

# RIS3 Regional Assessment: Crete

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

December 2012 (Final version)

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## 1. Executive summary: Overall conclusions and recommendations

### **Smart specialisation priorities and the innovation system**

The regional innovation system of Crete is characterised by a dichotomy between, on the one hand, the highest Greek regional scientific potential, outside of Athens, and, on the other, weak business innovation intensity. The major scientific research centres located on the island, after several decades of public investment, are significant players in both the Greek and European scientific fields in which they operate, scoring well in terms of scientific impact. At the same time, and despite past efforts to foster stronger linkages with and research commercialisation to the local economy, there is a significant mismatch between business innovation needs and scientific know-how.

The expert team concurs broadly with the priorities set out in the first draft of the regional strategy, with an emphasis placed on the agro-food sector (production, packaging, food processing, Mediterranean diet), the cultural-tourist sector (hospitality, travel agencies, cultural capital, cultural activities), and the technological educational sector (research centres, universities, technology park) and its connection to the other two sectors. However, evidence from other EU ‘peripheral’ regions suggests that attempts to commercialise research into a local economy will only have at best limited effects. Rather there is a need to identify specific opportunities where research or expertise available can be used to develop new commercial opportunities through full-scale pre-competitive testing (e.g. marine or ICT applications). While a sectoral focus on agro-food, tourism, etc. can be justified, a main priority should be given to integrating key enabling technologies and seeking out opportunities of a cross-sectoral nature (e.g. at the interface of ICT, cultural heritage and tourism; or ‘blue-biotech’ opportunities related to energy or food production, etc.). Finally, a high priority should be given to reducing the extent of the dual economy, with a split between low technology agricultural and tourism activities and high technology research and education and a few spin-off firms. This requires a significant programme of innovation management support and technology investment in more traditional sectors, which have a good export potential.

### **Governance and stakeholder involvement**

The expert team consider that while Crete has built up a significant track record of developing regional strategies for innovation and information society, that there is still a need to further reinforce and strengthen both the participatory process and the management structures. A Regional Innovation Council exists since the 1990s and the regional authorities have indicated that it will serve as the key pillar for consultation and elaboration of the RIS3, supported by thematic working groups. Public, higher education and associative sector stakeholders are committed to working together on the RIS3. However, the degree of business involvement is less significant.

The expert team recommends that the bottom-up participation process should cover the entire innovation policy planning process, not just the final phase of approval by the innovation and regional councils. This should involve a number of working group, thematically based and with cross-sectoral linkages wherever possible. Moreover, remaining Structural Fund technical assistance funds should be mobilised to support this process through for instance a ‘challenge fund’ inviting public-private partnerships in specific fields to bid for money for developing during the current programming period a portfolio of projects and appropriate management structures for their implementation in the next period.

### **Innovation policy**

In the current period, research and innovation has been given a low priority and the majority of funding secured by Crete based organisations from the national operational programme (OP) has been absorbed by the higher education and public research centres. Hence, there is significant gap between the objectives of the 2007-

2013 regional OP to support the modernisation of productive activities, boost exports and create innovative high added-value products and the actions implemented.

The expert team notes that the initial proposal of the regional authorities for the 2014-20 period is more in line with regional potential and needs of the business sector and sustainable and knowledge based development. However, the expert team sees a risk that the divergence between strategic objectives and implementation will occur again. Hence, there is a need to a) ensure that RIS3 funding should include all funds that will be made available; b) develop a regional institutional capacity to deliver the RIS3 policy and avoid over-fragmentation of support.

The latter could take the form of a merger of existing intermediary organisations to create a single regional innovation agency (one-stop shop), ideally reporting to a board composed of public-private partners, that would be able to assemble a sufficient critical mass of expertise to oversee, coach and monitor projects funded through the RIS3/regional operational programme. This agency could be tasked with managing a global grant from the Structural Funds (all innovation related funding from all funds). The selection of innovation policy projects should follow criteria of sustainability, creation of local capabilities, integrated solutions, leverage of private funding, coverage of a large number of beneficiaries, and contribution to development goals. A particular emphasis should be placed on supporting 'portfolios' of projects proposed by public-private partnerships and that can be implemented over the programming period to attain a cumulatively higher effect than ad hoc one-off projects.

### **Cluster policy**

During the previous and the current programming periods, programmes underpinned significantly the upgrade of the research infrastructure to support research and innovation in the research and educational institutions in the Region. Other programmes also supported cooperative research projects with the participation of the research fabric and businesses, but only a few and with no focus on specific fields. Those actions undoubtedly strengthened the R&D capacity, but did not sufficiently address the systematic weakness of the Region of Crete to exploit the research results and innovation in priority themes and key economic sectors for the Region. A national clustering programme has also covered the region with no visible impact.

As noted above, the initial 2014-20 regional strategy place an emphasis on economic activities in three main sectors. Clusters are not mentioned per se, but referred to in more generic terms, like, value chains, sectoral and spatial specialisations and integrated production complexes. To prepare a foundation for cluster development, the Cretan authorities should use cluster mapping techniques to identify regional competences and assets and update with more recent data wherever possible. They should also seek and provide advice on the methodology to use to develop clusters, and consider the creation of a cluster secretariat. A particular emphasis should be placed the cooperation of existing/emerging sectors/clusters to make connections to local, national and global value chains (e.g., bio-agro food, food processing, tourism). Finally, there is a need to facilitate cross-clustering and the identification of innovation opportunities at the interface between different clusters (e.g. incorporation in priority areas/sectors ICT to increase competitiveness).

### **ICT policy, broadband & e-services**

Crete has universities and public research institutes with a significant ICT capacity. Their work, however, remains loosely connected with the main production sectors (agriculture, tourism, food & beverages, health & education). During the next period, there is a need for on-going investment in the broadband infrastructure, that will require that regional, national, and EU initiatives are properly combined if the EU's digital agenda targets are to be met. Broadband requirements are also important for utilising the advantages of cloud computing. This technological model is strongly supported by the EU and can bring unprecedented advantages to small and geographically dispersed ICT markets like Crete. The expert team notes that it is encouraging that the first proposals of the Cretan authorities for the 2014-20 period

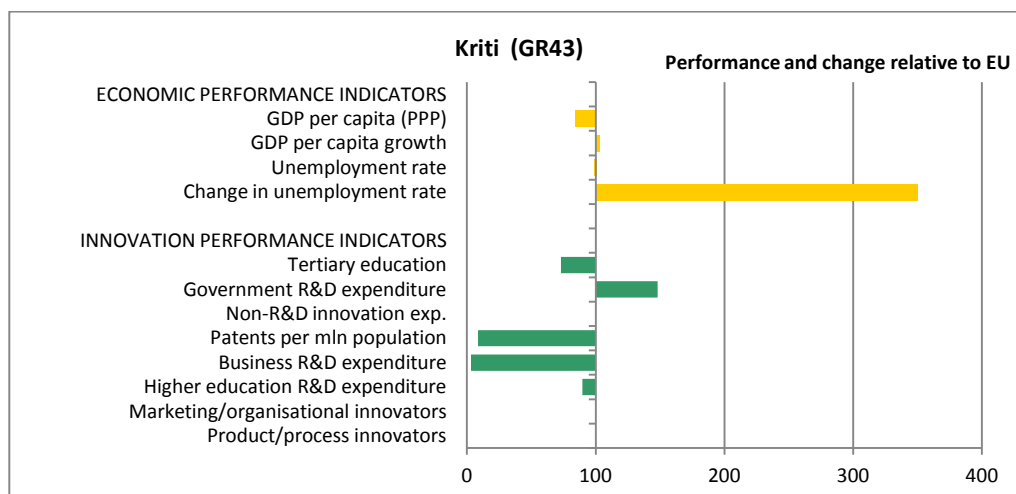
place an emphasis on digital convergence and integration with the systematic use of ICT and development of new electronic services in areas of social and economic activity especially in the rural economy, tourism and culture. However, the team considers that there is a need for significantly more preparatory work to be done if a regional strategic ICT plan is to be implemented using novel public-private partnership (PPP) models, characterised by increased transparency, additional flexibility to project execution, less red-tape and sustainable business models.

## 2. Regional Innovation Performance and potential

### 2.1 Regional profile and specialisation

Crete is the largest and most populous of the Greek Islands, accounting for 5.4% of the Greek population in 2011<sup>1</sup>. With a gross domestic product (GDP in Purchasing Power Standard) per capita of €19,900 in 2009 (85% of EU27 average), Crete ranked 5<sup>th</sup> among the 13 Greek regions. Regional GDP per capita grew by 1.24% annually between 2006 and 2009 (EU27: 1.2%, Eurostat). The regional population has a relatively low education level: 20.5% of the age group 25-64 have a tertiary level education (2011), compared to 25.4% in Greece and 26.8% in the EU27. As for the other Greek regions, Crete has a low level of involvement of the population aged 25-64 in life-long learning (1.9% in 2011, against 2.4% in Greece and 8.9% at EU27 level).

Figure 1 Summary benchmark of regional innovation performance



Source: Regional Innovation Monitor, data used is 2011 or latest available year. Trend data is over latest three year period for which data is available.

The regional economy is dominated by the service sector (80.7% of regional added value in 2008, EL-STAT): the "Trade and Tourism" branch represents 38% of the regional added value, financial services 15.8%, industry and construction 13.8%. Tourism is the most dynamic sector with large investments over the past decade in hotel infrastructure, resulting in a qualitative and quantitative upgrading. In contrast, agriculture has steadily declined in importance over the last decade, even if it still accounts for 5.5% of regional GDP, a relatively high share compared to the EU27 average. The primary sector is characterised by the dominance of smallholdings focused mainly on olive and wine production. Efforts are being made to shift to higher value-added production (such as flowers and organic farming) and develop a multi-functional agricultural economy (e.g. agro-tourism) as an alternative to mass tourism.

<sup>1</sup> All data, unless stated otherwise, is sourced from Eurostat, latest update as of 31 October 2012

The main regional manufacturing activities include the processing and packaging of agricultural products, food and beverages, non-metallic mineral products, metallic products, plastics and chemicals, with only a small number of large firms. Given the dominance of tourism and of agricultural exports, the regional economy has suffered from the economic crisis. The sectors affected most by the crisis are trade and construction (RIM, 2011). Unemployment rose from 8.8% in 2009 to 15.4% in 2011.

The European Regional Innovation Scoreboard<sup>2</sup> ranks Crete (grouped in the mega-region Nisia Aigaiou, Kriti) as a modest-high innovator (the lowest of four performance categories) along with all other Greek regions aside from Attica. Similarly, the 2011 Regional Innovation Monitor (RIM) annual report classified the region amongst a group of knowledge absorbing innovating regions (again along with all other Greek regions except Attica). From a positive perspective, this group of 19 EU27 regions has the highest average score (amongst the RIM regional grouping) on ‘innovative entrepreneurship’ (based on the share of SMEs that declare to have introduced innovations in the Community Innovation Survey) but the lowest score on ‘technological innovation’: business R&D and patenting is very low, while the non-R&D innovation expenditures (as a % of turnover) are higher than in any other group. This implies that innovation is mostly through integrating knowledge created elsewhere by purchasing ‘off-the-shelf’ technologies.

The most recent figures on gross expenditures for R&D (GERD) date from 2005. At that time, GERD in Crete stood at 0.9% of GDP, which was the highest of all Greek regions (national average of 0.6%) but considerably below the EU27 average (1.83%). However, this was almost entirely due to the public (44.3%) and the higher education sectors (47.4%), since business R&D expenditure was only 6.4% of total GERD (compared to 31% at national level, 63% at EU27 level). As a share of regional GDP, BERD represented 0.06%, GOVERD 0.4% and HERD 0.43%. The dichotomy is also visible in terms of human resources: 2,101 full-time equivalent (FTE) researchers were employed in Crete in 2005 and 2,211 FTE R&D personnel<sup>3</sup>. However, regional businesses employed only 151 researchers, in 2007, i.e. 2.4% of the total for Greek businesses, and 351 FTE R&D personnel, or 2.8% of the total in Greek businesses.

The regional higher education and public research institutes perform relatively well in terms of both scientific output and impact (Thomson Reuters data from 2010). In terms of scientific output, between 1996 and 2010, the University of Crete (UOC) was ranked fifth out of 21 Greek universities ((786 publications in 2010 against 330 in 1996). Over the period 2006-2010, UOC had a total of 3,854 publications (9.5% of total Greek universities’ publications), 51% of those involving international co-authorship. The Technical University of Crete (TUC) increased its publications from 59 to 173 in 2010 but ranked 11<sup>th</sup> in 2010. Over the period 2006-2010, the publications of the TUC represented 2.5% of all Greek universities’ publications. Looking at the share of cited publications for each university, and levels of growth over the period 1996-2010, the UOC achieved the best performance in Greece with 76.2%. As regards the citation impact<sup>4</sup>, the TUC (citation score of 1.11) and the UOC (1.08) were amongst the four best ranked universities in Greece between 1996-2010. Moreover, the Foundation for Research and Technology – Hellas (FORTH) is the top ranked Greek research centres in terms of publications and citations over the period 2006-2010 (2,073 publications and 15,307 citations, citation impact of 1.24).

As regards the main fields of science in terms of publications and citations, the UOC is active in natural sciences (14,301 citations over 2006-2010, 2,098 publications, citation score of 1.22) and medical and health sciences (9,998 citations, 1,738 publications, citation score of 0.9), whereas the TUC is mainly active in natural

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<sup>2</sup> MERIT & Technopolis 2012

<sup>3</sup> More recent data is not available to judge whether there has been brain drain since the financial crisis.

<sup>4</sup> The relative number of citations to publications of a university compared to the world average

sciences (2,504 citations, 588 publications, citation score of 1.09) and engineering and technology (1,937 citations, 542 publications, citation score of 1.13). The main fields of publication of FORTH are natural sciences (13,004 citations, 1,761 publications, citation score of 1.27), medical sciences and health sciences (2,050 citations, 216 publications, citation score of 1.39) and engineering and technology (3,287 citations, 639 publications, citation score of 1.1).

In order to understand the mismatch between the economic and scientific specialisation, the following table from the European Cluster Observatory provides an overview of the 20 industries in which Crete is most specialised compared to other regions<sup>5</sup>. Crete is highly specialised in the renting of automobiles; growing of crops, market gardening, horticulture; and hotels.

Figure 2: Relative regional specialisation in 20 industries – Crete

	<b>Industry</b>	<b>Rank in Europe</b>	<b>Specialisation</b>	<b>Employment</b>
<b>1</b>	<b>Renting of automobiles</b>	1	7.12	1 248
<b>2</b>	<b>Activities of travel agencies and tour operators; tourist assistance activities</b>	7	2.77	2 080
<b>3</b>	<b>Other retail sale of new goods in specialised stores</b>	7	1.68	16 475
<b>4</b>	<b>Growing of crops; market gardening; horticulture</b>	9	9.78	39 638
<b>5</b>	<b>Growing of crops combined with farming of animals (mixed farming)</b>	12	2.01	7 849
<b>6</b>	<b>Site preparation</b>	13	2.99	2 243
<b>7</b>	<b>Hotels</b>	13	3.95	10 697
<b>8</b>	<b>Veterinary activities</b>	16	2.21	534
<b>9</b>	<b>Adult and other education</b>	17	2.26	3 940
<b>10</b>	<b>Activities of households as employers of domestic staff</b>	20	2.31	2 914
<b>11</b>	<b>Provision of services to the community as a whole</b>	21	2.38	7 788
<b>12</b>	<b>Manufacture of other food products</b>	24	1.63	4 627
<b>13</b>	<b>Farming of animals</b>	26	2.61	3 336
<b>14</b>	<b>Other supporting transport activities</b>	29	1.89	1 895
<b>15</b>	<b>Bars</b>	29	2.30	5 930
<b>16</b>	<b>Collection, purification and distribution of water</b>	33	2.16	1 165
<b>17</b>	<b>Building completion</b>	34	1.57	5 433
<b>18</b>	<b>Repair of personal and household goods</b>	38	1.63	540
<b>19</b>	<b>Wholesale of agricultural raw materials and live animals</b>	49	1.52	594
<b>20</b>	<b>Manufacture of dairy products</b>	52	1.68	925

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

Indeed, the RIPwatch<sup>6</sup>, report (2006) found that the establishment of the knowledge infrastructure largely disregarded the region's existing economic specialisation and potential. After being established, the HEIs and research centres were developed and grew in line with their own internal dynamics and as dictated by the available sources of funding, such as the national and European R&D funding programmes.

The RIPWatch report argued that synergies between the scientific and economic potential have been developed only in agriculture and food. By contrast, no strong links have been developed in areas where scientific excellence has been developed, i.e. biotechnology, ICT, laser, astrophysics, materials technology and life sciences, if one

<sup>5</sup> The minimum degree of specialisation is 1.5 (meaning that the region has 50% more employment in the industry than the size of the region), and the industry must have at least 500 employees in the region (in order to eliminate high specialisations in very narrow industries).

<sup>6</sup> Maroulis N., Nioras A., Dedemadi D. (2006): Analysis of the regional dimensions of investment in research -Case study regional report: Crete (Greece). RIP-WATCH project

excepts the strong cooperation with the local public health sector. This has an influence on the development on the long term of scientific capacities in the region: graduates from regional HEIs, as well as new knowledge and research results created in the HEIs and research centre, are absorbed largely outside the regional economy.

In terms of innovation outputs, there is little evidence of new high technology firms being established outside of a spin offs from the public-academic research centres. The lack of private business investments is reflected in the level of patenting activities, with 9.57 patents registered per million inhabitants to the European Patent Office in 2008 in Crete, against 8.04 in Greece and 111.58, on average, for the EU27.

According to the latest RIM analysis, the low level of private R&D investments is attributed to the dominance of low-to-medium technology SME's in the region associated to the limited formal linkages between the research and business spheres due inter alia to a profound mismatching of orientation and specialisation the slow rate of restructuring of the local economy and the mismatch between the technological business demand with the public sector supply. In addition, since 2008, the economic crisis has affected the level of overall business investment, including in R&D activities, even if data is not available so far to reflect this perceived trend. The RIM report highlights that the reduced liquidity of the private sector, in combination with the limited funding provided to businesses, and in particular new ones, by the banking sector, is further hindering the investments into innovative activities.

Figure 3 : SWOT of regional innovation potential and specialisation

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• R&amp;D infrastructure well developed</li> <li>• Strong role of government and higher education in R&amp;D</li> <li>• Good scientific quality in renowned R&amp;D institutions</li> <li>• Strong knowledge creation capacity</li> <li>• Development of ICT practices</li> </ul>	<ul style="list-style-type: none"> <li>• Overall low level of R&amp;D investments</li> <li>• Quasi inexistence of business investment in R&amp;D</li> <li>• Economy focussed on small low-tech companies</li> <li>• Low level of patenting</li> <li>• Low level of high tech venture capital investments</li> <li>• Low level of science-business collaboration</li> <li>• Low level of education and life-long learning practices</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Increased participation in EU Framework Programmes for areas of scientific excellence</li> <li>• Increase absorptive capacity in region, especially in the two leading sectors of tourism and agriculture</li> <li>• Reorientate production towards higher value-added segments and introduce innovation in services</li> <li>• Address the needs of the local economy's most advanced segments</li> <li>• Increase economies of scale for firms and farms by increasing size and networking</li> </ul>	<ul style="list-style-type: none"> <li>• Economic specialisation in low-tech sectors (agriculture, tourism, trade)</li> <li>• Mismatch economic/scientific specialisation: low absorption capacities</li> <li>• Competition from low-costs economies</li> <li>• Brain drain</li> </ul>

## 2.2 The strengths and weaknesses of the regional innovation system

The main actors and stakeholders in the regional innovation system are presented in Appendix C. Thanks to a considerable public investment since the 1980's, the region has a number of major R&D infrastructures such as the University of Crete (UOC), the Technical University and Technological Education Institutes, as well as renowned research centres (Foundation of Research & Technology Hellas (FORTH), Hellenic Centre for Marine Research etc.). The participation indices of Crete to (European) research activities are considerably higher than those of other Greek regions and Crete is regarded as one of the most important national R&D nodes.

However, as noted above, this success is not matched by business innovation activity, due to the small scale of firms, sectoral distribution and weak linkages in the regional innovation system. In particular, efforts under previous regional innovation strategy initiatives<sup>7</sup> to develop a more solid network of innovation actors did not lead to the anticipated boost in innovation performance.

Crete has a long record of networking for collaboration in the field of innovation. University liaison offices were established in 1996 within the two HEIs, both financed by the Operational Programme for Research and Technology (EPET II). Then a branch of the Help-Forward Network opened in Crete, although its headquarters are in Athens - Help-Forward was recognised as the best IRC network in Europe in 2002. A technology park and incubator have been established as a result of cooperation between the private and the public sector and the managing company STEP-C (EDAP SA) was incorporated in 1993 with collaboration and support from the FORTH. A second incubator was set up in Chania as a non-profit organisation, by a partnership of the Organisation of Small and Medium-Sized Greek Companies, the Prefecture of Chania and Chania's Commercial and Industrial Chamber.

Figure 4: The Regional Innovation Pole of Crete

The Regional Innovation Pole of Crete (i4crete) is a union of organisations of the private and public sectors which aims at reinforcing the technological and innovative performances of Crete and the improvement of the competitiveness of the regional economy. The Pole was funded by the GSRT managed programme "Creation of Regional Innovation Poles" in the framework of the Hellenic Operational Programme "Competitiveness" (3<sup>rd</sup> Community Support Programme). The initiative aimed to support the development of inter-connected clusters in Greek regions that demonstrate critical mass in certain sectors.

Amongst other outputs, the i4Crete initiative aimed to boost the research infrastructure in six higher education and research institutions; create approximately 40 new products/ services, tools and methodologies which are exploitable in business terms; set up a technological platform for the diffusion of e-health broadband management technologies; establish a regional observatory for innovation, technology foresight and benchmarking; launch an incubator of ideas for university students; and develop applied research in thematic areas like broadband networks and infrastructures, e-business, e-health, ozone technology, wireless terrestrial and satellite technology, molecular identification of varieties of olive tree and vineyard, utilisation of biomass, telematics, etc.

A further effort to structure the innovation system was made through the Regional Innovation Pole of Crete (i4crete), co-funded by the European Regional Development Fund (ERDF) from 2006-8, which focused on the perceived regional strengths (information technologies, biotechnology and medical technology). However, the majority view, expressed during the stakeholder meeting in October 2012, is that the pole activities failed again to build a sufficient basis for coherent long-term support for business innovation activities.

<sup>7</sup> RITTS (1997-2000), focusing on the competitiveness of local SMEs and their production reforming. InnoRegio (1999-2001), focusing on methods and techniques of innovation development and management. CRINNO (2003-2005), aiming at the introduction of innovative practices regarding the management of the natural resources of the island, the support of entrepreneurship and the safeguarding of the regional and traditional identity of the island, by strengthening the Cretan innovation network.



### 3. Stakeholder involvement and governance of research and innovation policies

#### 3.1 Stakeholder involvement in strategy design and implementation

During 2007-2013, in Crete, as in other Greek regions, RTDI policy design and implementation was managed centrally by the GSRT in Athens. A main argument in favour of centralisation was the low capacity of regions to manage their own RDTI policies. However, Crete has a long history of strategy design dating back to the management structure established by the RITTS Crete project (1997-2000) which led to the creation of a 'Regional Innovation Council' supported by thematic working groups. The council will be a key pillar of consultation and elaboration of policy for the 2014-20 regional development planning and smart specialisation strategy processes.

In order to launch the RIS3 design process, a meeting between the expert team and stakeholders was organised by the Region and the Intermediate Management Authority of Crete on 17 October 2012 in the Chamber of Commerce and Industry of Heraklion. Some 20 organisations participated including local authorities, higher education and research organisations, chambers (business, technical, geotechnical, hospitality) and other non-governmental bodies (see Appendix A).

Most stakeholders were aware of smart specialisation strategy and all expressed their interest, support, and strong commitment for participation in the RIS3 of Crete. Smart specialisation was praised as the appropriate strategy for fighting crisis and the rising unemployment, because of its focus on productive restructuring; differentiation and competitiveness on export markets. Many participants pointed-out that despite the establishment of many intermediary organizations and the existence of a strong research base in Crete, cooperation between industry and research organisations remains at a very low level and success stories concerning the activity of intermediary organisations and the exploitation of R&D by local companies are very limited. It is priority to address this issue and help companies getting technology from the research institutes located in the region.

Clearly the setting of RIS3 in Crete is based on a process of stakeholder involvement, including in particular regional governments, regional agencies, enterprises, knowledge providers and civil society, through the activation of the Regional Innovation Council, thematic working groups, and open consultation (Question 1.1 of assessment grid). However, given the relative absence of business expertise, the expert team notes that an entrepreneurial discovery process has still to be launched.

#### 3.2 Multi-level governance and synergies between policies and funds

During the current programming period, it has proved difficult to create synergies between the regional OP for Crete and national programmes since the vast majority of funding for research, innovation and the digital economy has been channelled through national OPs. Indeed, the regional authorities and stakeholders were unaware of the full range of projects funded in the region. Similarly while participants at the S3 stakeholder meeting from the higher education and research sectors, e.g. the representative of FORTH, noted that a significant project funding had been secured from EU research and innovation programmes, this has not been a result of a concerted strategy to seek synergies between the Structural Funds and FP7, etc.

In contrast, the Cretan authorities expressed the ambition to shift to a decentralised design and implementation of the RIS3, with at least 80% of available Structural Funds managed regionally. Hence, while acknowledging and welcoming technical support and advice that competent national authorities can offer, the Cretan regional government intends to exercise full control over regional funds during 2014-20.

In the 2014-2020 period, there is an expectation that the smart specialisation strategy will provide a framework, or umbrella, for planning increased synergies between all funds that will be invested regionally. In line, with the RIS3 Guide, each region should analyse overall funding needs, including how to best leverage private investment. The first draft of the development strategy for Crete sets out priorities complementary to national-level priorities: it is in line with the National Reform Programme, the national research and innovation strategy formulated by the GSRT and EU 2020 objectives. However, the strategy has not reached at the stage of defining operational synergies between the various EU, national and regional funding sources, in particular between ERDF, ESF, Horizon 2020 and COSME.

### 3.3 Vision for the Region

The development vision for Crete described in the ROP 2007-2013 is to: *'Strengthen competitiveness and enhance the attractiveness of Crete and the Aegean Islands in conditions of sustainable development'*. This vision was to be achieved through a series of strategic objectives, such as improving entrepreneurship and attract investment; promoting innovation and research and their connection to the entrepreneurship; ensuring the viability and functionality of regional infrastructure with emphasis on the development of environmentally friendly forms of energy; improving the quality of life; enhancing production and increase attractiveness of the area as a place of living and doing business; developing human resources for the effective enhancement of employment, productivity and social cohesion.

The specific strategic orientations for Crete<sup>8</sup> are (1) the development and modernisation of physical infrastructure and related transport services, (2) strengthening of productive investments, innovation and effective use of information and communication technologies, (3) upgrading of educational infrastructure, health and welfare, (4) sustainable environmental management and enhancement of cultural heritage, and (5) enhancing the spatial and social cohesion and improving quality of life for residents.

In their initial plans for the 2014-2020 programming period, the Region of Crete aims to turn the current crisis into an opportunity, taking advantage of reforms promoted nationally and reorienting the regional economy through smart specialisation. The prerequisite for success is to mobilise the regional productive potential with rapid integration of innovations in production and operating procedures of the financial system and administration, development of interfaces between disciplines, and building strong interregional relations. The draft plans suggest specialisation will be based on the current economic growth niche: the rural economy (accounting for 49% of employment); tourism (31% of employment); cultivation of vegetables which holds the ninth position among European regions; mixed farming (12th place), and veterinary activities (16th place). Moreover, the significant educational and research infrastructure and centres of excellence are a growth pole that can foster the development of the local economy (Region of Crete 2012, p. 4).

## 4. The regional innovation and smart specialisation strategy

### 4.1 Current priorities of the regional research and innovation policy

The ROP for Crete and the Aegean Islands for 2007-13 is the current regional development framework. The overall and specific priorities of Priority 4 for Digital convergence and entrepreneurship are to enhance business competitiveness through the expansion of markets and technological and organizational modernisation, promote innovation, encourage the internationalization of enterprises, the expansion

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<sup>8</sup> Operational Programme for Crete and the Aegean Islands 2007-2013, pp. 108-110

of the productive base of the region and creation of new jobs, and strengthening the competitiveness of tourism (OP 2007-2013, p. 211).

Figure 5 : Current regional research, innovation and ICT priorities

Policy Documents	Priorities and objectives
Operational Programme of Crete and Aegean Islands 2007-2013, Athens 2007.  Επιχειρησιακό Πρόγραμμα Κρήτης και Νήσων Αιγαίου 2007-2013, Αθήνα 2007	<p style="text-align: center;"><b>Priority 4: Digital Convergence and Entrepreneurship</b></p> General Objective: Strengthening of productive investment, innovation and effective use of ICT in the Region of Crete. The above general objective specializes in the following specific objectives: <ul style="list-style-type: none"> <li>• Supporting productive investment which contributes to the increase in exports and reduction in import penetration</li> <li>• Supporting investment in the tourism sector which contribute to quality improvement of the tourism product and the lengthening of the season</li> <li>• Business support services in order to produce products of high value-added and high-tech</li> <li>• Enhance the capabilities of Research Institutions in order to production of new knowledge and its subsequent conversion into innovative products, areas of interest to the productive fabric of Crete and the country in general.</li> </ul>

The ROP 2007-2013 includes three priority axes with a breakdown of funds as presented in Figure 6, underlining that digital convergence, innovation and entrepreneurship is given a low priority, with only 6.63% of total funds.

Figure 6 : Priorities and funding of OP Crete 2007-2013

Priority axis	Total funding EU + national	%
1. Infrastructure and accessibility	210.000.000	37,63
2. Digital convergence and entrepreneurship	37.000.000	6,63%
3. Sustainable development and quality of life	311.000.000	55,73%

Source: ROP 2007-13

Only 17 projects have been supported in Crete through the national OP for Competitiveness and Innovation managed by the GSRT (see Appendix D). Some three-quarters of the €17.3m awarded has been secured by research and educational institutes. This is in sharp contrast to the other Greek regions where the share is roughly 2/3 of funds to companies and 1/3 to research institutes. Moreover, total funding received by Cretan organisations accounted for only 7.2% of national R&I funds, which is by far below the 18% allocated to Crete in the 2000-06 period.

Hence, there appears to be a large gap between the stated objectives in the OP 2007-2013 towards the modernization of productive activities, exports and creation of innovative high added-value products and the execution of the OP with most funding channelled to public research establishments. GSRT data suggests low levels of collaboration of R&D institutes with companies in Crete with a view to research-business consortia.

The initial proposals for the 2014-20 programming period by the Cretan authorities set out a number of priorities under the smart growth axis, including (1) openness of business by enhancing standardisation, processing, and product promotion, (2) strengthening research and development at the enterprise level and utilisation of R&D, (3) supporting new, innovative businesses, (4) management support for innovation development of the agricultural sector, (4) systematic use of information and communication technologies in the rural economy, tourism and culture, (5) enhancing the competitiveness of tourism by introducing innovations throughout the supply chain, and (6) diversification of tourism services. The expert team notes that these strategic priorities are broadly in line with the national and European policy guidelines, are outward looking and have a strong focus on restructuring and diversification of in the main regional business sectors.

However, the design of the future RIS3 will need to avoid a repeat of the divergence between strategic objectives and implemented projects as happened in the current

programming period. Moreover, a more detailed analysis is needed on matching knowledge and economic specialisation and support of those technologies and business services that fuel the regional economy. To this end, the analysis of the RIPWatch report on Crete offers a useful starting point.

Finally, the choice of potential actions to implementing the RIS3 should be made with respect to six criteria: (1) sustainability after the funding period, (2) creation of local capabilities, (3) integrated solutions to technology-production-market-funding, (4) of leverage of private sector funding, (5) broad number of beneficiaries, and (6) contribution to development goals of income growth and net employment creation.

## 4.2 Cluster policies

As stated above, the more traditional Cretan sectors (see Figure 7) are loosely connected to the regionally located research organisations, however, in more high-tech sectors inter-connections in the regional innovation system are improving and the STEP-C Technology Park has had a considerable impact in this respect.

Figure 7: Cluster – Size, Specialisation and Focus in Crete

Size<sup>9</sup>, Specialisation<sup>10</sup> and Focus<sup>11</sup> in Crete is mainly around *Agricultural Products, Farming & Animal Husbandry and Tourism & Hospitality* with 2 stars in the Cluster Observatory star system and *Construction* with 1 star. The Region has no clusters with 3 stars.

In the main, the actions funded have been of a horizontal and multi sector nature, like the technology park, incubators and the Industrial Zone of Heraklion. Entrepreneurial and innovation support services (like **one-stop-shops**) have been promoted by various organisations, notably through Structural Fund projects (see Appendix C). However, despite the efforts of such intermediaries collaboration between innovation actors remains limited. Three **incubators** exist and have achieved some critical mass of innovative firms. They offer services to start-ups, SMEs, investors and other actors. Policies for their development have being mainly designed and funding has being funnelled centrally and not by the regional authorities.

As might be expected, there are no regional **venture capital funds**, nor business angel networks. Attempts were made in the past by STEP-C to launch such a fund but this did not prove successful. The commercial banks, including two regional cooperative banks, are limited to providing standard business traditional loans but access for these are now scarce due to the financial crisis.

<sup>9</sup> 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.

<sup>10</sup> 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.

<sup>11</sup> 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.

During the previous and current programming periods, programmes underpinned significantly the upgrade of the research infrastructure to support research and innovation in the regional research and educational institutions. Aside from the Regional Innovation Pole, little support has been provided to cooperative R&D projects in specific fields. These actions have been insufficient to strengthen the business innovation capacity or to fully exploit the potential for applying research results and technology in priority fields and key regional economic sectors.

At the meeting held on 17 October 2012, the Crete Regional Authorities stated their willingness to implement cluster policies for the sectors in which a competitive advantage exists. Indeed, in the forthcoming period, the regional strategy places an emphasis (priorities 1 & 3) on economic activities connected with the agricultural-food complex (production, packaging, food processing, Mediterranean diet), the cultural-tourist complex (hospitality, travel agencies, cultural capital, cultural activities), and the technological educational complex (research centres, universities, technology park) and its connection to the other two. The interventions proposed are related to the lack of regional competitiveness, the limited propensity for innovation and entrepreneurship, the restricted commercialisation of research into marketable products and services, the lack of venture capital funds, the small scale of firms and the low number of knowledge intensive firms. Clusters are not mentioned, per se, but referred to in more generic terms, like, value chains, sectoral and spatial specialisations and integrated production complexes.

The expert team considers that there is a need to use more intensively cluster mapping data and techniques to identify regional competences and assets and update the existing analysis with more recent data wherever possible. The development of a regional cluster policy needs to be done through support and consulting existing sectoral and spatial specialisations, associations, unions, networks and clusters as well as leading businesses, key research actors, local financing institutions, and incubators. The region should seek and provide advice on what methodology to use to develop clusters, and consider the creation of a cluster secretariat. A particular focus should be given to strengthening the cooperation of existing/emerging sectors/clusters to make connections to local, national and global value chains (e.g., bio-agro food, food processing, tourism). Finally, 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).

### 4.3 Digital economy and ICT policies

Crete performs fairly well relative to other Greek regions but still has a fairly weak digital economy performance. According to the "Internet Users in Greece" survey (March 2010)<sup>12</sup> of the Observatory for Digital Greece<sup>13</sup>, the region is in third position for PC usage (44.6%), and for the use of the Internet (43.8%). It is encouraging that from 2005-08 Internet usage has more than doubled. The percentage of home Internet connections is 37.5% (4th place). Although these indices further improved by 2012, they are not satisfactory for a modern competitive economy.

The region hosts a small number of ICT companies, mainly focused on system integration and business software support. There have also been a significant number of spin-off companies, originating from local universities and research institution. The most notable case is Forthnet SA, which became the second largest national Internet service provider (ISP). Several other innovative ICT companies have been created, but their overall contribution to the regional economic activity is still minimal.

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<sup>12</sup> 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](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)

<sup>13</sup> See: <http://www.observatory.gr>



As noted above, the region hosts several universities and technological educational institutes, with a significant variety of ICT-related departments, most of which have high-level curricula for young scientists and engineers. Moreover, the region is home to some notable higher education and public research institutes (most of them hosted by FORTH), with significant activities in EU-funded ICT RTD projects. Their work, however, remains loosely connected with the other main production sectors (agriculture, tourism, food & beverages, health & education).

In the context of ERDF, the major ICT-related investments are carried out by the Digital Convergence Operational Programme (OP). The most important commitments include: Jeremy ICT Fund, Local Metropolitan Access Networks, Vouchers for student PCs, Academic Networking, Digi-Lodge and e-Services. Moreover, major e-government services like Elenxis, Crisis Management System for the Region of Crete, Digital Content for the Disabled, Digital Future, and e-Archanes are supported. To provide a sustainable basis for such actions, the regional authorities need to make sure that the broadband targets of the Digital Agenda will be met, namely:

- by 2013: basic broadband to all Europeans
- by 2020: Internet speeds  $\geq 30$  Mbps for all households, and internet connections  $\geq 100$  Mbps for at least 50% of the households

These crucial and ambitious goals can only be accomplished if regional, national, and EU initiatives are properly combined. Broadband requirements are also important for utilising the advantages of cloud computing<sup>14</sup>. This technological model is strongly supported by the EU and can bring unprecedented advantages to small and geographically dispersed ICT markets like Crete. Encouragingly, the first proposals of the Cretan authorities for the 2014-20 period place an emphasis on digital convergence and integration with the systematic use of ICT and development of new electronic services in areas of social and economic activity especially in the rural economy, tourism and culture.

Another important initiative that can improve the effectiveness of any ICT-related programmes is the promotion of e-government services. Although most of these services are, by their nature, provided by national authorities, there exist several cases in which regional e-government services need to be launched by the local authorities for the citizens and the enterprises of the region. Open access and interoperability are key common features to be covered by the applications to be developed for the new e-government services, based on pertinent EU guidelines<sup>15</sup>.

A significant part of the strategic ICT plan should be implemented using novel public-private partnership (PPP) models, characterised by increased transparency and less red-tape. PPPs can also lead to the leverage of the public funds and improved sustainability, providing additional flexibility to project execution.

## **Recommendations**

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

**Primary sector:** it represents a significant portion of the regional economic activity, with remarkable growth potential if combined with modern ICT tools. Agriculture, fishing and aquaculture enterprises are in urgent need to accommodate modern control, administration, monitoring, marketing, and logistics tools. Added value bio-agricultural and alternative agriculture producers can benefit from internet-based marketplace participation, to widen their distribution channels and optimise branding, procurement, packaging etc. Farmers and livestock unit owners could also

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<sup>14</sup> [http://ec.europa.eu/information\\_society/activities/cloudcomputing/docs/com/com\\_cloud.pdf](http://ec.europa.eu/information_society/activities/cloudcomputing/docs/com/com_cloud.pdf)

<sup>15</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2006:0173:FIN:EN:PDF>

be supported to optimise their production activity, by employing modern control and monitoring tools, especially in reducing the cost of energy by using alternative sources.

Transportation: the cost and time consumed 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.

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.

Energy & environment: 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.

Tourism & culture: 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 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 all the related national- and EU-level actions, to further extend broadband in the Region. More specifically, it should help making local Industrial Zones/Parks as “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 platforms<sup>16</sup>.

- 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

Monitoring refers to the need of verifying the state of implementation of activities. Evaluation refers to assessing whether and how strategic goals are met. Hence, it is essential that RIS3 objectives are clearly defined in measurable terms and that during the design of the RIS3 a limited yet comprehensive set of results indicators and target values for each of them are set. The limited capabilities for monitoring, evaluation and analysis of innovation programmes and performance should be enhanced and embedded in both the new regional government structures and the RIS3 partnership. A specific budget line could be set aside for a 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 period<sup>17</sup> 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.

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<sup>16</sup> [http://ec.europa.eu/information\\_society/activities/cloudcomputing/docs/com/com\\_cloud.pdf](http://ec.europa.eu/information_society/activities/cloudcomputing/docs/com/com_cloud.pdf)

<sup>17</sup> See: <http://bit.ly/Igzx5T>



## Appendix A List of participants at stakeholder meeting

1. Αντιπεριφερειάρχες Περιφέρειας Κρήτης
2. Πανεπιστήμιο Κρήτης
  - κ. Πρύτανη
3. Πολυτεχνείο Κρήτης
  - κ. Πρύτανη
4. ΤΕΙ Κρήτης
  - κ. Πρόεδρο
5. Ίδρυμα Τεχνολογίας και Έρευνας(ΙΤΕ)
  - κ. Πρόεδρο
  - κ.κ Δ/ντες Ινστιτούτων ΙΤΕ
6. ΕΛΚΕΘΕ
  - κ. Πρόεδρο
7. ΜΑΙΧ
  - κ. Δ/ντη
8. ΕΘΙΑΓΕ (Δ/ντες Ινστιτούτων Κρήτης)
9. Τεχνολογικό Πάρκο (κο Δ/ντη)
10. Πρόεδρο και Αντιπρόεδρο Συμβουλίου Καινοτομίας
11. Επιμελητήριο Ηρακλείου, Χανίων, Λασιθίου, Ρεθύμνου (κ.κ Πρόεδροι)
12. Τεχνικό Επιμελητήριο
  - Τμήμα Ανατολικής Κρήτης (ΤΕΕ/ΤΑΚ) (κο.Πρόεδρο)
  - Τμήμα Δυτικής Κρήτης (ΤΕΕ/ΤΔΚ) (κο.Πρόεδρο)
13. Οικονομικό Επιμελητήριο
  - Τμήμα Ανατολικής Κρήτης(κο.Πρόεδρο)
  - Τμήμα Δυτικής Κρήτης(κο.Πρόεδρο)
14. Γεωτεχνικό Επιμελητήριο / Τμήμα Κρήτης (κο Πρόεδρο)
15. Σύνδεσμοι Ξενοδόχων Κρήτης(κ.κ. Πρόεδροι)
16. Υπεύθυνο Επιτροπής Πολιτισμού Περιφέρειας Κρήτης (κ. Οδυσσέα Σγουρό)
17. Μουσείο Φυσικής Ιστορίας Κρήτης
18. Εφορείες Αρχαιοτήτων Κρήτης
19. Μέλη της ΟΣΠ Περιφέρειας Κρήτης

## Appendix B List of key documents and reference materials

European Commission & Greek Government (2007) Επιχειρησιακό Πρόγραμμα Κρήτης και Νήσων Αιγαίου 2007-2013 / Operational Programme of Crete and Aegean Islands 2007-2013

Region of Crete (2012) Διαμόρφωση των κατευθύνσεων εθνικής αναπτυξιακής στρατηγικής προγραμματικής περιόδου 2014-2020, Formulation of guidelines for national development strategy of the programming period 2014-2020.

Logotech (2007) RIP – WATCH. Analysis of the Regional Dimensions of Investment in Research. Case Study Regional Report: Crete (Greece), Erawatch Network ASBL

Nikolaidis Y., Y. Bakouros (2009) Innovation Penetration into a Region with Specific Features: The Case of Crete, Greece. International journal of entrepreneurship and innovation management. Vol. 9. 1/2, p. 118-138 Available at: <http://users.uom.gr/~nikolai/6-Nikolaidis,%20Bakouros.pdf>

Regional Innovation Monitor (2012), <http://www.rim-europa.eu/index.cfm?q=p.baseline&r=GR43>

## Appendix C Key Actors in of the regional innovation system

### **Emerging Clusters/Sectors:**

Agricultural Products, Farming & Animal Husbandry (veterinary activities, etc), Tourism & Hospitality (renting of automobiles, tourist assistance activities, hotels), Processed food (dairy products, collection/purification/distribution of water, etc), Transportation and Logistics.

### **Leading Businesses:**

Forthnet, Xalkiadakis, Kouvidis, Karatzis, Myclima, Kalabokis, Critida, Kritiki Gi, Candia Nuts, Digenakis, Creta Farm, Escargot de Crete, Savoidakis, Stelman, Cretan Ceramics, Cretan Herbalchem, Plastika Kritis, Service Car Rental – Paspalaki, Virtual Trip, Anatoli, Noveltech, Dialynas, Agricultural - Dairy Cooperative of Anogea - "Proodos", Stormrider, BioAnalytica, ANEK Lines, Food Allergens Lab, Amari, Sychem, Cytech, lastminute.gr, Medotics, Green Innovative Partners,

### **Key Research Actors:**

University of Crete, Technical University of Crete, Foundation for Research and Technology-Hellas (FORTH), Hellenic Centre for Marine Research, National Agricultural Research Foundation, Mediterranean Agronomical Institute of Chania, TEI of Crete, National Interprofessional Organisation of Olive Oil & Olives, etc.

### **Innovation Financing:**

Pancretan Cooperative Bank, Cooperative Bank of Chania

### **Incubators, Industrial Areas/Zones**

Science and Technology Park of Crete (STEP-C), Virtual Incubator of Innovation Center of Crete, Incubator of New Enterprises of Chania, Industrial Zone of Heraklion.

### **Principal Intermediaries:**

Heraklion Chamber of Commerce & Industry, Chania Chamber of Commerce & Industry, Chamber of Lasithi, Chamber of Rethymno, Exporter's Association of Crete,

Technical Chamber of Greece (Chapter of Eastern Crete, Chapter of Western Crete), Economic Chamber (Chapter of Eastern Crete, Chapter of Western Crete), Agronomist Chamber of Greece, Associations of Hoteliers of Crete, Heraklion Development Agency, Western Crete Development Organisation, Psiloritis Development Agency, Development Agency of Lasithi, Cretan Quality Agreement, Unions of Agricultural Activities of Crete (Apokorna-Sfakia, Heraklion, Ierapetra, Merabelos, Monofatsi, Mylopotamos, Peza, Rethymno, Sitia), etc

## Appendix D Regional RTDI funding under the OP Competitiveness and Innovation

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
<b>Attiki</b>	€ 78,383,203	€ 33,291,462	€ 480,411	€ 112,155,076	47.4%
<b>Central Macedonia</b>	€ 22,588,727	€ 13,566,039	€ 38,300	€ 36,193,066	15.2%
<b>Western Greece</b>	€ 22,841,816	€ 8,901,221	€ 7,000	€ 31,750,037	13.4%
<b>Crete</b>	€ 3,623,524	€ 13,728,214	€ -	€ 17,351,738	7.2%
<b>Stereia Ellada</b>	€ 9,388,903	€ 1,397,119	€ -	€ 10,786,022	4.6%
<b>East Macedonia &amp; Thrace</b>	€ 5,886,928	€ 1,864,884	€ 25,090	€ 7,776,902	3.3%
<b>Thessaly</b>	€ 4,648,471	€ 2,134,643	€ 253,000	€ 7,036,114	3.0%
<b>Epirus</b>	€ 2,403,100	€ 1,887,252	€ -	€ 4,290,352	1.8%
<b>Peloponnese</b>	€ 3,382,986	€ 545,200	€ -	€ 3,928,186	1.7%
<b>Βορείου Αιγαίου</b>	€ 1,813,280	€ 425,506	€ -	€ 2,238,786	0.9%
<b>West Macedonia</b>	€ 1,355,665	€ 524,695	€ -	€ 1,880,360	0.8%
<b>Ionian Islands</b>	€ 388,000	€ 120,000	€ -	€ 508,000	0.2%
<b>Νοτίου Αιγαίου</b>	€ 476,000	€ -	€ 18,750	€ 494,750	0.2%
<b>Grand Total</b>	€ 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.

