

RIS3 Regional Assessment: Attica

A report to the European Commission, Directorate General for Regional Policy, Unit I3 - Greece & Cyprus

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1. Executive summary: Overall conclusions and recommendations

Smart specialisation priorities and the innovation system

The largest Greek region, accounting for a third of the Greek population and over 40% of national GDP, Attica is a metropolitan region with a dominant service sector and is the major Greek export hub. Regional competitiveness has been eroded due to the lack of a development strategy to tackle increasing economic, social and environmental problems. Indeed, despite a relatively strong GDP growth rate until 2008, average income levels were still only marginally above the EU27 regional average and have fallen back since. Attica is characteristic of the structurally unsound Greek growth model based on domestic consumption, inefficient and costly public services and insufficient investment into knowledge intensive businesses.

Overall, Attica is under-performing in terms of innovation performance (even allowing for 'hidden innovation' in service or other less technology intensive sectors) and this has a clear impact on the potential to grow a more diversified and robust economy supporting employment and higher income levels. The Attica region is weakly specialised and, notably, lacks specialisation in high-tech manufacturing and knowledge intensive service sectors. The main specialisation is in pharmaceuticals, financial services, transportation & logistics. The specialisation data does allow for some optimism with respect to the development of the ICT and creative industries sectors with a possibility to link 'media' sectors to the strong potential in education and latent design capacity. Similarly, there appears to be a potential for growing knowledge intensive business services sector including architectural and engineering activities, technical consultancy and financial services.

The expert team **recommends** that the RIS3 should focus on a few key sectors that have an integrating role for the regional economy: transport systems (including maritime and urban), knowledge intensive business services; (green) ICT as a source of new firms and to encourage efficiency improvements in the private and public sectors. The RIS3 should also focus on how 'eco-innovation' could contribute to both boosting business potential and 'greening' the urban environment to make the metropolitan area more environmentally sustainable.

Governance and stakeholder involvement

The region of Attica is the most important Greek innovation hub with a concentration of higher education and research institutes, business activity and financial institutions. However, it suffers from fragmentation in terms of stakeholder involvement and collaborative participation in the design of research and innovation policies. A major challenge for the RIS3 will be to define a process ensuring the active participation of a large number of stakeholders. The RIS3 process started in October 2012, when the regional authority created a RIS3 network and organised a kick-off meeting with the expert team. It is set to conclude by September 2013. However, limited business involvement and identification of market-led opportunities means that more effort is needed to support an entrepreneurial discovery process.

The experts **recommend** that the RIS3 strategy should foster a re-organisation of the decision making process, the enforcement of the role of key stakeholders and the re-allocation of tasks among them. The regional authorities should define a structure of decision making and participation in the RIS3 which will assure coordination between regional, national authorities and regional stakeholders, disseminate widely the RIS3 bottom up approach in order to secure the participation of a large number of stakeholders, and sustain strong ties between the regional and the GSRT strategies.

Innovation policy

The regional operational programme (ROP) 2007-2013 was the largest in Greece both in terms of total funds and the funding allocated to competitiveness, innovation, and

digital convergence (€724m). However, the central management of research and innovation funds by the GSRT meant that while Attica received close to 50% of funds allocated, the support is concentrated on a few sectors (ICT and health) and on a limited number of larger projects.

The ATTICA 2020 strategy document for the 2014-2020 programming period aims to concentrate on “*deepening, broadening and strengthening existing and developing new sustainable competitive advantages in all sectors of the regional economy*”, with an initial milestone in 2020 but with an explicit aim to extend the results of the development process after 2020. The ATTICA 2020+ strategy sets out to achieve a complex adaptation of the Attica economy over the period 2014-2020 in five steps. Broadly speaking, the expert welcomes the longer-term perspective of the strategy and the identification of different sectoral target groups for each step.

The expert team **recommends** that the Attica RIS3 focuses on a small number of larger projects that address both the complexity of the innovation system and ensure the visibility of results; to carefully select innovation actions and initiatives with transparent criteria including: (1) sustainability in the long run and mainly after the initial support period; (2) creation of capabilities and know how in the region; (3) offering integrated solutions to technology-production-market-funding; (4) leading to high leverage of private investments; (5) involving a large number of beneficiaries through innovation consortia or platforms; and (6) contribution to development goals of competitiveness, employment, and companies creation.

Clusters policy

While there are no world-class clusters in Attica, there are a number of mature clusters including those supported by the Corallia cluster initiative (Microelectronics, Space Technologies and Applications Cluster, Innovative Gaming Technologies) or the Life Sciences Cluster (HBio). There are also a number of dynamic organic clusters (pharmaceuticals, telecom/ICT, chemical products, entertainment, processed food, tourism & hospitality) that could be further developed through appropriate policies mobilising the potential cluster actors.

Through the Attica 2020+ strategy, the region aims at “the creation of trans-sectoral, trans-institutional and trans-business networks (clusters), with the aim to improve exports orientation and the integration, production and promotion of innovation”. Since the regional authorities have no previous experience with managing **cluster policies**, it is **recommended** to replicate a competitive technology industrial cluster approach to facilitate the rapid spread of good practice (e.g. Corallia Clusters Initiative). The region should also consider the creation of a regional **cluster secretariat** or support one at national level.

ICT policy, broadband, eServices

In addition to incorporating ICT as a core topic in the RIS3 strategy, the region should strengthen support on ICT for the most crucial sectors of the regional economy i.e. transportation, energy, health services, manufacturing, tourism, food & beverages, and education. The region should investigate viable policy tools to provide incentives for new IT-enhanced products and services from local enterprises, and also award funds for the fast transformation of traditional businesses using ICT tools.

Broadband expansion, gradually aiming at ‘fibre to the home’, is a strategic step for improving the competitiveness of the whole economy and improving the quality of life. Education should be supported to both improve the average digital skills of the workforce and also direct the research community towards innovative products and services. ICT services can help transform Attica into a business-friendly region and an attractive hub for SE Europe. The creation of conditions enabling a substantial private sector role in assuming the risk of the planned ICT investments should be ensured.

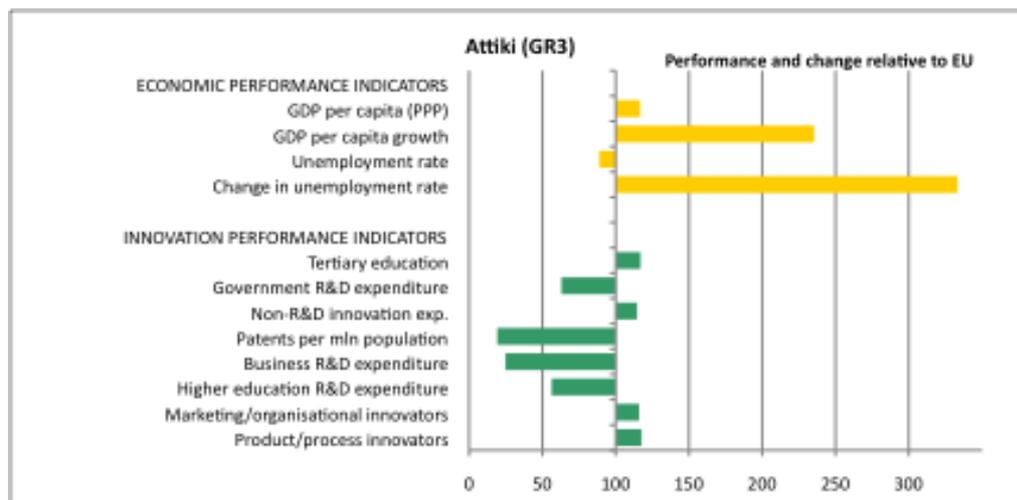
2. Regional Innovation Performance and potential

2.1 Regional profile and specialisation

The region of Attica, which includes the capital Athens, is the largest Greek region accounting for a third of the Greek population and over 40% of national GDP. It is a metropolitan area with a dominant service sector and acts as the major Greek export hub. However, the region is faced by a series of significant development problems, which were present even before the crisis hit employment levels hard. Nioras (2012) notes that since the Olympics games, the competitiveness of Attica has gradually eroded, due to the lack of a development strategy, and with increasing economic, social and environmental problems. The sustainability of regional economic development is seriously threatened due to the loss of natural land, urban sprawl, high levels of air, water and land pollution, coastal encroachment, water mismanagement, a waste crisis and the lack of urban green¹.

Hence, despite a relatively strong growth rate of GDP per capita until the recent crisis, the average income levels were still only marginally above the EU27 regional average and have fallen back due to the crisis. In short, Attica encapsulates the structurally unsound basis of the previous Greek growth model dependent on domestic demand (consumption), dragged down by inefficient and costly public services and with insufficient investment into more knowledge intensive productive business activities.

Figure 1 Summary benchmark of regional innovation performance



Source: Regional Innovation Monitor. 2011 data, or latest available year, trends since 2000.

Similarly, while Attica dominates the Greek innovation system, its relative performance and trends with respect to the EU27 average is still below par (see Figure 1). In particular, business R&D expenditure (as a share of GDP) remains well below the EU27 average; however, the region performs well on non-R&D innovation (as a % of all SMEs, and expenditure as a share of turnover). This is consistent with an industrial structure that is heavily dependent on the service sector (which tends to have a lower technological R&D intensity).

The 2011 Regional Innovation Scoreboard places Attica in a group of regions classified as innovation followers. In southern Europe, other regions in this group include Madrid and Lazio (Rome), whilst, in contrast, other metropolitan regions like Lisbon

¹ Presentation ‘Planning for sustainability in Attica’, Theodota Nantsou, Conservation Policy Coordinator, WWF Greece

and Prague are amongst the innovation leaders group. Compared to these four other metropolitan regions (see Appendix G), Attica performs particularly poorly on innovative SMEs collaborating with each other, share of employment in high manufacturing and knowledge intensive services, and public R&D expenditures as a share of GDP. On the other hand, it performs above Prague and similarly to Lazio and Madrid for the share of turnover generated by sales of new products. The data suggests that the region of Attica has an unexploited potential to increase innovation intensity by supporting regional firms to shift up value chains towards more technologically intensive products, notably through fostering greater collaborative projects.

Concerning scientific specialisation, it is difficult to distinguish between Attica and the overall specialisation profile of Greece, given the weight of the regionally based organisations in the national research system. However, in terms of citation impact, Attica based research organisations perform above or close to the world average in agricultural sciences (NTUA, AUA), medical and health sciences (BSRC Fleming, AUA, UOA), engineering (NCSR Demokritos, AUA), natural sciences (BSRC Fleming, NCSR Demokritos, Pasteur, UOA) and social science (NTUA)².

In terms of business specialisation, Nioras (2012) notes that the region is a hub for services and apart from trade other important sectors are the financial services, transport and ICT, health and social services, real estate, recreation, research and business services. The manufacturing sector is dominated by medium to low technology sectors, such as the food industry, metal products, chemicals and basic pharmaceuticals, textiles and shipbuilding where productivity gains are based mainly on the acquisition of new technology and the substitution of labour with capital. At the same time dynamic and growing sectors such as the ICT and electronics are only recently being integrated in international value chains.

However, available data (Stockholm School of Economics, 2011, see Appendix F) on industrial specialisation suggests that the region of Attica is weakly specialised in comparison to other European regions and notably, in high-tech manufacturing and knowledge intensive service sectors. The main specialisation is in maritime transport, transportation and logistics; the three sectors accounted for over 34,000 jobs. Sea and coastal water transport is the sector, Attica is most specialised in but the region is only ranked 10th in Europe. Closely related to the transport cluster is the tourism sector with activities of travel agencies and tour operators; tourist assistance activities figuring in the regional specialisation ranking (12,242 employees) but again only ranked 10th in Europe.

The over dominant position of ‘consumption’ activities in the region is visible in the specialisation data. The ‘industry’ in which Attica is the second most specialised is activities of households as employers of domestic staff (a startling 48,665 employees) while retail trade, sale and maintenance of motorcycles, repair of personal and household goods and other retail sale (98,653 employees) all figure highly. Similarly, the weight of the public sector is visible through ‘provision of services to the community as a whole’ (63,241).

The specialisation data does allow for some optimism with respect to the development of the creative industries sector with reproduction of recorded media, motion picture and video activities, printing and service activities related to printing. These three ‘media’ related fields could be related to the strong potential in adult and other education and in manufacture of jewellery and related articles (as a proxy for design).

Similarly, there appears to be a potential for a knowledge intensive business services (KIBS) sector development with research and experimental development on social sciences and humanities (1,440); Architectural and engineering activities and related

² See: <http://metrics.ekt.gr/en/reporto2/index> for more details and analysis. Greek Scientific Publications 1996-2010: Bibliometric analysis of Greek publications in international scientific journals”.

technical consultancy both being significant sources of employment; and financial services (monetary intermediation, 46,253 employees). A related sector is maintenance and repair of office, accounting and computing machinery (3,005).

Figure 2: SWOT of regional innovation potential and specialisation

Strengths	Weaknesses
<ul style="list-style-type: none"> • Improved quality of urban infrastructure post 2004 Olympics further enhanced by on-going major infrastructure project such as extension of Athens Metro, etc. • Significant concentration of national higher education and public research institutes. • Host to majority of business headquarters and private R&D facilities. • Well-connected (by air and sea) international metropolis acting as a hub between Europe and Middle East, etc. • Attica is specialised notably in (maritime) transport sector; other focal points include tourism and business services. 	<ul style="list-style-type: none"> • Manufacturing sector ‘hollowed’ out and weak development of hi-tech manufacturing. • Low rates of employment in knowledge intensive services contrasting with over-blown share of ‘consumption’ related service sectors in economy • Limited interaction between public/higher education research and business sectors. • Heavily polluted urban environment and congested (road) transport networks.
Opportunities	Threats
<ul style="list-style-type: none"> • Good potential for switch to renewable energy resources (photovoltaic, etc) and reduce energy consumption in housing and industrial sectors. • Unexploited potential to develop alternative transport modes (car sharing, greener public transport, cycling, etc). • Future requirements for improved waste management, etc. provide opportunity for job creation in recycling, re-use and ‘urban mining’. • Potential for further expansion of creative industries sector. 	<ul style="list-style-type: none"> • On-going urban sprawl and ageing stock of buildings and urban infrastructure. • Reduced levels of Structural Fund support in coming period and lack of regional agencies able to manage innovation and knowledge type measures. • Increasing taxation and costs of operating in Greece may lead to further off-shoring.

Finally, two industrial sectors do figure in the top 20: manufacture of refined petroleum products (4,078) and the manufacture of pharmaceuticals, medicinal chemicals and botanical products (12,036). However, in both cases Attica is ranked lowly (15th and 16th respectively) in Europe, suggesting that the region is not a dominant player in European value chains.

Overall, Attica appears to be under-performing in terms of innovation performance (even allowing for ‘hidden innovation’ in service or other less technology intensive sectors) and this is clearly impacting on the potential to grow and develop a more diversified and robust economy supporting employment and higher income levels. Nioras (2012) identified three challenges for the regional innovation policy: 1) expand cluster policies to cover new dynamic sectors and technologies (building on the successful Corallia model); 2) strengthen knowledge intensive services and their linkage with other more dynamic sectors, and 3) balance regional development by supporting the manufacturing base.

We concur broadly with these conclusions and **recommend** that the regional RIS3 strategy should be built around a few key sectors that play an integrating role for the regional economy: transport systems (including maritime and urban), knowledge intensive business services; (green) ICT as both a source of new firms but also as a key enabling technology for efficiency improvements in the private and public sectors. Other sector with potential includes the creative industries.

However, we also **recommend** that there is a need for a greater focus on how ‘eco-innovation’ could contribute to both boosting business potential and ‘greening’ the

urban environment to make the city more environmentally sustainable. A number of recent reports on Greece point to the large potential in emerging sectors such as waste management and recycling. Other opportunities such as urban mining³ or the introduction of new business models for greening transport systems offer significant potential. In short, the negative environmental situation in Attica can be viewed as a strategic opportunity for the region to become a test-bed for new eco-innovative solutions to green the urban environment and protect and derive value from the remaining fragile natural eco-systems in the region.

Box 1 Identification of Technology Based Opportunities in Attica, MET3 project

MET3 aims to develop a network for integrated trans-regional cooperation between knowledge & technology providers, innovation intermediaries and users and thus facilitate industrial and commercial exploitation of research results by taking into account technology and other “soft” aspects in the process. Project partners jointly developed exploitation plans for selected technologies with market potential and proactively sought to promote them to private and public sector. This effort was complemented by a series of experience exchange and capacity building events to enhance peer learning and development of common strategies. Project partners have assessed R&D results identified at the RTO providers of their regions and selected the ones that present promising business opportunities. For the region of Attica the following Technology Based Opportunities, i.e. ideas for commercialisation of “research based” products & services have been identified and analysed:

- *Biotechnology and Life sciences:* Block copolymer based nanoparticles for drug delivery and bioimaging; Anti-aging properties of Greek olive leaf extracts (Koroneiki variety) and oleuropein via retaining proteasome function on human fibroblasts; Use of Lecithin-based microemulsions in a local weight loss product.; Use of Lecithin-based microemulsions in cosmetic depilatory product; Development of new methodologies for the production of new bioactive high added value products from Spirulina (Arthrospira) species; Biological markers as predictors of response in the treatment of cancer patients with cross-linking alkylating agents; Development of an oral drug against canine leishmaniasis (kala-azar)
- *Industry:* Applied Spectroscopy Laboratory – Services; Hydrogen Microsensor based on NiO; Hybrid polymer/cobalt chloride humidity sensors based on optical diffraction

2.2 The strengths and weaknesses of the regional innovation system

Since the 2011 Kallikratis reform, the responsibility for policy-making in the region of Attica falls on the Regional Governor and a Regional Council⁴, popularly elected every 5 years. In the current Structural Funds period, the design, implementation and monitoring of the Regional Operational Programme (ROP) measures is the responsibility of the Intermediate Managing Authority (IMA) of Attica. The Regional Development Fund of Attica manages project funding and financial control of the Attica ROP, including measures related to RTDI. During 2007-2013, the IMA of the region of Attica ceded part of the ROP budget to Sectoral Programmes (e.g. Competitiveness and Entrepreneurship, Digital Convergence, etc), under the precondition that an equivalent amount of money should return to regional organisations through those programmes.

³ Urban mining emphasizes the extraction of obsolete resources situated in buildings, infrastructure and landfills. Over time, massive amounts of material resources have been extracted for buildings and infrastructure development. The resulting accumulation - so-called urban stocks - could be important resource reservoirs in the future. In the case of particular metals, for example copper or precious metals, stocks in the built environment are already of comparable size to –virginl reserves. See: EIO (2011) Resource-efficient construction for more details.

⁴ <http://www.attiki.gov.gr/>

As noted above, Attica, like many capital city regions, has an above average innovation capacity, compared to other regions in the country. However, most of the organisations reporting R&D expenditure and activity in the region do not necessarily have a specific regional mission but rather a national one. Attica, therefore, hosts a range of organisations that while they offer significant RTDI potential, they do not support strongly regional research or innovation priorities and regional development projects.

The concentration of public and higher education R&D activities in Attica is striking on human resources for science and technology (HRST), with Attica accounting for 47% (or 903,000 people) of the total for Greece in 2011 (Eurostat). The figures are more discovering on the HSRT in high-tech manufacturing and knowledge intensive services, where they rise to 76.9% and 71.4% respectively in 2011 (Eurostat).

The main players in the higher education research sector in terms of research activities are: the National Technical University of Athens (NTUA), the National & Kapodistrian University of Athens (UOA), the Agricultural University of Athens (AUA), the Athens the University of Economics and Business, the University of Piraeus, the Panteion University of Social and Political Sciences, the Harokopio University of Athens, the Athens School of Fine Arts, the Technological Educational Institute of Athens and the Technological Educational Institute of Piraeus. In terms of research centres: the Research and Innovation Centre Athena, the National Observatory of Athens, the National Hellenic Research Foundation, the National Centre of Scientific Research Demokritos, the Hellenic Centre for Marine Research, the National Centre for Social Research, the Greek Atomic Energy Commission, the Hellenic Pasteur Institute and the Biomedical Sciences Research Centre "Alexander Fleming".

From the private sector side, various multinational firms have established R&D activities in Attica, such Nokia Siemens Networks and Microsoft⁵, while the majority of the firms in the three main clusters supported by Corallia are also located in Attica⁶.

In the financial services sector, a similar concentration of potential is present, with all but two of the 18 member organisations of the Hellenic Venture Capital Association located in the region of Attica⁷. However, the use of risk capital as a financing source for SMEs is negligible, with sub-average EU performance and only five investments recorded in 2011 (according to the EVCA) for a value of just below €10m⁸.

Overall, the region innovation system has significant capacity, however, the relatively low to weak performance of each of the constituent elements and the difficulty for the regional authorities to influence the strategies and missions of the many 'national' public research entities, the higher education institutes and the firms headquartered in the region means that the system is 'institutionally thick' but weakly inter-connected. Over the past decade, efforts made to establish a number of intermediary organisations, such as the BIC of Attica and the technological development companies (e.g. ETAT, CLOTEFI, etc.) have been unsuccessful (Nioras, 2012).

Given the current situation, it is **recommended** for the RIS3 strategy to be delivered through a number of public-private partnerships, which should seek to integrate available skills and knowledge from a range of organisations. The contracting out of programme implementation should be considered (e.g. Corallia as an intermediary body) to avoid creating additional bureaucratic structures within the public sector. On the other hand, there is a need for the development of a regional innovation policy and evaluation unit, properly staffed, within the regional government structures to oversee

⁵ <http://www.investingreece.gov.gr>

⁶ <http://www.corallia.org/en/innovation-clusters.html>

⁷ <http://en.hvca.gr/members/member-list.html>

⁸ http://ec.europa.eu/enterprise/policies/finance/data/enterprise-finance-index/access-to-finance-indicators/venture-capital/index_en.htm

policy design, on-going review and evaluation processes and report to the RIS3 steering group and Regional Council on an annual basis.

3. Stakeholder involvement and governance of research and innovation policies

3.1 Stakeholder involvement in strategy design and implementation

Attica has the highest concentration of higher education, research institutes and businesses in the country. However, there is a lack of stakeholder involvement and collaborative participation in the design of research and innovation policies. So far, the main coordinator for RTDI policies has been the national General Secretariat for Research and Technology (GSRT). The competencies ceded over the years to the GSRT have overshadowed the role of the regional authorities and the regional stakeholders.

In the current and past programming periods, business community and higher education and research sector representatives gave input to the consultation phase of the ROP, but had limited influence on strategies formulated by the central government agencies. Regional actors have led on only a few initiatives such as the Lavrion Technological and Cultural Park (LTCP) and the Athens Innovation Centre (Corallia). However, post-Kallikratis, the elected Regional Authority is now responsible for the endorsement of strategy, including innovation and ICT. This creates a number of challenges since the experience of the regional authority in the design of R&I policies is limited. Hence, strong collaboration with the GSRT is crucial, but this time under the precondition that any assistance should be focused on the regional needs and should not jeopardise the strategy's bottom-up character.

A major challenge for RIS3 is a structured and active involvement of a large number of stakeholders given the 'thickness' of the innovation system in this large and complex region. To launch such a process, on 20 September, the IMA for Attica invited regional stakeholders (see list in Appendix A) to participate in an expert network to design the RIS3 Strategy. The network brings together 27 organisations from academia (9 members), business community (7), public administration (6), and technology intermediary organisations (5). It is clear, given the low attendance of the business sector at the meeting organised by the IMA on 1 October, that a main challenge for this bottom-up innovation policy planning will be the participation of the private sector.

During the meeting, a number of concerns were expressed, including: (1) the role of the GSRT in the design of the RIS3 strategy, (2) which body will be responsible for strategy implementation, (3) the need for actions to enhance coordination of stakeholders from different sectors and (4) the difficulty in securing the bottom up approach. As noted above, the range of institutions operating within of the region is a barrier to collaboration since many do not really seem to know each other. This will hinder the definition of a well-focused and balanced strategy.

While the RIS3 process was only at its inception in October 2012, the region had elaborated a detailed schedule, up to September 2013, for designing the strategy and the 2014-2020 ROP. Although the RIS3 network includes participants from a range of stakeholders, the rules of participation and decision-making processes have not been defined. The documents made available do not suggest that there is enough account taken of the need to involve the business sector and foster an "entrepreneurial process of discovery (or, in other words, identify demand or market driven opportunities). The decision to keep the RIS3 process under the strict control of the public authorities, without transferring sufficient power to a RIS3 Steering Committee to formulate the strategy, risks to be a major bottleneck to an effective strategy design.

Hence, we **recommend** that the RIS3 strategy should foster a bottom-up participatory decision making process, reinforcing the role of key stakeholders and the allocation of tasks among them. The regional policy makers should:

- define a decision making structure and participatory process which will assure coordination between regional, national authorities and regional stakeholders,
- disseminate widely the RIS3 bottom up approach in order to secure the participation of a large number of stakeholders,
- hold and sustain strong ties between the regional strategy and the strategy of GSRT, given that Attica is the largest innovation region in the country.

3.2 Multi-level governance and synergies between policies and funds

The fact that Attica host the central government’s policy making departments, a large share of national research and technology organisations and business activities allied to the limited involvement of regional authorities in the design of the previous ROPs (2000-2006 and 2007-2013) has made it hard to set demarcation lines between the national and regional dimensions. In general, priorities included in the previous Attica ROPs reflected national rather than regional priorities. Support for RTDI has been delivered through the national OP (and most measures are a horizontal character) and co-financed by the Structural Funds in 2007-13 using funding taken from the ROP.

Concerning RIS3 and the priorities of the elected regional authority, the information we dispose on multi-level governance and synergies between policies is extremely limited, and is sourced from the meeting with stakeholders. Stakeholders underlined the need for regional research and innovation policies to take account of the range of issues arising from the crisis: unemployment, financial health of firms, entrepreneurship and upgrading of skills.

The questions of chapter 6 of the assessment grid: “synergies between different policies and funding sources”, “priority-setting complementary to national-level priorities”, “is the strategy based on inter-departmental/inter-ministerial/inter-agency coordination”, “does the strategy attempt to produce synergies between different European, national and regional funding sources”, cannot be addressed.

In this regard, it is **recommended** to define the RIS3 decision-making and management structure ensuring participation and ownership. As the RIS3 Guide points out “the most common, tripartite governance model based on the involvement of industry, education and research institutions, and government (the so-called Triple Helix model), is no longer enough in the context of smart specialisation. Innovation users or groups representing demand-side perspectives and consumers, relevant non-profit organisations representing citizens and workers should all be taken on board in the design process of RIS3”.

Furthermore, the RIS3 should address the regional/national coordination and funding issue. In this regard, it is **recommended** to coordinate closely with the national authorities responsible for research and innovation, digital convergence and entrepreneurship.

It is **recommended** to: enforce and secure the commitment of stakeholders and organisations of the area for the RIS3 strategy; use PPPs to secure the sustainability of initiatives in addition to the adoption of elaborated business models for each project/investment; coordinate the national-regional directions and regional priorities to deal with the structural deficiencies and the inequalities within the region.

3.3 Vision for the Region

For the forthcoming 2014-2020 programming period, the national authorities have set out directives for drafting the regional development (operational) programmes⁹ (that

⁹ 1st Directive for preparing the 2014-2020 Development Programme / Υπουργείο Ανάπτυξης, Ανταγωνιστικότητας και Ναυτιλίας (2012) 1^η Εγκύκλιος Σχεδιασμού και Κατάρτισης Αναπτυξιακού Προγραμματισμού 2014-2020. Priorities include strengthening research, technological development and

required all regions to provide first input by September 2012); and the GSRT has presented a proposed strategic framework for research and innovation policies¹⁰, which it considers its contribution to the national smart specialisation strategy.

The Attica region published its first strategic orientations for 2014-20 after the meeting held with the team of experts. The strategy document for the 2014-2020 programming period ("ATTICA 2020 +") sets as an aim to concentrate on "*deepening, broadening and strengthening existing and developing new sustainable competitive advantages in all sectors of the regional economy*", with an initial milestone in 2020 but with an explicit aim to extend the results of the development process after 2020. The ATTICA 2020+ strategy aims to induce a complex adaptation of the Attica region over the period 2014-2020 in five steps:

- "develop resistance" to reduce, manage and address the impact of the economic and social crisis;
- "recovery" of regional competitiveness and 'reintegration' of Attica in European and international development and investment plans;
- "renewal-change" of the overall Attica growth model;
- "growth reorientation" of existing regional production structures;
- the gradual "adjustment" of the Attica region to the new conditions and requirements of Europe 2020.

These are clearly ambitious goals and the expert team welcome the long-term nature of the vision and consider the time frame more realistic in order to achieve a sustainable restructuring of the regional economy.

In terms of specialisation, the Attica 2020+ strategy intends to focus on various sectors and 'emerging clusters' in each step. Under the 'recovery' step, the support would focus on those areas of production that account for a large share of both national and regional gross value added and employment. The five largest sectors (tourism, retail, energy, construction and agriculture) represent 42% of the economic output; while the food and beverage industry is seen as a critical sector with strong inter-sectoral linkages and export potential.

In the 'renewal-change step, the aim is to build on and attract investments in "emerging" markets. For instance, in marine tourism (pleasure-yachts, cruises) is considered to offer significant opportunities for growth and diversification. Other sectors mentioned include generic pharmaceutical products, fish farming, medical tourism, spa tourism, care for the elderly and the chronically ill, the creation of regional transit nodes, management of solid and liquid waste, focusing on specific food categories, creating international "hubs" for classical studies, etc.

Finally, in the growth orientation phase, the role of research and innovation is explicitly mentioned as critical in order to address issues of environmental degradation and targeted investment to reduce the carbon footprint, enhance agricultural residues to produce energy or feed, environmental management processing infrastructure, introduce innovations in the production process, development of robotic systems and stimulate patenting, etc. Encouragingly, the

innovation; increase access and use of ICT; development of the productive sectors of the country, with emphasis on strengthening the competitiveness of SMEs, development of endogenous potential for investment financing and the wide attraction of foreign direct investment.

¹⁰ Proposal of GSRT for Defining Directions of Development Strategy 2014-2020. ΓΓΕΤ (2012) Πρόταση ΓΓΕΤ για τη Διαμόρφωση Κατευθύνσεων Αναπτυξιακής Στρατηγικής 2014-2020 The GSRT proposal reconfirmed the priorities for 2007-13 for 2014-2020: research excellence (human resources and research infrastructures); connecting research and business sectors, notably through PPPs; support to dissemination and exploitation of key enabling technologies; support to creation of innovative companies, competence centres and risk sharing finance; etc.

Attica 2020+ strategy specifies criteria that will be used to make an indicative selection of emerging industries: availability of resources required and/or raw materials, availability of specific expertise, existing infrastructure that can be used to support recovery or upgrade sectors and the geographical proximity to markets.

Overall, the expert team welcomes the effort to develop an initial long specialisation focus for different steps, however, there is clearly more work needed on further identification of priority business sectors and in particular in the design of integrated portfolio of projects that allow these ambitious aims to be met. We **recommend** to focus the RIS3 of Attica in a small number of major projects to address both the complexity of the innovation system of Attica and the visibility of results and their impact; carefully select innovation actions and initiatives with transparent criteria including: (1) sustainability in the long run and mainly after the initial support period; (2) creation of capabilities and know how in the region; (3) offering integrated solutions to technology-production-market-funding; (4) leading to high leverage of private investments; (5) involving a large number of beneficiaries; and (6) contribution to development goals of competitiveness, employment, and companies creation; consider innovation platforms, such as clusters, incubators, platforms for start-ups, digital mechanisms for innovation, funding schemes, platforms to global markets, that are good solutions for mobilizing individual ventures over public and open infrastructures.

Finally, it would be unwise to focus efforts on boosting the relatively low rate of public R&D expenditure since this would further widen the imbalance between Attica and other Greek regions in terms of the regional concentration of public and higher education funding; and would not provide a direct economic boost for the region. Rather, there is a need to improve the overall productivity of the higher education and public research organisations and foster linkages with regional businesses.

4. Towards a regional smart specialisation strategy

4.1 Current research and innovation policy

The vision for the region of Attica as described in the ROP 2007-2013 is to ‘*strengthen Attica’s international role as a European metropolis in the South Eastern Europe and Mediterranean regions*’. This is a long term vision which surpasses the time limits of the ROP; therefore, a number of general goals have been set, which are the following: render the Region more appealing as an international business hub; improve the economy’s competitiveness, by encouraging innovation, entrepreneurship, research and technology and the promotion and use of new IT technologies; improve quality of life and protect the environment; create further and improved employment opportunities.

The ROP objectives and goals are quite general and almost identical to the national ones; in addition, there is no clear sign that regional features and particularities are fundamentally considered. Hence, the priorities as described in policy documents reveal the absence of a clear vision for regional development. The ROP for 2007-2013 of Attica included four main priorities, plus a technical assistance priority, with the breakdown of funds as indicated below.

Figure 3 : Priorities and funding of OP Attica 2007-2013 (in million €)

Priority axis	Total funding EU + national	%
1. Infrastructure and accessibility	1,203	33.78
2. Competitiveness, innovation, and digital convergence	724	20.33
3. Sustainable development and quality of life	1,429	40.12
4. Urban regeneration	188	5.27

5. Technical support	17	0.47
TOTAL	3,561	100

The Competitiveness, innovation and digital convergence priority was expected to consume 20% of total funding, making it the third most important priority after sustainable development and accessibility. The overall objective of priority 2 of the ROP was "improving the competitiveness of the economy by encouraging innovation, entrepreneurship, research and technology dissemination and use of new information technologies". It covered all interventions such as R&D and dissemination of research results to companies, supporting innovation, increase use of ICT by businesses, upgrading tourist services, strengthening the institutional environment and production of renewable energy, and increased FDI inflows. The majority of interventions were targeted at SMEs.

However, as was the case in all regions, the IMA for Attica transferred the funds available for research and innovation to the GSRT to be managed through the calls launched in the framework of the national OP for competitiveness. As can be seen from Appendix D, the funding of projects supported by GSRT programmes has largely benefited participants from Attica, who have been awarded 47.4% of total funding or €112,155,076. A higher share than the national average has been awarded to research organisations 42% (33% nationally), compared to 50% (66%) to businesses. This reflects the relative strength of the 'national' research centres located in the region.

The breakdown of allocated funding by field highlights that 48.5% of funding went to projects characterised as 'Engineering and Technology', and the vast majority of this €54m was awarded to enterprises. In contrast, the split between enterprises and research organisations was much more balanced for the €26m (23.5% of total for the region) allocated to medical science projects. However, there is a considerable difference in scale between the projects supported: the top 10 projects consuming close to €22m (or roughly 20% of the total budget). The top five projects in value are all part of the support for the Corallia microelectronics cluster. Indeed, ICT related projects dominate in the region, accounting for 196 out of 629 projects funded and just over €48m in budgets. The health sector accounted for another 114 projects or a total budget of €23.5m. Hence, these two sectors consumed 64% of funding (compared to an average 54% for all Greek regions). In contrast, only 51 Agriculture, Fisheries, Farming, Food and Biotechnology projects were funded (just under €6m in funding). The numbers of projects and total funding for other sectors includes: energy 46 projects, €5.6m; environment 54, €6.2m; advanced materials, nanotechnology - nanoscience and microelectronics 38, €8.5m; high value added products and technologies with an emphasis on traditional industries 60, €6.6m.

At this stage, and in the absence of a full evaluation of the projects funded, it is impossible to assess the impact of the funding. Broadly speaking, the strong focus on ICT and medical projects suggests that these may be fields where future regional research programmes could be envisaged. However, the need to boost R&D in other fields in line with the selected development priorities should not be ignored (e.g. environmental technologies, etc.).

4.2 Cluster and entrepreneurship policies

Using the European Cluster Observatory rating system, the sectors in Attica with the highest combined scores for size¹¹, specialisation¹² and focus¹³ are: pharmaceuticals,

¹¹ The 'size' measure shows whether a cluster is in the top 10% of all clusters in Europe within the same cluster category in terms of the number of employees. If employment reaches a sufficient share of total European employment, it is more likely that meaningful economic effects of clusters will be present. Those in the top 10% receive one star.

financial services, transportation & logistics, jewellery & precious metals and construction with 2 stars and telecom/ICT, apparel, distribution, footwear, maritime, media & publishing, oil & gas and paper products with 1 star.

While there are no three star sectors in Attica, there are quite a number of mature clusters (see Box 2) and a number of dynamic organic clusters (pharmaceuticals, telecom/ICT, chemical products, entertainment, processed food, tourism & hospitality) that could be further developed through appropriate policies mobilising the potential cluster actors (see Appendix C).

Box 2: Mature and Emerging Clusters in Attica

Mature Clusters:

Microelectronics-based Systems and Applications Cluster (mi-Cluster)¹⁴, Space Technologies and Applications Cluster (si-Cluster)¹⁵, Innovative Gaming Technologies and Creative Content Cluster (gi-Cluster)¹⁶, coordinated by the Corallia Clusters Initiative, Life Sciences Cluster (HBio)¹⁷ coordinated by HELP-FORWARD/PRAXI, Mobile Applications Cluster (HAMAC)¹⁸ coordinated by Atlantis, Furniture Cluster (120)¹⁹, Pharmacist's Supplying Cooperative of Attica (PROSYFAPE)²⁰

Emerging Clusters:

Pharmaceuticals (manufacture of pharmaceuticals, medicinal chemicals and botanical products), Financial Services (monetary intermediation), Transportation & Logistics (sea and coastal water transport, other supporting transport activities, renting of transport equipment), Jewellery & Precious Metals (manufacture of jewellery and related articles), Construction (architectural and engineering activities and related technical consultancy), Telecom (maintenance and repair of office, accounting and computing machinery), Apparel, Distribution, Footwear, Maritime, Media & Publishing (printing and service activities related to printing, reproduction of recorded media), Oil & Gas (manufacture of refined petroleum products), Paper Products, Business Services, Agricultural Products, Chemical Products, Education & Knowledge Creation (adult and other education), Recreational, Cultural & Sporting Activities (motion picture and video activities), Furniture, Metal Manufacturing, Processed Food, Tourism & Hospitality (activities of travel agencies and tour operators; tourist assistance activities), Aerospace, Biotech, Medical Devices.

In both the 1 October meeting, and in the Attica 2020+ strategy, the region stated that it aimed at “the creation of trans-sectoral, trans-institutional and trans-business networks (clusters), with the aim to improve exports orientation and the integration, production and promotion of innovation”, in all steps of the Attica 2020+ strategy, as well as “to attract new industrial and business infrastructure (business parks), with an emphasis on collaborative activities (clustering) and innovation”. Since the Attica

¹² The 'specialisation' measure compares the proportion of employment in a cluster category in a region over the total employment in the same region, to the proportion of total European employment in that cluster category over total European employment. If a region is more specialised in a specific cluster category than the overall economy across all regions, this is likely to be an indication that the economic effects of the regional cluster have been strong enough to attract related economic activity from other regions to this location, and that spill-overs and linkages will be stronger. If a cluster category in a region has a specialisation quotient of 2 or more it receives a star. If a cluster category in a region has a specialisation quotient of 2 or more it receives a star.

¹³ The 'focus' measure shows the extent to which the regional economy is focused upon the industries comprising the cluster category. This measure relates employment in the cluster to total employment in the region. If a cluster accounts for a larger share of a region's overall employment, it is more likely that spill-over effects and linkages will actually occur instead of being drowned in the economic interaction of other parts of the regional economy. The top 10% of clusters which account for the largest proportion of their region's total employment receive a star.

¹⁴ www.mi-Cluster.gr

¹⁵ www.si-Cluster.gr

¹⁶ www.gi-Cluster.gr

¹⁷ www.hbio.gr

¹⁸ www.hamac.gr

¹⁹ www.120.gr

²⁰ www.prosyfape.gr

regional authorities have no previous experience with managing **cluster policies**, it is **recommended** to replicate a competitive technology industrial cluster approach to facilitate the rapid spread of good practice (e.g. Corallia Clusters Initiative). The region should also consider the creation of a regional **cluster secretariat** or support one at national level.

Furthermore, more qualitative focus studies should be carried out in the activity domains where the region shows relative specialisation to identify niches. This involves expert work on **value chain analysis**. It also involves an analysis of the linkages between clusters/industries/sectors, in order to examine whether one can talk about related variety across the areas of regional specialisation.

An emphasis should be given to facilitating **cross-clustering** and the identification of innovation opportunities at the interface between different clusters (e.g. incorporate ICT in priority sectors to increase competitiveness) as well as specific funding measures and support should be developed aimed at interconnecting the primary, secondary and tertiary sector (as also discussed in Attica 2020+).

A particular focus should be given to strengthening the capacity of existing/emerging sectors/clusters to make **connections to local, national and global value chains**. In this respect and given that Attica has strong interconnections with other Greek Regions (especially Central Greece and Peloponnese) it should consider incentives for the development of trans-regional clusters.

As discussed above, some of the stronger business sectors in the region are loosely connected to the regional innovation system. However, a small number of firms in more high-tech sectors are better connected to the regional innovation system thanks to the efforts of the Corallia Clusters Initiative/Athens Innovation Centre, the Business & Innovation Centre of Attica, the Technology and Science Park Lefkipos, the Help-Forward Network and a large number of public and private initiatives that took off after the crisis started.

Despite the efforts of such intermediaries, collaboration between the industry and innovation actors remains limited. It is **recommended** to create a **one-stop-shop** within existing structures or a new structure for potential investors/SME start-ups with the appropriate improvements and sustainability plans based on lessons learnt and known deficiencies of current implementations.

As can be seen in Appendix C, Attica region has numerous commercial and industrial zones as well as incubators, accelerators, innovation centres and collaborative spaces. The commercial and industrial zones and parks offer mainly real estate services and are not sector-specific. It is **recommended** to further develop the zones and parks by offering added-value services to tenants and provide incentives for the establishment of thematic incubators in combination with other policies like clusters.

Furthermore, with support from recent JEREMIE initiatives, a number of **venture capital funds** have been established. In order, to broaden the basis for financing of innovative ventures and create a ‘pipeline’ of support, it is **recommended** to support the creation of a **business angel network** with professional standards and co-investment funds. In this respect, the Scottish Investment Bank model (managed by Scottish Enterprise) could be considered as a model.

4.3 Digital economy and ICT policies

Attica is clearly a “metropolitan” region including in terms of ICT, since it hosts most of the ICT-related activity of Greece. The ongoing economic crisis, however, has hit the sector hard, demand for ICT products and services are down, forcing a large portion of the ICT activities and companies into financial troubles and minimal investments.

Regarding broadband, Attica has a rather good penetration. According to the “Internet Users in Greece” survey (March 2010)²¹ of the Observatory for Digital Greece²², 57% of the regional population uses regularly a PC and the Internet; well above the national average. Availability and cost of ADSL connections are satisfactory, with a highly competitive market.

The most notable ICT projects that have been implemented in the recent years were concerned with the automation of the registry offices, the development of content for the disabled, the digitisation of cultural and historical monuments, and the networking of the higher education institutions and school units to the national research and education network and the Internet.

Most Greek ICT SMEs are located in Attica, focusing their activities on software development, system integration, maintenance, and software support for the whole economy. The region also hosts several universities and technological institutes, with several ICT-related departments. Moreover, Attica is home to many of the research centres performing basic and applied research on ICT technologies and services.

According to the preliminary strategic directions of the Region (Attica 2020+), the following sectors are best suited to benefit from modern ICT tools and technologies:

Transportation: the cost and time lost on transportation for citizens and enterprises is enormous. Modern smart transportation approaches, based on ICT, should be deployed, to minimise the cost of travelling, reduce the consumption of fossil fuels, and improve the efficiency of businesses.

Energy: the cost and the consequences of energy consumption represent serious challenges for the Region. ICT tools should be used in a systematic way to help reduce waste and improve efficiency, at both residential and industrial settings.

Health: health services are beyond reach for several citizens, because of the rising costs and the limited capacity of the traditional public health system. This problem can be partially solved by using new cost-efficient telemedicine or home-care services. The Region should provide support to the private sector, to deploy affordable telemedicine or home-care platforms, for selected citizens. These services would be provided as public-private partnerships (PPPs), in cooperation with local state hospitals and health centres, under a proper sustainability model.

Manufacturing: this sector, suffering from reduced demand and low-cost imports, needs to be supported by ICT, in getting better automation, control and monitoring. Cost minimisation and quality assurance can help restrain job losses and bring about new investment.

Tourism: the Region hosts numerous world-renowned archaeological and religious sites, capable of attracting huge numbers of visitors. SMEs should be motivated to exploit modern technology and synergies to maximize the outreach of the Region, minimise management and advertising costs, and thus extend the tourist season and create more and better jobs.

Food & Beverages: SMEs in this sector can also improve their profit margins by better branding and advertising, using new-generation ERP and CRM tools, along with modern e-commerce and procurement platforms.

Education: the education system of the Region should be supported in a way to (a) improve the ICT skills level of the citizens and (b) enhance the ability of higher

²¹ Ταυτότητα χρηστών internet στην Ελλάδα”, Παρατηρητήριο για την ΚτΠ, Μάρτιος 2010. http://www.observatory.gr/files/meletes/A100526_%CE%A0%CF%81%CE%BF%CF%86%CE%AF%CE%BB%20%CF%87%CF%81%CE%B7%CF%83%CF%84%CF%8E%CE%BD%20internet%202010.pdf

²² See: <http://www.observatory.gr>

education institutions and research centres to carry out applied research for innovative products and services.

e-government and learning: the cost of dealing with the regional public services is significant for both citizens and regional and national government. Properly designed and interoperable e-government apps would be a major contribution towards efficiency and transparency. These services could be easily combined with proper initial training applications, to overcome the barriers for those with low IT skills.

Broadband Internet: the availability of affordable broadband connections for all the households is a major European target. The Region should complement the related national- and EU-level actions, to further extend broadband coverage. More specifically, it should ensure industrial zones/parks are “FttH-ready”, i.e. bringing fibre to each hosted enterprise. The same can be done for selected neighbourhoods, by connecting the respective households with a passive “open-access” FttH local network. It is also crucial to facilitate additional actions like setting-up of public free-access hot-spots in public places, in ports, schools, sports/recreation areas, churches, etc.

Furthermore, the Region should seek to encourage a substantial private sector involvement in the full project cycle and risk sharing. This can be best carried out by flexible PPPs, or by ICT vouchers for selected households or SMEs. Regarding other specific RIS3 Strategy ICT-related requirements:

- There is currently no detailed regional ICT strategy per sector. In many cases, there may be a balanced allocation, in order to achieve better economies of scale.
- There is no master plan for e-government services. Most of them (cadastre, e-prescription, e-invoicing, etc) are administered by national authorities and, therefore, should be better addressed by a balanced allocation. Other possible e-services, like local taxation or regional permits, would be administered by the Region. All e-government services should adhere to well-defined interoperability standards, and be based on dependable cloud computing platforms²³.
- There is no reference to viable plans for the deployment of new, and the extension of next generation access networks.
- An operational inventory of ICT infrastructure should be created.
- Active involvement of the private sector in ICT activities has to be addressed by the Region, in a way to both leverage community funding and improve sustainability, especially for the delivery of products and services.

5. Monitoring and evaluation

The capabilities for monitoring, evaluation and analysis of innovation programmes and performance should be further solidified and embedded in both the new regional government structures and the wider partnership. A specific budget line could be set aside for a partnership based regional innovation observatory that could fund studies and doctoral/post-graduate research into innovation practice in regional firms, etc.

Guidance on evaluation methodologies for innovation measures is already available for the 2014-20 period²⁴ and the IMA, regional authorities, etc, should make themselves aware of and use such materials to develop an evaluation plan. At a minimum, one official should be specifically tasked with setting up an evaluation and monitoring system for innovation measures in the IMA.

²³ http://ec.europa.eu/information_society/activities/cloudcomputing/docs/com/com_cloud.pdf

²⁴ See: <http://bit.ly/Igzx5T>

Appendix A Participants at the meeting of 1 October 2012.

ΦΟΡΕΑΣ	ΕΚΠΡΟΣΩΠΟΣ	ΘΕΣΗ ΣΤΟ ΦΟΡΕΑ	E-MAIL
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Appendix B List of key documents and reference materials

Υπουργείο Ανάπτυξης, Ανταγωνιστικότητας και Ναυτιλίας (2012) 1η Εγκύκλιος Σχεδιασμού και Κατάρτισης Αναπτυξιακού Προγραμματισμού 2014-2020 (1st Directive for Setting the Development Programme 2014-2020)

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Appendix C Key Actors in of the regional innovation system

Leading Businesses:

Helic, Theta Micro, inAccess Networks, Antcor, Theon Sensors, Niponnia, Mastoscopia, Pharmathen, Singular Logic, Nanotropic, Micor2Gen, Sensap, Micrel Medical Devices, ISD, Intracom Telecom, Ceragon, Aerofilms, ALS, AVS, Dialog, Echovision, Epos, Fasmatech, GDS, Inasco, Infitheon, Marac, Micronics, Movino, Opt, Oxygen broadband, Top Vision, Vision Solutions, Xvue, Zelitron, Emtech, Epicos, ISI, Neupublic, Planetek, Spot Infoterra, Aventurine, Epicon Technologies, iMellon, InternetQ, Intralot, MobileFX, Games2Gaze, Kytarrotech, Total Eclipse, Wow, Zoobytes, Alcatel-Lucent Hellas, Unibrain, Hellenic Telecommunications Organization, Green Games, Viss, Miltech Hellas, Gennet, Alma Technologies, Sitel Semiconductor Hellas, Intrasoft International, Cosmote, Analogies, Globo, Raymetrics, Optronics Technologies, Velti, Fasmetrics, Prisma Electronics, Constelx, Tropical, Space Hellas, Upstream, Veriah, Wadja, Viva!, EBS, Algosystems, Neogenetics, Apipharm, BioHexagon, Biomedcode, Biomedica, Biovista, EMbio diagnostics, Regulon, Thetametrisis, Biomedcode Hellas, BioGenomica, Novartis Hellas, Biodiagnostiki, Lavipharm, Roche Diagnostics Hellas, Euromedica, Apivita, Medexis-Biotechnology, Dextera, Dendrigen, Abbott Laboratories, Elpen, Net Semantics, Galenica, Goulandris Natural History Museum, Advanced Energy Technologies, Spyrou House of Agriculture, Mobics, pro-Actina, Jotis, Advanced Services Group, Uni-Pharma, Delta, IMC Technologies, Astrolabe Engineering, Crystal Audio, Prime Laser Technology, Athens International Airport, Medicamerc, Bioiatriki, PyroGenesis, Medicon Hellas, Talent Attiki-Pittas, ATC, Vioryl, H+S Technology Solutions, Glonatech, Clarus Energy Services, SOFiSTiK Hellas, Sieben, Malva, Humofert, Floridis, Enditech, Neurocom, Creative Image Technologies, CCS, Alapis, Satways, Temak, Twin Net, Envision, Vitex, White Fox, Telenavis, Mast, Cyberstream, SQLearn, Audiovisual Enterprises, NanoPhos, Avaca Technologies, Provet, Bioanalytica, Steficon, Helector, Stergiou, Telesto Technologies, Envinhealth, Zeincro Hellas, Hydroexigiantiki, Procell, Greek Geeks, Nodalpoint, Uniglass, Hellenic Seaways, Mobics, Encode, Mediascape, Farad, Orasys ID, Motiopn Hellas, Intermed, Attikes Diadromes, Sales Managers, Postscriptum, Polyeco, Data and Control Systems, Aegean Speed Lines, Fexopack, Mobile Media.

Key Research Actors:

The research sector include the National Technical University of Athens (NTUA), the National and Kapodistrian University of Athens (UOA), the Agricultural University of Athens (AUA), the Athens the University of Economics and Business, the University of Piraeus, the Panteion University of Social and Political Sciences, the Harokopio University of Athens, the Athens School of Fine Arts, the Technological Educational Institute of Athens, the Technological Educational Institute of Piraeus, the Research and Innovation Centre Athena, the National Observatory of Athens, the National Hellenic Research Foundation, the National Centre of Scientific Research Demokritos, the Hellenic Centre for Marine Research, the National Centre for Social Research, the Greek Atomic Energy Commission, the Hellenic Pasteur Institute, the Biomedical Sciences Research Centre "Alexander Fleming", the Eginition University Hospital, the Aretaieio University Hospital, the University General Hospital Attikon, the Academy of Athens, the National Agricultural Research Foundation, the Institute of Geology and Mineral Exploration, the Centre for Renewable Energy Sources and Saving, the Centre of Planning and Economic Research, the Benaki Phytopathological Institute.

Financing:

Odyssey Venture Partners, Piraeus Tech Catalyst Fund, Openfund, FirstAthens Corporate Finance, Alpha Ventures, Attica Ventures, Aims Management, Global Finance, Glocal Systems Management, IBG Management, 7L Capital Partners, Oxygen

Management, Parthenon Trust, VCI, Vectis Capital, New Mellon, Logo Ventures, Piraeus Capital Management, Dianko.

Incubators, Industrial Areas/Zones/Parks

Industrial Zone of Agios Stefanos, Industrial Zone of Acharnes, Industrial Zone of Ano Liosia, Industrial Zone of Helidonous, Industrial Zone of Neo Faliro, Industrial Zone of Keramos, Commercial and Industrial Zone of West Attica, Commercial and Industrial Zone of Lykovrisi, Commercial and Industrial Zone of Peania, Commercial and Industrial Zone of Thriasio Pedio, Commercial and Industrial Zone of Koropi, Commercial and Industrial Zone of Magoula, Commercial and Industrial Zone of Eleusis, Industrial Park of Sxistos, Technology and Cultural Park of Lavrio, Business & Innovation Center of Attika, Technology and Science Park Lefkipos, Athens Innovation Center, Microsoft Innovation Center, Incubator, Athens Colab, Synergy Project, Loft2Work, 123P, CAMP!.

Principal Intermediaries:

Corallia Clusters Initiative, Help-Forward/Praxi, Chamber of Commerce and Industry of Athens, Chamber of Commerce and Industry of Piraeus, Chamber of Small and Medium Enterprises of Athens, Chamber of Small and Medium Enterprises of Piraeus, Professional Chamber of Athens, Professional Chamber of Piraeus, Hellenic Industrial Association, Technical Chamber of Greece, Geotechnical Chamber of Greece, Economic Chamber of Greece, Hellenic Chamber of Hotels, Attica Hotel Association, Hellenic Bank Association, Industrial Property Organisation.

Appendix D Regional RTDI funding under the OP Competitiveness and Innovation

Figure 4: Allocation by region of GSRT grants for RTDI projects (State Aid) under the OP Competitiveness and Innovation

Region	Enterprises	Research organisations	Other entities	Grand Total	% share
Attica	€ 78,383,203	€ 33,291,462	€ 480,411	€ 112,155,076	47.4%
Central Macedonia	€ 22,588,727	€ 13,566,039	€ 38,300	€ 36,193,066	15.2%
Western Greece	€ 22,841,816	€ 8,901,221	€ 7,000	€ 31,750,037	13.4%
Crete	€ 3,623,524	€ 13,728,214	€ -	€ 17,351,738	7.2%
Central Greece	€ 9,388,903	€ 1,397,119	€ -	€ 10,786,022	4.6%
East Macedonia & Thrace	€ 5,886,928	€ 1,864,884	€ 25,090	€ 7,776,902	3.3%
Thessaly	€ 4,648,471	€ 2,134,643	€ 253,000	€ 7,036,114	3.0%
Epirus	€ 2,403,100	€ 1,887,252	€ -	€ 4,290,352	1.8%
Peloponnese	€ 3,382,986	€ 545,200	€ -	€ 3,928,186	1.7%
North Aegean	€ 1,813,280	€ 425,506	€ -	€ 2,238,786	0.9%
West Macedonia	€ 1,355,665	€ 524,695	€ -	€ 1,880,360	0.8%
Ionian Islands	€ 388,000	€ 120,000	€ -	€ 508,000	0.2%
South Aegean	€ 476,000	€ -	€ 18,750	€ 494,750	0.2%
Grand Total	€ 157,180,603	€ 78,386,235	€ 822,551	€ 236,389,389	100%
	66.5%	33.2%	0.3%		

Source: data received from the GRST on 10 October 2012. Calculations authors.

Appendix E Total Gross value added at basic prices – Attica

% of Total Gross value added at basic prices	2005	2006	2007	2008	2009
A - Agriculture, forestry and fishing	0.41	0.41	0.42	0.33	0.34
B-E - Industry (except construction)	10.52	10.99	10.47	9.96	10.36
C - Manufacturing	8.41	8.74	8.13	7.64	8.21
F - Construction	5.28	5.98	5.14	4.49	4.57
G-I - Wholesale and retail trade, transport, accommodation and food service activities	24.77	24.72	26.66	27.20	23.81
J - Information and communication	6.38	6.68	6.23	5.78	6.87
K - Financial and insurance activities	7.13	6.98	6.69	6.51	6.45
L - Real estate activities	14.94	13.75	14.48	15.28	15.49
M_N - Professional, scientific and technical activities; administrative and support service activities	8.37	8.58	8.54	8.39	8.66
O-Q - Public administration, defence, education, human health and social work activities	17.60	16.79	16.20	17.00	18.17
R-U - Arts, entertainment and recreation; other service activities; activities of household & extra-territorial organisations and bodies	4.58	5.11	5.18	5.07	5.28
TOTAL - All NACE activities - in Millions of Euros	79,432.2	86,496.7	91,348.2	96,506.0	98,600.1

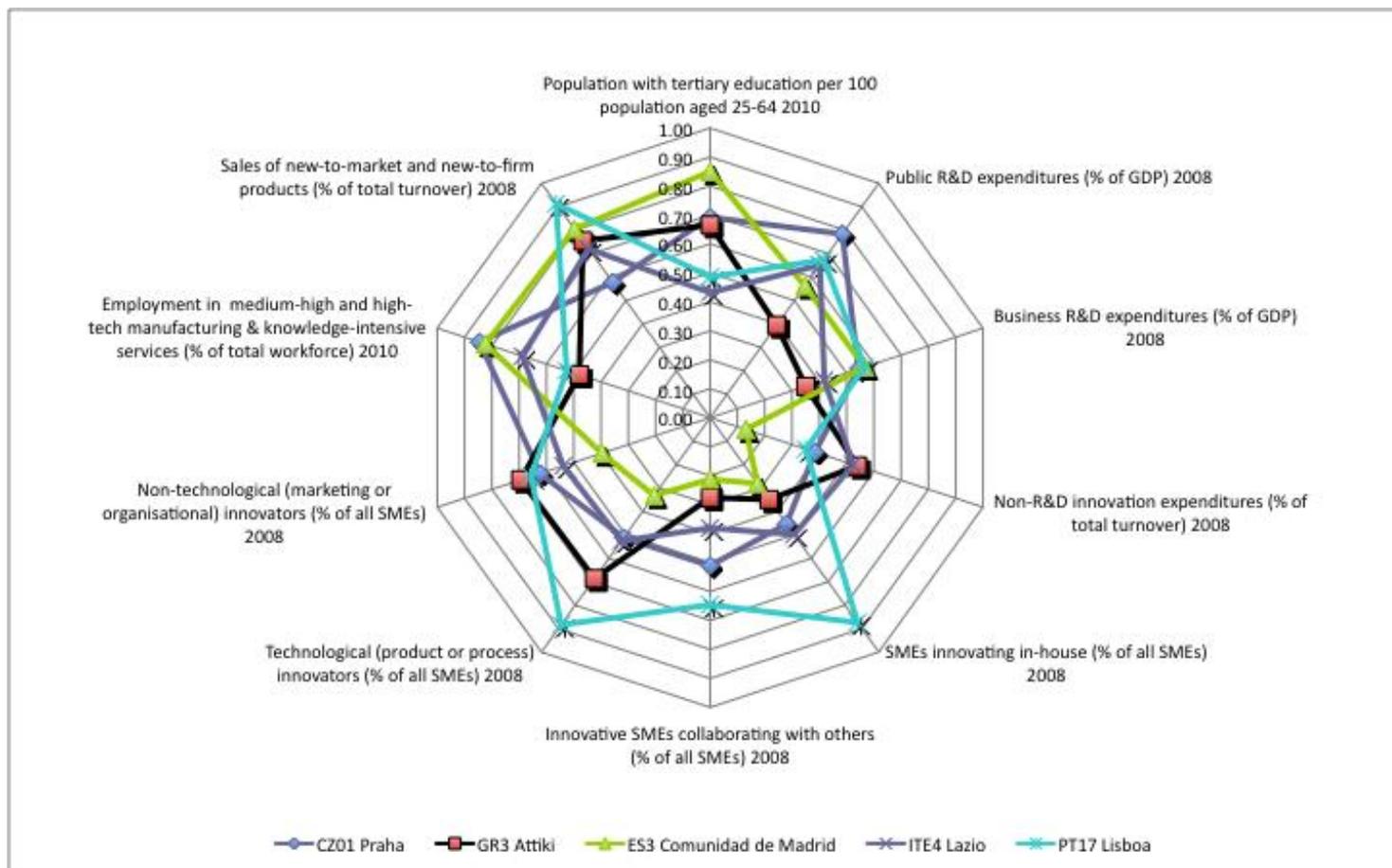
Source: Eurostat

Appendix F Industrial specialisation-Attica region

Industry	Rank in Europe	Specialisation	Employment
Sea and coastal water transport	10	7.36	12,655
Activities of households as employers of domestic staff	9	5.97	48,665
Sale, maintenance and repair of motorcycles and related parts and accessories	4	4.08	3,772
Reproduction of recorded media	7	3.9	1,028
Manufacture of refined petroleum products	15	3.35	4,078
Manufacture of jewellery and related articles	8	3.32	3,363
Other supporting transport activities	10	3.06	19,835
Provision of services to the community as a whole	9	2.99	63,241
Repair of personal and household goods	6	2.92	6,263
Adult and other education	9	2.55	28,759
Activities of travel agencies and tour operators; tourist assistance activities n.e.c.	10	2.52	12,242
Maintenance and repair of office, accounting and computing machinery	11	2.43	3,005
Research and experimental development on social sciences and humanities	16	2.42	1,440
Renting of other transport equipment	18	2.33	876
Manufacture of pharmaceuticals, medicinal chemicals and botanical products	16	2.27	12,036
Printing and service activities related to printing	3	1.93	18,305
Motion picture and video activities	15	1.85	4,153
Architectural and engineering activities and related technical consultancy	12	1.82	37,389
Monetary intermediation	13	1.62	46,253
Other retail sale of new goods in specialized stores	15	1.56	98,653

Source: Smart specialisation in Europe: European specialisation data by region Centre for Strategy and Competitiveness, CSC, Stockholm School of Economics, April 2011

Appendix G Attica compared to selected EU metropolitan regions



Source: Regional Innovation Scoreboard 2011 database, calculations authors