

Development of an Innovation Strategy for the Thessaloniki Metropolitan region.

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Abstract

This paper presents the results of a regional consultation exercise, initiated by the Asviloc+ South East Europe territorial cooperation project, with the aim of defining a medium to long term strategy for developing innovation in the wider metropolitan area of Thessaloniki, Greece. The strategy was developed and presented for consultation in a series of open events in Thessaloniki, where the relevant stakeholders had the opportunity to debate and reshape it. The wider Thessaloniki area is characterised by the increased concentration of research and innovation support related activities but is lagging behind in terms of the added value and permanent links created between academic research and entrepreneurship. The paper presents the current situation by discussing the position of Thessaloniki and the Region of Central Macedonia regarding innovation activity. The technological and research capacity in the different sectors of the economy are being discussed and the funding of innovation during the recent years presented. Based on the above, a presentation of the main actors of the regional innovation system and an assessment of the local capacity for Research, Development and Innovation, a SWOT analysis with reference to the development of innovative activities is being drawn. The current situation analysis is being complemented by an analysis of the wider context and principles of the innovation strategy. This leads to the definition of the main objectives and priorities of the strategy as well as the tools for its implementation. Priorities for the whole range of the triple helix are discussed and a set of policy proposals are presented. These proposals cover both the institutional and the operational aspects of a comprehensive innovation strategy. Finally a series of proposed activities that will enhance innovation and allow taking advantage of the region's capacities are being discussed.

Keywords

Entrepreneurship, innovation policy, regional innovation strategy, regional innovation systems.

1. Introduction

The term "Innovation Strategy", defines the objectives, actions and implementation tools, which allow improving both the capacity and innovation performance of a region. It is a form of technological and strategic development planning, which takes into account the networks, dynamics and weaknesses of the innovation system of the corresponding region in which it applies. It is a fact that the poor performance of Greece and of its thirteen regions, in terms of their innovative capacity, necessitate the intensification of the efforts of both public and

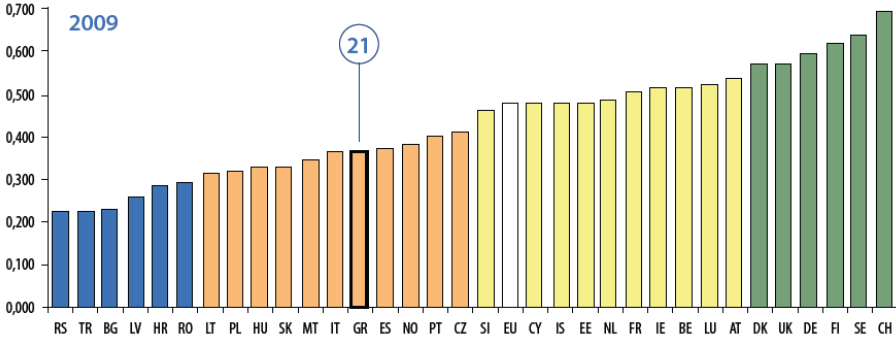
private sector so that this performance is immediately improved. Thessaloniki is the capital of the Region of Central Macedonia (RCM) and plays a dominating role in the region's economy. Any strategy for the development of the wider Thessaloniki municipality area will have to refer to the region as well. The proposal for the "Thessaloniki Innovation Strategy" for the decade 2011-2020 was developed under the project Asviloc + SEE program and entered into consultation as part of the Innovation Forum, which operates in the city, during late 2011 and early 2012.

2. Current situation in Thessaloniki on the basis of innovative activity

2.1. The performance of the Innovation System of Central Macedonia (RCM)

The Region of Central Macedonia is an example of what we may label as a "European paradox", observed at country-level European Union, as well as at a regional level: while there is a high level of research activity and knowledge production by a number of entities and initiatives, the performance of RCM in the field of innovation remains low. Table 1 compares Greece with the rest of the EU countries in terms of innovative capacity.

Table 1: Comparison of Greece with EU countries on the basis of their innovative capacity

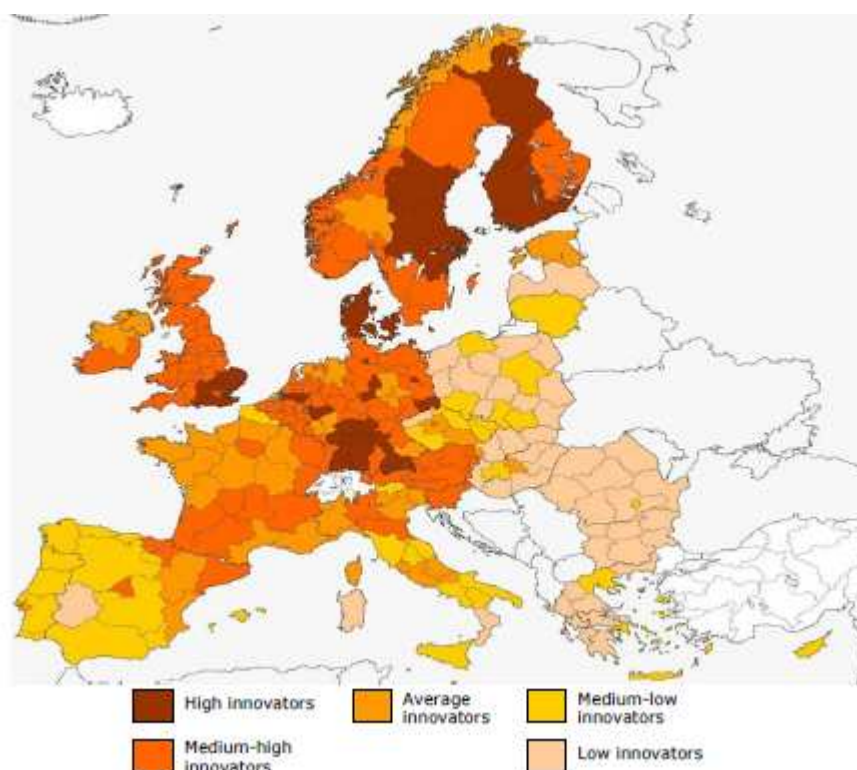


Source: European Innovation Scoreboard 2009

In RCM a relatively small proportion (12%) of firms operate in industries characterized by the OECD as medium - intensive technology. RCM and its capital Thessaloniki appears as "consumer" rather than "producer" of innovation.

Indeed as shown in Table 2, the Region of Central Macedonia is characterized as being of "moderate - low level" of innovation, despite the fact that within its geographical boundaries there is quite a good level of public funding for research. Additionally RCM spending on innovation, excluding research and development, are among the highest of regions of the EU, while the number of SMEs with innovative activities within the enterprise level is quite important.

Table 2: Regions of the EU 27 based on the level of innovation



Source: Regional Innovation Scoreboard 2009, page 3

The Region of Central Macedonia shows a limited performance in the field of innovation, despite the existence of a high concentration of components of a successful local / regional innovation system, such as research centers, universities, business incubators, active business associations and chambers, dynamic and extroverted companies. This reality reinforces and substantiates the meaning of "paradox" already mentioned.

However, while the overall innovation performance of RCM is very low at the EU level, the Region ranks among the top three regions in Greece in terms of innovative performance. Athens and Thessaloniki maintain their top positions because of the ongoing presence of industry and technology-intensive services within their geographical boundaries. Indeed, 2009 data confirm that the strengths of innovation in Central Macedonia are the human resources of higher education research and technology institutions as well as public research and development spending.

2.2. The ability of Thessaloniki for R&TD and innovation: the elements of the Regional Innovation System

The entities that make up the Regional Innovation System, (the local 'triple-helix' of innovation) are:

- (a) The Regional Authority of Central Macedonia and the local level authorities (municipalities)
- (b) Chambers, Business and Professional Associations

- (c) Business and technology parks, business and high tech incubators and the Thessaloniki Innovation Zone
- (d) Universities (among which the largest University in the country), Technology Educational Institutions, as well as private higher education institutes that attract foreign students
- (e) Research Centres, among which the second largest in the country public research centre
- (g) The manufacturing and services sector.

Table 3 presents a simplified version of the SWOT analysis of the Regional Innovation System.

Table 3: SWOT analysis for Thessaloniki and the RCM with reference to the development of innovative activities

Strengths	Opportunities
<ul style="list-style-type: none"> - A critical mass of institutions and initiatives that support innovative activities (business, educational and research institutions) - Significant experience of developing and implementing innovation activities. - High degree of networking of institutions - Private initiatives to create innovation clusters - A significant degree of openness of the local production system - Presence of industries with increased international competitiveness. 	<ul style="list-style-type: none"> - New orientation of ERDF funds and new initiatives at EU level - Creation of new mechanisms for the diffusion of new technologies and know-how from research entities into production. - Easier acceptance of new innovative products from the market. - Gradual homogenization of regional markets - Pressure to export due to financial crisis
Weaknesses	Threats
<ul style="list-style-type: none"> - SMEs have limited capacity to finance innovation activities. - Low level of private sector participation in financing innovation activities. - Fragmentation of relevant activities and lack of coordination at local level. - Insufficient visibility and valorisation of research results. - Introvert orientation of innovation activities - Divergence of the research and the industry worlds regarding their approach towards innovation. 	<ul style="list-style-type: none"> - Bureaucratic obstacles of public initiatives designed to support innovation and entrepreneurship. - Unclear and ever-changing institutional framework (taxation, management of research results, etc.) - Significant reduction of financial capacity because of the economic crisis. - Brain drain

3. Guiding principles for the Thessaloniki Innovation Strategy

3.1. External environment

The environment within which Thessaloniki and RCM should develop their own strategy for innovation to be implemented in the coming years is characterized by the following external factors:

- a. The current economic crisis, which calls for a radical overthrow and replacement of the current public-centred consumer-based model of development, with a model based on the exploitation of comparative advantages of each region, entrepreneurial extroversion and production of products and services with high added value.

- b. The challenges facing the developed world as a whole and which can be summarized in three-fold: environmental degradation, financial instability, demographic decline.
- c. The framework set by the EU strategies which try to respond to current challenges, which centre on the Strategy for Europe 2020 and the adoption of the Innovation Union Flagship Initiative.
- d. The framework set by the EU structural funds for the new programming period 2014 – 2020. This may be viewed as the last major opportunity for the country, region and Thessaloniki, in order to invest in human capital, knowledge and technology. The funding instruments for the new programming period will put great emphasis on human resources, research, innovation, extroversion and technology. During 2012-2013 programming preparations at country and regional level will intensify. Although it is premature to make quantitative estimates, it is safe to foresee that even if the RCM projected budget decreases in relation to the current programming period (2007-2013), the funds ultimately made available for research / innovation / technology / human resources development are likely to be increased significantly and therefore are bound to play a key role in regional development through innovation.

3.2. Principles for strategic innovation in Thessaloniki

Based on the above analysis, the Thessaloniki Innovation Strategy is proposed to be based on the following principles:

- Excellence and extroversion: the pursuit of excellence and targeting exports of products and services are the cornerstones of any initiative and investment.
- Exploitation of comparative advantages (smart specialization): moving from horizontal initiatives and investments towards initiatives and investments that support selected developmental options.
- Open city: the Metropolitan character of the city, its connections with the Greek and Balkan hinterland and the Black Sea region, indicates the way for the opening of the city at all levels (cultural, business, social)
- Exploiting the capabilities of human resources and the high concentration of research and technology in academic and research centres.

3.3. The central aim of the strategy: the pursuit of wide range multiplying results

Central aim of the Thessaloniki Innovation Strategy is to achieve high growth rates, followed by employment growth, based on knowledge for the production of high added value products and services. Specific objectives of this central aim are:

- Take advantage of the comparative advantages of the city and region
- Establishing Thessaloniki as an international centre of knowledge in Southeast Europe.
- Creation of an enabling environment for attracting knowledge intensive and high value added investment and
- The reversal of the phenomenon of brain drain (internal: to Attica and external: outside of Greece)

Additionally the objective of increasing growth and employment should be tied with an objective to achieve an increase in the specific indicators measured by the annual Innovation Union Scoreboard, especially those in which RCM is lagging significantly, i.e. venture capital as% of GDP, R & D firms as% of GDP, employment in knowledge-intensive activities (manufacturing and services) as% of total employment, exports of medium and high technology as a % of total exports. For the effective implementation of the Innovation Strategy, any developmental initiative taken up by institutions in the city, as well as any public investment must incorporate the following key directions:

- Leverage private investment: any public funded initiative should seek to leverage private investment and be able to demonstrate multiplying results.
- Assessment and continuous measurement of impact: the impact of the implementation of institutional initiatives and public investment should be clear and be measured as contributing to the growth rate of innovation, while contribution to local development and employment must be quantified.
- Sustainability of results: the viability of a project or initiative after the end of public financing should be the main selection criterion. For this reason priority should be given to initiatives and projects which have secured their continuation beyond the phase of initial public investment. In this context it is necessary to develop an appropriate system of incentives, and a monitoring system, which can ensure the sustainability of innovation related projects.
- Simplify procedures: any procedure, requirement and regulation that does not directly contribute to the objectives of the Innovation Strategy should be reviewed and - where appropriate – be amended and / or removed. The administration should encourage "good bureaucracy" (which ensures the achievement of developmental objectives) and fight against "bad bureaucracy" (which serves no purpose and hinders innovation and development).

3.4. Priority areas for development

To achieve these objectives the Thessaloniki Innovation Strategy needs to focus on specific sectors and areas of Thessaloniki and the RCM that present a comparative advantage or have the physical infrastructure, human resources and critical mass of companies, which can present a competitive edge (Smart Specialization principle). An initial list of those sectors/ areas is:

- A. Agriculture / Nutrition: the city is the centre of a major agricultural region, whose traditional crops are declining and which should be re-oriented towards organic farming, functional foods (functional or customized food) and foods with high added value.
- B. Manufacturing: In the last decade, the industrial landscape of Thessaloniki has undergone major changes. In the period 1997-2005, the number of manufacturing companies decreased by 42.7%, employment by 17.8% and value added by 3.1%. In contrast, output increased by 17.9% and sales by 18.4% (National Statics Agency, at constant prices 2005). At the same time interest in knowledge-intensive industrial activity increased, as it became clear that knowledge provides a competitive advantage that can balance de-industrialization.
- C. Tourism: the city can emerge as an international tourist destination by exploiting its geographical position, its history (and especially its multinational character), its

proximity to areas ideal for summer and winter tourism, and global areas of touristic interest such as Olympus, Athos, Vergina etc.

- D. Information and Communications Technology (ICT):** the city and its surrounding area have a high level of human power, working either in local universities and research centres or the manufacturing sector. Information and Communication Technologies can become a significant part of the dynamic economy of the region as they offer an ideal case of production and supply of high skills and value added, which does not depend significantly on the location and the existence of major physical infrastructure.
- E. Centre for transport and logistics:** the location of Thessaloniki and its history as a port of inter-territorial scope, suggests prioritizing the development of intermodal freight transport and logistics services.
- F. Education:** Thessaloniki is a centre of higher education not only for Greece but for the wider region. The development of education, especially higher, driven by excellence, evaluation, merit, quality and rationalization will have multiplying effects in terms of overall improvement of the knowledge level of business and society.
- G. Health:** The rationalization the country's health system, which is imperative because of the intensity of the current economic crisis, will lead to release of health care resources of high quality. These resources combined with existing major public and private infrastructure and the geographical location of the city could offer the ground for the creation of a high added value export oriented health care service sector which can also be coupled with high added value tourist services.

3.5. Guidelines for public sector policy

Within the framework of the new EU strategies as expressed by Europe 2020, the Innovation Union and the objectives defined above, the "new role" of the public sector emerges as a key to the success of the Thessaloniki Innovation Strategy. The basic directions for the central government, the Region Authority of Central Macedonia, and the underlying local government institutions should be:

- Research and innovation policy should become an organic part of the policy to enhance competitiveness at the local level.
- The Regional Authority should be able to define an independent regional research and innovation strategy, taking into account national priorities as well as local conditions, needs and advantages.
- The regional strategy should have medium-and long-term targets that are well-elaborated with the participation of all stakeholders and that include a mechanism for measuring performance and are regularly reviewed to ensure efficiency.
- Development of new institutional arrangements which fight bureaucracy, encourage development of entrepreneurship and leverage private capital for investment should be a top priority for the local economic and productive system.
- Encourage innovation in public procurement, which can be combined with radical modernization of the public procurement system (i.e, reducing bureaucracy, using the 2 stages option in procurement, use of e-procurement, use of framework contracts, creating registries of suppliers, simplifying the institutional framework in order to avoid judicial congestion etc)

4. The proposal: Institutional arrangements as facilitators of innovation multiplying effects.

4.1. Institutional arrangements for implementing the Thessaloniki Innovation Strategy

4.1.1. A Permanent Innovation Forum: the establishment of a permanent forum for innovation will provide a solid basis for discussion, consultation, collective decision of the basic directions of innovation strategy and will collectively address regional problems of development and innovation in the region. The main functions of the proposed Forum are:

- **Advisory role:** the forum offers advice on the general directions and priorities of the regional innovation strategy, on major RTD and Innovation projects, on the strategy, the preparation and the implementation of RTD programs and on the strategic direction of the ERDF investments in the region.
- **Analysis and evaluation:** the Forum analyses and evaluates the results of innovation activities carried out in Thessaloniki and offers an estimation of future trends and priorities.

4.1.2. Regional Innovation Council with the participation of all innovation

stakeholders: a key activity of the proposed Council will be to participate at a strategic level to the development of the regional programming for ERDF funds to be streamlined to RTD and Innovation.

4.1.3. Creating regional financial mechanisms for innovation: Following the example of many European regions that have developed their own innovation financing mechanisms Thessaloniki should investigate the development of its own financial infrastructure to support innovation. On top of the creation of a regional seed capital fund to support spin-offs and innovative small businesses, other types of funding mechanisms can be created with the cooperation of regional authorities and entrepreneurship support institutions. For example:

- **Regional Network of business angels:** the network, possibly under the supervision of the Federation of Industries of Northern Greece (FING) and the Commerce and Industry Chamber of Thessaloniki (TCCI) or other bodies supporting entrepreneurship in the region, would be a network of private investors that provide capital to new technology start-ups. The supervising body would be the point of contact between individuals seeking investment opportunities and entrepreneurs who need funding.
- **Creation of a Regional Innovation Development Fund:** the main resources of the Fund could come from the European Investment Fund (EIF) or the European Investment Bank (EIB). Important initiatives that could be used are: a) JESSICA (Joint European Support for Sustainable Investment in City Areas). The initiative allows financing of urban development projects, using a combination of grants from the Operational Programmes of Structural Funds and loans, or other appropriate funding bodies, and b) the JEREMIE initiative (Joint European Resources for Micro to Medium Enterprises), which enhances SME access to finance.

4.1.4. Measuring the impact of innovation activities in local development: the measurement and evaluation of the impact of the innovation initiatives and programs is proposed to be done through a periodic study of a set of innovation performance indicators. A valid system and a specific method for the measurement of innovation should be created in

order to facilitate the development of strategic directions for innovation in RCM and the documentation of their impact on development. Additionally it is proposed to create an effective system of ongoing evaluation of the impact of projects and results of innovation in local development, based on specific criteria and indicators. The assessment will provide useful information to the Regional Council, and by extension to the Forum, and will facilitate the selection of appropriate actions.

4.2. Recommended actions: ecosystems, innovation platforms for multiplying effects

4.2.1. Brand name: Thessaloniki Innovation

Both the regional economic system and the central government are trying to transform Thessaloniki to the "City of Innovation" for the last 20 years. The number of relevant innovation initiatives that have been implemented over those years, have now created the conditions for this to become a reality. A critical mass of resources (research institutions, intermediaries and business orientation towards innovation), and interaction between stakeholders (businesses, researchers, public authorities and indirectly other stakeholders), bring closer the local demand side for innovation with that of the local - and inter-territorial - offer. Networks of research units in various technological fields, which gradually appear in Thessaloniki, is expected within the coming years to contribute to the enhancement of the research potential of the area. Moreover, the practical application of research results, namely the adoption of innovation by regional companies through joint ventures, will be the main tool to promote the local dynamics for the adoption of innovation activities. Therefore, an important element in the development strategy of the brand name of Thessaloniki in the field of innovation should be the transformation from consumer to producer of innovation. This transformation has two pre-requisites: (a) the production of new knowledge from research institutions in the region, and (b) translating this new knowledge into products and services with high added value, which is measured in the form of increased turnover of innovative products and services.

4.2.2. Clusters of innovation: types, bottom-up formation, business model viability.

As early as 2003 the EU recognized the need to strengthen its global competitive position. To do this the EU must concentrate its forces in developing regional production specialization and clusters guided by research that has resulted from global clusters of excellence. The spatial concentration of manufacturing and support services and infrastructure in Thessaloniki and Central Macedonia, form the framework for development of cooperation, knowledge acquisition and transfer of technology, which are the prerequisites for the development of innovative manufacturing activity oriented towards high quality and high added value products. There are six potentially viable clusters in Thessaloniki. These are (in parentheses the number of firms that can potentially participate in each of these):

1. Food Sector: Food and Beverage Companies (90 units over 10 employees each)
2. Clothing and Fashion: Business textile and clothing (135 units approximately)
3. Chemical and Energy sector: Petrochemical, chemical, plastics (65 units approximately)
4. Building materials and household equipment: Non-metallic minerals, wood and furniture (90 units approximately)

5. Metal Sector: Metallurgy, metal products, machinery and equipment (100 units approximately)
6. Electronics, electrical appliances and ICT: Electrical appliances, computers, communications and IT (40 units approximately).

In addition to these six clusters, the creation of a seventh “horizontal” cluster dedicated to “green technology” has been proposed. This will operate within each of these six clusters, and will be dedicated to developing green products, waste management, recycling, using green materials with renewable energy technologies, etc.

The six clusters described above offer areas of consensus on achieving 'triple helix' partnerships and creating a knowledge environment. Requirements for this to succeed are:

- a shift from the idea of cooperation per project to the logic of long-term institutional cooperation within each cluster, and
- each cluster to collectively identify its technological needs and priorities, as well its own technological platform of reference.

4.2.3. Targeted platforms

By the term "targeted platforms" we mean a collaborative approach at a regional level, which examines and suggests concrete approaches and pathways for the development and implementation of selected technologies. The main precondition for the effective functioning of a targeted platform technology is finding common ground between the parties involved in its activities, which create a common vision and a common methodology for the development of a technology or multiple technologies, which ultimately form the thematic area which focuses on the technological platform. The following "technological platforms" are proposed: a) broadband networks, b) energy c) materials d) food technology, and e) logistics. With this proposal, industry, regional authorities, local research community users of technologies, and financial institutions will utilize a comprehensive, integrated strategic research agenda, to create a realistic vision of development for Thessaloniki and the region which is based on the local comparative advantages.

4.2.4. Network of universities and research institutes with local businesses

The need for bringing together supply and demand of research results and innovation in Thessaloniki has led to a re-assessment of interactions and links between the productive sector and academic/research institutions. The existing "Digital Research Centre" of Aristotle University of Thessaloniki can play an intermediary role between production and academia. The "Digital Research Center" aspires to facilitate the access of public and private sector to results of research projects and contribute to wider dissemination and use of products and services based on academic research. It also provides integrated support for both research laboratories that wish to promote the products of their research, and businesses / organizations that want to use them.

4.2.5. Platform for start-ups: massive creation of new knowledge-intensive firms

Taking into account that the creation of new knowledge-intensive businesses is a modern strategy for strengthening the competitiveness of an industry and create new prospects for growth, the creation of start-ups can be a part of the solution for ending the current crisis. A mechanism for transferring research results from local research centres to the market by

creating start-ups is proposed. Structures and institutions such as the existing incubators, the Technology Park, the “open coffee” initiative and individuals can be utilized for this purpose.

4.2.6. Platform for promotion of innovation in the international market

The integration of local firms in international markets and global production and distribution networks requires the transformation of local business clusters in innovative clusters. Especially for companies in Thessaloniki that are classified as «technology modifiers» and «technology adopters», with some experience of developing new products for the international market, it is crucial to create such complex patterns of cooperation. Given the imbalance of supply and demand of research and innovation in the region, it is appropriate to create a platform to promote product innovation in the international market. The aim of this platform would be to promote innovative products from Thessaloniki to the international market. This will eventually improve the international technological cooperation between companies and research centres in Thessaloniki and RCM. In this context, international networking and international technical cooperation with organizations from abroad should aim not only to reach new markets, but mainly to improve the quality of the local products. An important result of international networking and promotion of innovation in the international market could be the international promotion of Thessaloniki as a location for companies from abroad to set up joint investment schemes in the region, to transfer best practices and to market innovative product development. Therefore, the platform for promotion of innovation in the international market can be an important tool for the development of Thessaloniki and the surrounding area so that the RCM eventually becomes internationally competitive.

5. Concluding remarks

The absence of a clear and structured framework for strengthening the capacity of Thessaloniki and RCM to innovate is a key limiting factor for growth and successful dissemination and implementation of technologies, which will enhance the competitiveness of local enterprises. This fact is coupled with the lack of continuity and coordination of the different regional policies and programs that support innovation. It is therefore clear that Thessaloniki should capitalize on the experience of past years and achieve substantial growth through the targeted exploitation of tangible and intangible infrastructure already existing in the area. It is therefore today, during the peak of the current period of economic crisis, that the need of the transition to the knowledge economy is more urgent and important than ever.

References

- 1 An Innovation Strategy for Thessaloniki (in Greek), Anatoliki S.A. Deliverable of the Asviloc+ project Thessaloniki, January 2012.
- 2 European Innovation Scoreboard 2009, Comparative analysis of innovation performance.
- 3 Regional Innovation Scoreboard (RIS) 2009
- 4 Europe 2020: A European strategy for smart, sustainable and inclusive growth, Brussels, 3.3.2010, COM(2010) 2020
- 5 Europe 2020 Flagship Initiative Innovation Union, SEC(2010) 1161 Brussels 2011.
- 6 Conference proceedings: Industry 2020 (in Greek) FING, EURO BANK EFG, Thessaloniki February 2010