) an index of export market potential derived by summing the row scores.

Identifying Cross-Sector Industry Economic Development Opportunities

Input-output tables for a region (Chapter 6) can be used to progress to the next stage of regional analysis using the MSA process. This helps identify new opportunities for development and investment in a region through an analysis of business links between industry sectors. These may vary greatly between regions and between industries within a region. The mix and the magnitude of the inter-industry linkages provided by the input- output analysis may be useful indicators of the relative strengths and diversity of a regional economy to support new export and economic development activities.

Here, the MSA technique involves an assessment (which may be bi-polar or scaled, where, for example, 5 = significant and 1 = limited) of the strength (S) of the potential (P) for intra- and inter-industry sector linkages. This assessment will utilise input-output tables where available, and include a consideration of the strength of commonly used regional infrastructure and the relative capabilities and strengths of industry sectors previously identified through other applications of MSA. However, a measurement of economic potential by itself is not particularly useful.

Often the potential for collaboration between industries is viewed as high, but because of factors such as the size of industry, market potential and production costs, the economic value to a region may be very low.

To provide meaningful data for strategic planning purposes, it is necessary to gain some estimate or measurement of economic potential. That may be achieved by developing a second measurement related to the scale or economy. The scale factor (S) is usually a value that is equated to a scale of monetary measurement The matrix is filled in with the (P) x (S) score means (averages) for each industry sector linkage. The full matrix represents a two-way measurement of the magnitude of potential for collaboration within and between industries. Seldom will the potential for two-way collaboration between industries be equal. In developing the matrix, the average figures for two-way collaboration are used so that only half of the matrix is filled. The diagonal in the matrix identifies opportunities for 'stretching' – that is, linking sectors within an industry or cluster. The other figures represent the potential opportunities for 'leveraging' between industry sectors to create new business activities.

From that matrix, it is possible to derive for each sector an index of potential linkage with all other sectors of the regional economy. The value of this approach is both to identify linkages, which may be enhanced by improving innovation with industry sectors, and to identify those that are networked across one or more sectors.

Data collection for undertaking an MSA of regional economy may be gathered by using three modes:

(a) survey questionnaires;
(b) expert panels; and
(c) a combination of survey questionnaires and expert panels.

Undertaking an MSA of regional economy takes significant time and resources. The steps involved in the process are:

Identifying factors and developing questions. The first stage in conducting a multi-sector analysis exercise is to identify factors and questions to be included in the survey questionnaire or for consideration by the panel of experts. The factors listed above provide a useful basis for developing questions for the analysis. These factors are a guide, and

organisations using MSA may wish to develop specific criteria for the purpose of conducting their own regional analysis. A sample size must then be developed for the survey work, or in the case of a panel, experts need to be identified and approached to seek their willingness to participate on the panel.

Developing a sample framework for surveys or panels. The number of questionnaires required for this type of analysis will depend upon the number of industry sectors to be investigated. For a comparative analysis, it is useful to adopt the same industry sector descriptions used for preparing regional input-output tables, if these are available.

Conducting the survey or panel evaluation. After the design of the questionnaire has been completed, it is useful to run a small pilot survey of about ten organisations to remove bugs from the survey and data analysis processes. This will usually result in minor modification to questions, and the inclusion of new factors and questions. Questionnaires are normally distributed to leading business, government, professional and educational organisations and to other experts based on the level of sampling suggested above.

Data analysis. Data analysis is undertaken using a standard statistical package, such as SPSS or SAS. Care should be taken to ensure checks on quality of the data input into the statistical package.

Study questions

- *What are the limitations of quantitative methods used for regional multisector regional analysis and planning development strategy?*
- *What are the* main weaknesses of traditional SWOT technique used for multisector regional analysis?
- *What are the key elements of regional competitiveness defined in regional multisector analysis?*
- *Describe how to assess core competencies in regional development?*
- *Describe how to assess regional infrastructure or architecture?*
- *Describe how to assess risk and its management in the context of regional economic development and strategy planning?*

Literature

Required reading

Stimpson, R. J. Stough, R. Roberts, B. H. (2006) *Regional economic development: analysis and planning strategy,* Springer.

Recommended reading

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Chapter 9. Assessing Regional Innovation System and Innovation Strategy

Learning objectives

After reading this chapter, you should be able to:

1. Understand the basic objectives of regional innovation system assessment and strategy formation
2. Describe the need analysis
3. Describe the supply side analysis
4. Describe the interaction analysis between the main actors of regional innovation system
4. Explain SWOT for regional innovation system analysis
5. Discuss the basic elements of methodology for designing a regional innovation strategy
6. Identify the main problems of stakeholder involvement in the strategy development process.

9.1. Basic Objectives of Regional Innovation System Assessment and Strategy Formation

The objectives of assessing a regional innovation system and designing a regional innovation strategy are the following:

- To identify crucial issues to be addressed in the regional innovation system analysis. This includes: understanding the needs of companies in your region for innovation support; getting an overview of the resources, competences and services offered by the innovation support organisations inside and, where relevant, outside your region; analysing the extent to which corporate needs for support are met and where new or improved services are needed; revealing the strengths and weaknesses of your region; identifying new opportunities for your region as well as the threats that the region will have to face in the future.
- To map the reality in the region from a systemic point of view. This objective is to map and identify different innovation actors within the region and their interaction to find out what is needed to establish

innovative environments. Innovation is a result of co-operation, interaction and mutual learning between different actors within a region, such as companies, research organisations and public administration, rather than the result of a linear process where innovating companies receive support from public institutions. It is not the performance of individual players that creates an innovative growth climate, but rather the interaction of these players as part of a system. In order for the analysis to be useful, it is important to keep in mind that the objective is to gain a fundamental understanding of the key issues at stake within the regional innovation system and determine how they are linked to each other, and not simply to obtain an accurate statistical description of the regional situation. The information gathered needs to be structured and analysed in order to be communicated further to all the relevant stakeholders responsible for carrying out the strategy and to improve innovation in the regional companies.

- To understand the region's positioning in an international comparison. Mapping the strength and weaknesses of a region is a crucial step. However it does not help understand a region's positioning in an international comparison. A region's competitiveness is determined by its strengths and weaknesses compared to those of other regions. It aims at identifying internationally competitive fields and networks. It is therefore important to benchmark against other regions and compare the results of the analysis phase with similar results in other regions.
- To summarise the findings of the analysis in SWOT (Strengths Weaknesses Opportunities & Threats) analysis. This is a popular method used to prepare the regional innovation strategy development. The SWOT analysis provides an overview of regional strengths and weaknesses as well as the opportunities and threats the region is facing or might face in the future.
- To design a regional innovation strategy including recommendations for priorities. This involves the following steps: understanding the regional innovation landscape, including the actions that need to be taken in order to meet the needs of regional companies; formulating

the strategic priorities of the region with respect to innovation support and development. While defining the objectives of the strategy, managers shall keep in mind the strategic objectives of the region targeted at increasing its competitiveness in the long term.

- To elaborate an action plan for the implementation of the regional innovation strategy; the action plan shall be understood as a practical roadmap for the implementation of the regional innovation strategy and shall include the following issues: definition of the priorities; definition of the target groups; definitions of the actions; definition of the actors involved and their responsibilities in the process; definition of the timeframes; identification of the funding sources. As the internal as well as the external environment of a region is continuously changing, the action plan shall rather be understood as a vital working document anticipating the possible changes in the regional innovation system and the needs of its actors than a final document. Thus, the issues defined in the action plan shall serve the decision makers as well as the policy makers as a basis for further adjustments and reviews. Furthermore, for this purpose of the actions monitoring, the monitoring system for the strategy shall be established and put in place.
- To establish an evaluation system for the regional innovation strategy. Apart from the monitoring which provides the management team with information about whether the milestones are met, activities are performed as planned and funds are used for the intended purposes; the relevant decision-makers also need to have a feedback on impacts of the measures put in place by the strategy and the effects on the region and its inhabitants. Hence an evaluation system could be established in order to provide lessons from the implementation of the regional innovation strategy. This allows reviewing the strategy and its measures in order to determine whether they respond to the needs of regional actors and the regional economy.
- To achieve a consensus amongst the key players on the analysis results and their use, the consensus has to be achieved and maintained on several levels: on the objectives and expected outcomes; on a long-term vision of the regional process; on the way to proceed; on the data to be

collected, the widening and systematisation of available information; on the results of the analyses and the implications for the strategy. Consensus need to be achieved amongst all actors of the 'triple helix', i.e. public administration, industry and research institutions. At the same time, however, it is important to avoid that the actors who are unwilling to cooperate are allowed to slow down the process. Building a consensus can be based on: awareness; influence over priorities; ownership; keeping the momentum. Awareness can be promoted in a number of ways, such as seminars, forums or conferences in the region to present the project and discuss intermediary findings; a series of presentations throughout the region to industry groups, local groups or existing groupings of regional actors; publicity of ongoing activities via regional media, such as radio, television and newspapers; information about the ongoing work published on the website; explaining the process during the ongoing contacts with individual companies. Widespread ownership of the strategy to be developed should be a natural consequence of the consensus building process. Shared ownership amongst the members of the steering committee is particularly important. This can be further ensured by regular consultations, timely publicity and securing of concrete outputs during the funding period. Working groups are a useful mechanism to help build regional consensus. They may be sector-oriented or thematic, depending on the adopted approach. Working groups can bring together representatives of both the public and private sector.

- To strengthen the commitment of the key players. Simply achieving consensus is not enough. It is therefore necessary to commit the key actors to action. One of the goals is therefore to identify 'project champions', such as prominent regional company managers of decision-makers who are willing to act as ambassadors for the initiative, promote it among their colleagues and give it legitimacy through their presence. The champions should be committed to the initiative as a whole and to specific actions in particular.

9.2. A framework for regional innovation system analysis

The next part of the chapter may be seen as a summary *of innovation system analysis technique presented in RIS methodological guide prepared the IRE Secretariat. (Innovating regions in Europe, 2006. RIS Methodological Guide. IRE Secretariat, stage 1 p. 16–55, stage 2 p.17–36. http:/www. innovating – regions.org)*

Need analysis

Companies and the degree to which they are able to innovate effectively is the very foundation of an innovation system. All actions aiming at improving the innovation system should therefore stem from the demand and needs of regional companies. A "bottom-up" approach of the RIS analysis, focusing on the demand side of innovation support, requires that there is (RIS Methodological Guide, 2006):

- a clear understanding of the needs and capacities of regional companies in terms of research and technology development and innovation support;
- a deep understanding of the factors motivating regional companies to be innovative;
- an identification and consideration of the obstacles to their innovation activities;
- a characterisation of the interaction of companies and innovation-supporting organisations;
- an analysis of the innovation-related success factors of the companies; and
- an identification of innovation opportunities.

Moreover, it should be kept in mind that the needs of SMEs are constantly changing, which makes it important to choose an iterable method providing a basis for comparison in the long term. In many cases, it has even proved useful to establish the need analysis as a continuing or recurring process in line with the goal of converting the overall exercise of a RIS project into a dynamic continuing process in the region.

Before proceeding with selecting individual companies to be included in the different elements of the analysis, it is important to clearly identify the type of companies to be addressed. This is important in order to make a balanced representation of the region's demand for innovation.

Companies should be chosen on the basis of the identified strengths and weaknesses of the region. If a region wishes to promote itself on a tourist base, for example, it will be important to include some very small tourist firms from the services sector, even if they do not appear in the statistics or are excluded from any definition of a high-tech sector. For regions in which many sectors are represented, it should be decided well in time whether the survey should focus on strategic sectors with in-depth analysis. In taking this decision, the inherent danger of a too strong focus on technology and research-oriented companies should be considered, as in this case the needs of other SMEs also having an innovation capacity could be overlooked. In studies focussing too much on matching industrial with scientific strengths of a region, those companies not having a clear-cut link with science might be neglected.

It is useful to consider large multinational companies in the region not only as an 'object' of study but also in order to take advantage of their compound networks and involve them in the regional innovation process as a liaison to other companies and regional actors. After all, an important goal is to reflect on ways to embed these companies in the regional tissue by favouring high value-adding linkages with regional SMEs and other regional actors. It may also prove useful to include the headquarters of companies with subsidiaries in the region in the survey.

After having determined the types of companies that should be targeted by the survey, a further characterisation of the companies involved will allow segmenting and supporting the analysis at sectoral and regional level. For example, if it was decided to include a number of strategic tourist companies in the survey, the next step will be to identify not individual companies, but a group of adequate tourist companies, e.g. at a specific location or within a specific branch.

One approach to the segmentation of SMEs could be to organise a workshop with a limited number of intermediaries to develop an initial segmentation followed by test interviews on some randomly chosen

companies in the different selected segments before deciding on the final segmentation.

Statistical classifications of sectors should be used carefully, as they could lead to unintentionally assigning a wrong technological company profile or sub-sector description. The food sector, for instance, should be regarded as high-tech, if the companies produce functional food or highly differentiated high added value products. Similarly, several low-tech sub-sectors can be introduced unwillingly in a sector that is generally regarded as high-tech, for example, in the manufacturing sector. This has to be considered when selecting individual companies for the survey.

In order to perform an adequate analysis of the innovation support demand in the region, the following topics should be considered (RIS Methodological Guide, 2006):

- the technologic areas in which regional companies operate;
- the level of skills, training and education of the company managers and workforce;
- what do the companies consider as their key issues for growth during the next years;
- the supply chain relationship of the company and the extent and nature of inter-company collaboration and networks;
- the sources of innovation for the company;
- access to innovation-related finance;
- the expressed need for innovation competence and the innovation services for which companies express the most accentuated needs
- the attitudes of company managers towards innovation support;
- the knowledge of the regional innovation support infrastructure;
- the extent of collaboration with regional innovation institutions and the extent to which public innovation supporting players are utilised to satisfy companies' needs and key issues;
- the potential for these players to take a more prominent role in the innovation processes of the companies;
- barriers to the innovation process, e.g. do the companies know about the service offer and are services living up to the expectations of the companies.

Some of the listed variables can have a direct impact on the level of innovation capacity of the company and some of them actually state the current level of innovation capacity. However, the correlations between different variables should be tested without predefining cause and effect relationships too much in advance. There might be correlations between different variables that were unknown in advance. When a statistical correlation is stated, a further analysis is needed, perhaps through face-to-face interviews with selected companies.

Supply-Side Analysis

The aim of analysing the supply of innovation support is to draw a complete picture of different elements of the technology and innovation support infrastructure (comprising innovation support agencies, research organisations, universities, financial institutions, training organisations etc.) as well as the policies governing that infrastructure in the region. The main objective of the assessment should be to provide the stakeholders with necessary information and analysis to improve the regional innovation system.

The supply-side analysis tends to be an easier process than the demand-side analysis. The supply-side organisations generally have a bigger interest in the RIS analysis and its results than private companies, not least because the outcomes of the RIS can have an implication on their business opportunities and/or funding. Supply-side actors can also in many cases incorporate the involvement in RIS in their daily, paid activities, while company representatives do this on a voluntary basis, on top of their commercial activities. At the beginning the providers, leaders and political decision-makers tend to already have pre-established opinions about the innovation system and the individual innovation actors. The supply analysis provides an opportunity to verify existing opinions, to improve mutual understanding and, where appropriate, to clear up prejudice and misunderstandings.

It is very difficult to undertake a critical assessment of intermediary organisations and to try to achieve a consensus on new options at the same time (RIS Methodological Guide, 2006). Continuous personal bilateral discussions between innovation providers will create a positive cooperation

climate that considerably facilitates consensus building. It will also help clarify how the tasks and roles could be distributed among the actors.

On the one hand, a critical assessment of the infrastructure is needed. However, on the other hand, if too many negative results come out, the commitment of valuable partners may get lost. Suppliers and technology providers, for example, often fear., but continuous discussion with the support actors is preferred using workgroups of different actors could also be considered.

A key lesson learned from the past is that supplying analysis necessarily means being evaluative in some way. Therefore, it is advisable to take advantage of the feedback coming from the companies to launch discussions with the support organisations. This is a politically tough action, yet without consensus among the supply side that the offer needs to match the users' needs, it is hard to generate change. The role of external consultants can be of importance here to encourage those in the system who are locked into their institutional roles to change their operating way.

The focus should be on those actors having the support of regional innovation as part of their mission. However, it is also useful to assess the capacity of organisations in the region not having innovation support as a core aim, and each case in which this capacity could be beneficial for the strategy.

Similarly, should there be a large number of potential regional actors to assess, it may be helpful to categorise the supply according to the type of service offered.

For instance, regional actors can be divided into (RIS Methodological Guide, 2006):

Those who provide technology and innovation competence – research centres; universities; governmental research laboratories etc.;

Those who assist in the flow of technology and innovation – technology transfer centres; innovation centres; science parks; industry networks; regional development bodies, financial services, as well as other actors not providing technology-related services directly but being beneficial to the innovation process.

Another possible categorisation could relate to their dependence on public funds and the extent to which they generate income. Care needs

to be exercised particularly with regard to the analysis of expenditures on innovation, as most statistical information will cover research and development, which is of course not directly synonymous with innovation. This holds true for the company expenditures on innovation in the need analysis as well.

In order for the innovation system to work effectively, high level of transparency between the different actors involved in the supply and demand of innovation services is required. Improved visibility of and access to innovation and technology support is a key requirement to innovation success. This holds particularly true with respect to specialised services that are often highly demanded by industrial companies and offered by regional suppliers. However, in many cases demand and supply do not match.

One of the key issues is to make technology and innovation needs and supply meet. Two types of scenarios could be imagined: the first in which the supply is normally well–defined, but the demand is quantitatively and qualitatively badly formulated, and the second in which the supply is weak and the offer incomplete or in which the supply-side lacks the skills to provide some services. Furthermore, the lack of sufficient transparency hinders the effective exploitation of the existing offer: potential technology providers can be renowned, but if their service offer as well as the quality and conditions of their services are unknown, the chances for the demand and the supply to meet will decrease. Many companies, in particular SMEs, have no extensive experience of the supply of technology support services from institutes or universities and their experience of buying and utilising support services is also limited.

The interactions between regional actors and other regional, national and international organisations should also be assessed. It is important to underline that regional demand is not only satisfied by the local RTD and innovation infrastructure and organisations but also by those located in other regions and countries. In this sense, it is important to assess the extent to which local innovation infrastructure and organisations facilitate regional companies' contacts and access to innovation, in particular regarding technology transfer sources from abroad. In the assessment,

every opportunity should be seized to involve regional supply actors into the process. This can be useful for many reasons:

- The contact with regional actors can stimulate awareness and promote discussion of the exercise;
- It may allow using the actors and their client groups as a forum for strategic discussions at a later phase;
- The actors can be encouraged to consider possible priorities and projects that they would like to put forward to the steering group for support;
- The involvement of key regional actors and institutions will give a greater level of consensus in the region.
- Implementation of the elaborated innovation strategy and the associated catalogue of measures will crucially depend on the willingness of relevant regional actors to co-operate.
- In order to make the assessment of the individual supply elements more manageable, it might be sensible to start with listing the topics for which answers from the supply organisations are required. In this respect, four general topics can be identified:

Resources and missions, for instance:

- Supply organisations present in the region
- Innovation schemes and programmes are implemented in the region
- Who does what in innovation and support activities in the region
- The resources involved in support activities
- The level of investment in innovation support activities in the region (by industry, government, research institute/universities)
- The number of people directly employed in support activities, at what technical or managerial level
- The skills of the people working in support organisations.

Correspondence to SME needs, for instance:

- How are various innovation support institutions organised to identify target companies needs

- The extent to which the supply corresponds to identified/expressed needs in the region (in particular of SMEs)
- The attitudes of researchers towards collaborations with companies
- E*fficiency, for instance*:
- What has been achieved through the support activities in the region
- How are the resources for innovation support allocated; What is the consequence of such an allocation
- How is the total supply of innovation service co-ordinated and how do agencies interact
- Are there cases of duplication in the supply of certain services
- Do users contacting one supplier gain access to a wider network of innovation support
- Are there structural problems that need to be considered? (e. g. multi-national investor dominance; predominance of low technology sectors; lack of government research centres, etc.).

Visibility/coherence, for instance:

- Is the scope and detail of the supply clear to potential users
- Are the client companies satisfied with the services they receive
- Any evident 'gaps'
- Is the ensemble of support services useful for the regional enterprises
- The extent to which the suppliers are complementary or competitive.

The analysis of findings of this part of the assessment should consider the overall balance between the supply capacity and the expressed demand and need for innovation support for economic actors. To a certain extent, the key questions to be included in the questionnaire should mirror the topics introduced above. Additionally, when considering individual innovation support suppliers, the following information and assessment criteria could be relevant (RIS Methodological Guide, 2006):

- What are the mission, aims and objectives and to what extent are they being realised?

- What are your target markets and what services do you offer?
- What are the inputs to the operations in terms of funding, personnel, equipment etc?
- What are the outputs in terms of clients served and results achieved?
- How would you perceive the efficiency of your operations?
- What is the extent of national and international links to the knowledge infrastructure and to other service providers?
- What technological skills are available at your organisation?
- How does the organisation respond to expressions of company needs and demands?
- What is the extent of coherence and complementarity with other organisations?

Sectoral and Technological Trends

We must consider that companies and organisations are part of both a regional economic system and a national and international context. The decisions taken by regional companies on innovation activities are heavily influenced by similar decisions being taken around the world by many large, medium and small companies. Therefore, policy choices made by regional institutions on investment in innovation support must also consider the global environment, in particular the trends in industry sectors and technological advances faced every day by regional companies. The trend analysis undertaken needs to be carried out according to the objectives and integrated with both the need and supply analysis, in order to obtain a full effect. The most important sources of information are likely to be first hand, such as interviews with key actors, sector experts, managers of firms in the sector together with common views of sectoral working groups. The sectoral work can be informed by a number of secondary sources:

- sectoral reports at national, European or global levels;
- output and employment statistics;
- surveys on companies.

The main questions that will need to be addressed for each sector are (RIS Methodological Guide, 2006):

- What is the size and structure of the sector in the region?
- Which are the main companies?
- What are the skills and technological processes applied in the region?
- What have been the aggregate sectoral trends?
- What have been the important innovations in the region that have influenced the region's development?
- What are the main markets and technological factors affecting the sector in the region?

Considering technological trends separately from sectoral trends, however, allows project managers to make a broad assessment of the technological impact in the region instead of working from narrow sectoral considerations. At regional level, there may be a concentration of economic activities that apply generic technologies and skills that are of strategic importance or whose product is itself highly important. At regional level, there may be a concentration of economic activities that apply generic technologies and skills that are of strategic importance or whose product is itself highly sensitive to global technological trends. It will therefore be necessary to consider:

- current global market trends; and
- how existing 'traditional' activities will be affected by technological opportunities.

A choice has to be made to determine the technological perspective that are of greatest relevance to the region, one focusing on:

- generic technologies and skills; or rather on
- products that incorporate a particular technology.

By making this choice, it should be kept in mind that it is not only concerned with 'new technologies'. Attention should be given to those traditional or generic technologies or skills that have been proven to be still of strategic importance to the regional economic growth context. A region

with a strong information technology sector will almost certainly include an analysis of global technological trends within this area. However, a region without such companies will probably want to carry out a study of the way in which trends in information technology will affect the region's main, more traditional sectors.

Surveys, questionnaires and interviews, focus groups, technology audit results and other secondary data are used for needs and supply analysis, sectoral and technological trend analysis. Many simple analytical techniques are used to analyse factual information. For example:

Using statistical analytical programmes for structured quantitative data, e.g. SPSS, allows frequency analysis, correlations between variables, etc.

Using available benchmarks, such as best practice or economic quotients, enable the identification of relative importance of the findings, e.g. by comparing a sector outcome with the national and/or European level. Additionally, the relative sectoral performance can be used in the analysis by comparing the rate of change (of employment and/or output) at regional level with the rate of change at national or European level. Of course, the usefulness of such techniques depends on factors such as the definition of the sector and the validity and availability of the data.

Involving various professionals to evaluate the qualitative aspects of information gathered in order to reach a more complete evaluation.

SWOT analysis

The process from analysis to strategy development is crucial. The analysis shall be summarised in such a way that it gives clear indications of the areas that the strategy should be focused on and that it can provide ideas for actions. The summary should thus ideally be used for motivating people to get together and develop a good strategy.

At this stage, it is important to note that it is quite unlikely that the analysis will provide clear indications of the exact actions needed in the region. Instead, the analysis results will give indications that the region can use as a starting point for strategy discussions. It can also e.g. be used for validation whether it would be useful for managers to put the existing

ideas into practice. Furthermore, the needs of the region must be analysed in order to allow the region to focus on issues that it can actually have an impact on (it is quite meaningless to make a strategy with priorities that can only be achieved e.g. on the national level or by market forces).

There are different ways for this to be approached. Much depends on the regional context and framework conditions as well as time and resources available for the exercise. One of the methods to summarise the findings of the analysis stage can be a SWOT (Strengths Weaknesses Opportunities & Threats) analysis. This is a popular method used to prepare the regional innovation strategy development. The SWOT analysis provides an overview of the regional strengths and weaknesses as well as the opportunities and threats the region is facing or might face in the future. In the context of RIS, the main contents of a SWOT analysis can be described as follows:

A strength is an advantageous resource or capacity in the region to improve its innovation system and general competitiveness. The strategy and action plan should be built on strengths;

A weakness is a limitation, fault or defect in the region that will keep it from improving its innovation system. Actions and a strategy should aim at eliminating weaknesses;

An opportunity is a favourable situation in the region's environment. The actions and the strategy should aim at taking advantage of the opportunities;

A threat is an unfavourable situation in the region's environment that may potentially damage the strategy. The actions and the strategy should aim at limiting the effects of the threats.

The implementation of the SWOT analysis involves the following three main steps:

Scanning the regional environment to detect major trends and influences likely to affect the region concerned. Different indicators can be used, e.g. socio-economic, demographic, geographic etc. Indicators of regional disparities and benchmarks are particularly useful for revealing opportunities and threats.

Analysis of opportunities and threats consists of listing those parameters of the environment that are not under control of regional

actors and that will probably strongly influence the socio-economic development.

Analysis of strengths and weaknesses involves an inventory of the factors that are at least partly under the control of regional actors and that may either promote or hinder development.

Once the strengths, weaknesses, opportunities and threats have been identified, a graphic should be produced that gathers the possible strategies to adopt, as presented below:

	Strengths	***Weaknesses***
Opportunities	*'OS' actions I.*	*'OW' actions I*
Threats	*'TS actions' I*	*'TW actions' I*

After having established the matrix with strengths, weaknesses, opportunities and threats, the next task would be to analyse the opportunities and threats and see if it would be advisable:

- Actions to take advantage of Opportunities based on Strengths ("OS" Actions);
- Actions to respond to Threats based on Strengths ("TS" Actions);
- Actions to correct Weaknesses in order to take advantage of Opportunities ("OW" actions);
- Actions to correct Weaknesses in order to respond to Threats ("WR" Actions).

The best way to do the analysis of every opportunity would be to list all the strengths and then the weaknesses and test the viability of possible actions, one after another. After having confronted all opportunities with all strengths and weaknesses, the same should be done with the threats. At the end of the exercise, a list of possible actions (between five and ten) forming the basis for the development of the regional innovation strategy priorities and the action plan is obtained.

At this stage, it is also important to mention that the SWOT analysis shall be carried out carefully, by avoiding very broad approaches. Regions in which much relevant data was not easily accessible often undertook a very demanding exercise to carry out a SWOT analysis trying to grasp

all the data characterising their region. Hence, in some cases much of the information obtained was of little use for the purpose of the innovation strategy preparation and understanding the real needs of the regional actors. More focused SWOT analyses targeting specific innovation issues can thus be regarded as a tool bringing more useful results for the strategy development.

In addition to conducting a SWOT analysis, it can be useful to develop scenarios that can form the basis for foresight and road mapping processes that allow drawing up a draft strategy and validating strategic directions. Scenario techniques can constitute a bridging step between analysis and final drafting and respectively implementation of the strategy. The possibility to explore different approaches may be important for regions that may have identified different paths to develop innovation policies in the course of their analyses.

The analysis process should result in a comprehensive summary document including the findings from all the analyses performed: e.g. innovation supply and demand analyses, analysis of trends, benchmarking exercise, etc.

9.3. A Framework for Regional Innovation Strategy Formation

Designing the Regional Innovation Strategy

Once the results of the analysis stage have been summarised and interpreted, the actual innovation strategy shall be developed. The phase of strategy design can be regarded as the most important step: at this stage, the priorities for future development of the region in terms of innovation for the next 5–10 years are defined. It is therefore of utmost importance to allocate sufficient time and resources to the preparation of this task. Moreover, in order to develop a strategy acceptable for all key regional actors, the consultation process and consensus building are one of the priorities.

Ideally, the strategy shall be a document dealing with strategic issues, answering the question as to the main content, while the action plan is an operational document responding to the question *how* the regional

innovation strategy will be implemented. It consists of concrete measures/actions/tools for the implementation of the priorities set in the strategy.

In some cases, the strategy may be the same document as the action plan. The next section will focus on the action plan.

In general, a good regional innovation strategy could be described as follows (RIS Methodological Guide, 2006):

It shall be clearly understandable for the main target groups – regional companies, R&D institutions, public authorities, NGOs, banks, etc;

It shall rather concentrate on a few priorities than describe a broad and theoretic "wish list" of every regional stakeholder;

It shall provide a vision and a clear roadmap to reach it;

It shall be if not unique, then at least specific to the region;

It shall be ambitious but realistic (e.g. pursuing it must not require substantially more resources than available);

It shall be agreed upon by the key regional stakeholders.

A strategy is a plan reaching into the future in which activities and performances necessary to reach a targeted objective are defined. The players participating in the project need to reach a consensus concerning the essential elements of the strategy if it is to fulfil its purpose as a common action orientation. The strategy process is to be understood as a process in which such a joint understanding of all participants will be developed, in particular regarding the following aspects:

From which situation do we start?

Which priorities do we go for?

How do we want to achieve the change?

In particular, the process must enable the participants to correctly understand and describe the initial situation, derive goals and objectives out of this situation and to develop a concept that will lead to the fulfilment of the goals.

Elaboration of strategic priorities. A priority or a development goal describes the change in the future that is considered as desirable by the project target groups or that they pursue themselves. Thus, the development goal shows the benefit that the target groups may expect from project

realisation. There must be an understandable connection between the identified problems and the situation described in the development goal.

The strategy must outline how to achieve the priorities set. This covers the coordination of the following issues (RIS Methodological Guide, 2006):

Various performances to be achieved – results**;**

Respective activities necessary to achieve the results;

Necessary resources**.**

Results are understood as products and services necessary for the achievement of the priorities (i.e. for the intended change in the behaviour of the performance receivers). Basically, several alternative performance/result packages may be suitable that have to be checked in the framework of the planning.

Activities are the term for the respective single steps to be planned and carried out to achieve the single results. On the basis of the planned activities, the need for *resources*, i.e. for personnel, material goods and financial funds can be calculated.

Assumptions are external conditions that cannot be influenced by the project management but that are necessary to work towards the priorities. The identification of assumptions serves to look into the environment of a project. An evaluation of the probability of their happening allows for describing possible risks that may threaten the success of the strategy and must, for this reason, be continuously observed.

Indicators describe how it can be determined that the set priorities are achieved, the goals accomplished and the assumptions happened and this makes the results, goals and assumption measurable and controllable. Stemming from a common understanding of all participants on the demand level and the success criteria they allow for a joint assessment of the realisation status of the strategy.

In the realisation of the described process, different quality criteria have to be considered. Strategy development should always be made in a participative process in which all concerned by the identified problem situation as well as all other important players should be actively involved.

The way how and which strategic priorities are defined depends on the nature of actors involved in the whole process. This is generally closely linked to specific regional/national culture and framework conditions. In

some regions/countries, the approach is still rather top-down, where public authorities are at the core of the process. In other regions/countries, the business community is traditionally actively involved in framing public policies. Hence, how the strategy will look like at the end of the process and which priorities will be chosen depends on the type of actors.

Another important issue within the regional innovation strategy definition is public discussion of defined priorities and measures/actions once the strategy has been elaborated. Some popular tools of initiating a broad public discussion on the strategy draft proposal are presentations of the strategy on the website or discussions in workshops and conferences with the key regional stakeholders. This process is crucial for achieving an acceptance of the strategy by regional community. If successfully completed, it provides for good basic conditions for smooth implementation in the future.

Following the public discussion of the strategy, the final validation of the document is made. Different public actors might be involved in this task: in a first step, the validation of the strategy is made by the steering committee which is the strategic body. Then, and even more importantly, the existing regional decision-making bodies (executive and legislative bodies), such as regional governments, in an ideal case, approve the strategy and publish a strategic innovation document for the region. The latter may be done e.g. by integration into the existing regional development plans.

Hence, the most important principles on how to prepare a successful innovation strategy can be summarised as follows:

Setting realistic objectives, priorities and measures by taking the regional framework conditions, availability of resources (funds and staff) as well as willingness and competencies of all regional actors into account. Moreover, the strategic objectives shall also guide and motivate the work of the regional stakeholders;

Based on a broad consensus and discussed with at least the most important regional stakeholders in order to reach the overall acceptance within the region;

Take existing documents and documents under preparation relating to the innovation support in the region into consideration.

Strategies fulfilling the above-mentioned criteria have a fair chance to be implemented and even being implemented with positive impact.

Action plan – a key for implementing the regional innovation strategy

The action plan is the main document guiding the implementation of the strategic priorities. The main objective of the action plan is to break down the strategic objectives into concrete actions. This way of thinking is also crucial when formulating the strategic objectives, in order to make sure that they do not become too vague or impossible to reach.

Moreover, this part deals also with the preparation and testing of the actions as well as with the establishment and putting in place of the monitoring system. The objectives can be summarised as follows (RIS Methodological Guide, 2006):

- Elaboration of an action plan in which the priorities and measures set in the strategy are worked out in detail;
- Performing a testing exercise that concerns selected actions;
- Establishing a monitoring system that concerns the monitoring of including the pilot actions.

The strategy action plan shall comprise at least the following issues:

- Definition of concrete actions/measures and projects to achieve the strategy priorities;
- Definition of timeframes for the implementation of single actions/measures and projects (short-term, medium-term, long-term);
- Description of competencies and responsibilities of single regional actors for the implementation of concrete actions/measures and projects;
- Identification of funding sources for concrete actions/measures and projects.

*Monitoring system***.** Monitoring is a process of providing management information through the life of a programme. It comprises systems for obtaining signals as to whether activities are taking place according to the schedule, if milestones are being met, whether funds are being used for the intended purposes, and the like.

In contrast to monitoring, the objective of evaluation is to seek lessons to be learnt from the implementation of a certain programme and is often performed by an external independent party. However, monitoring can also be regarded as an important part of the evaluation exercise.

Monitoring concerns watching over the entire programme/project, including monitoring of the actions. The following aspects need to be covered by monitoring (RIS Methodological Guide, 2006):

- Monitoring of activities and projects (operational goals);
- Monitoring of fulfilment of milestones;
- Definition of monitoring indicators (input and certain output indicators);
- Definition of monitoring methodology;
- Definition of a team responsible for monitoring.

The establishment of an effective monitoring system is an important issue. Without such a system, the management team would lack the essential feedback on the implementation success of activities and projects.

In this context, appropriate monitoring indicators need to be defined. It is advisable to start determining indicators when planning the activities, measures and projects defined in the strategy.

Evaluation of regional innovation strategy

As already referred to in the previous chapter, there is a difference between monitoring and evaluation even though sometimes these terms are being used in the same context. While monitoring serves the purpose of checking if the activities are running in line with the initial objectives, time schedule and budget, evaluation intends to analyse the impact of the regional innovation strategy.

Evaluation continues to be a critical issue for the success of regional innovation policies. Evaluation results can provide policy makers with the data they need to make their decisions, thus they do not have to rely on uncertain information. Evaluation as a tool is also important, as different policy makers are competing for a limited share of public money.

It is important to state at this stage that the preparation of the methodology to evaluate a regional innovation strategy is a demanding and time-consuming process.

In order to be able to deliver relevant outcomes, the evaluation exercise shall be well-structured and performed on a regular basis. It is important to define the methodology of data collection and processing. This may be done via processing statistical data, regular surveys and/or interviews with regional actors.

While statistical data mostly provide information on quantitative aspects of innovation-related issues, surveys and interviews enable to access more qualitative data.

When selecting the appropriate evaluation method or methods, other planned evaluation exercises in the region that might be carried out at the same time should also be taken into consideration. This is mainly important when choosing the survey method which is normally a time-consuming process for the actors involved, especially for companies. If there are similar surveys running in parallel in the region carried out by different institutions, this may lead to a general reluctance of surveyed companies to cooperate. Thus, the information obtained from a questionnaire might be incomplete or even incorrect.

Another important aspect of evaluation concerns the selection of the right institution carrying out the evaluation exercise. In contrast to monitoring, which normally lies with the project management team (regional public authority, regional development agency, university, etc.), it is advisable to delegate the evaluation to an independent institution/ external expert who is able to assess the results, impacts and effects of the strategy independently and in a realistic way.

Evaluations shall be performed on a regular basis – every 3-5 years, depending on regional framework conditions and needs. In order to be able to compare the data along time and hence to obtain the results relevant for further development of the strategy, it is important to standardise evaluation methods. In case of e.g. executing surveys, the questions shall be structured around the same topics in order to enable comparisons.

Study questions

- *What are the basic objectives of regional innovation system assessment and strategy formation?*
- *What are the basic players of regional innovation system – networked regional innovation system?*
- *What topics should be considered in analysing the demand-side of regional innovation support?*
- *What topics should be considered in analysing the supply-side of regional innovation support?*
- *How the collaboration of actors in a regional innovation system should be assessed?*
- *What is the logical structure of a regional innovation strategy?*
- *What is the role of regional stakeholders, actors in the regional innovation strategy development process?*

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