

## ***REGION OF CRETE, GREECE***

### **Geographical Information**

The total area of Crete is 8.336 sq.Km. (6,3% of the total area of the Greek territory). It is located at southern edge of the Aegean Sea, at a distance of about 160 sq.Km. from the mainland. It has a remarkable coastline of more than 1000 Km.



### **Population Characteristics**

The population of the Region of Crete according to the census of 2011 was 621.340 and corresponded to 5.48% of the population of Greece.

During the decades 1981-1991 and 1991-2001, the population showed a constant upward movement with the relevant per cent changes being higher than those of the rest of the country (7.55% and 11.31% for Crete and 6.86% for the entire Country).

Totally, population in Crete increased by 19.71% during the period 1981-2001, which underline its ability to keep and renew its population.

### **Economic Facts**

#### **a. Gross Domestic Product**

The Region of Crete participates in the **Gross Domestic Product** of the country at a percentage of 4.9%. In particular, for the year 2010, according to recent updated data of the Regional Accounts of the Hellenic Statistical Authority, the GDP of Crete amounted to 10.955 million euro and formed 4.9% of the national GDP. The Regional Unit of Heraklion, being the most populated one, has the largest participation (49%) in the regional GDP,

followed by the Regional Unit of Chania (25%). The participation of the Regional Units of Lasithi and Rethymno is at lower levels (both at 13%).

The GDP of Crete showed a considerable increase (75,35%) during the years 2000-2008, in line with the 73,85% increase in the national GDP for the same period but considerable decline after 2009.

## b. Per capita Gross Domestic Product

The **per capita Gross Domestic Product** of Crete is 91% of that of the country. In the year 2010 it amounted to 17.881 euro with considerable intraregional divergences (Table 1).

The per capita GDP of Crete showed a constant upward course during the years 2000-2008.

2010	PER CAPITA GDP	AS % OF GREECE
GREECE	19.646	
CRETE	17.881	91%
Irakleio	17.678	90%
Lasithi	18.986	97%
Rethimno	17.197	88%
Chania	18.107	92%

Table 1: Per capita GDP Crete and Greece

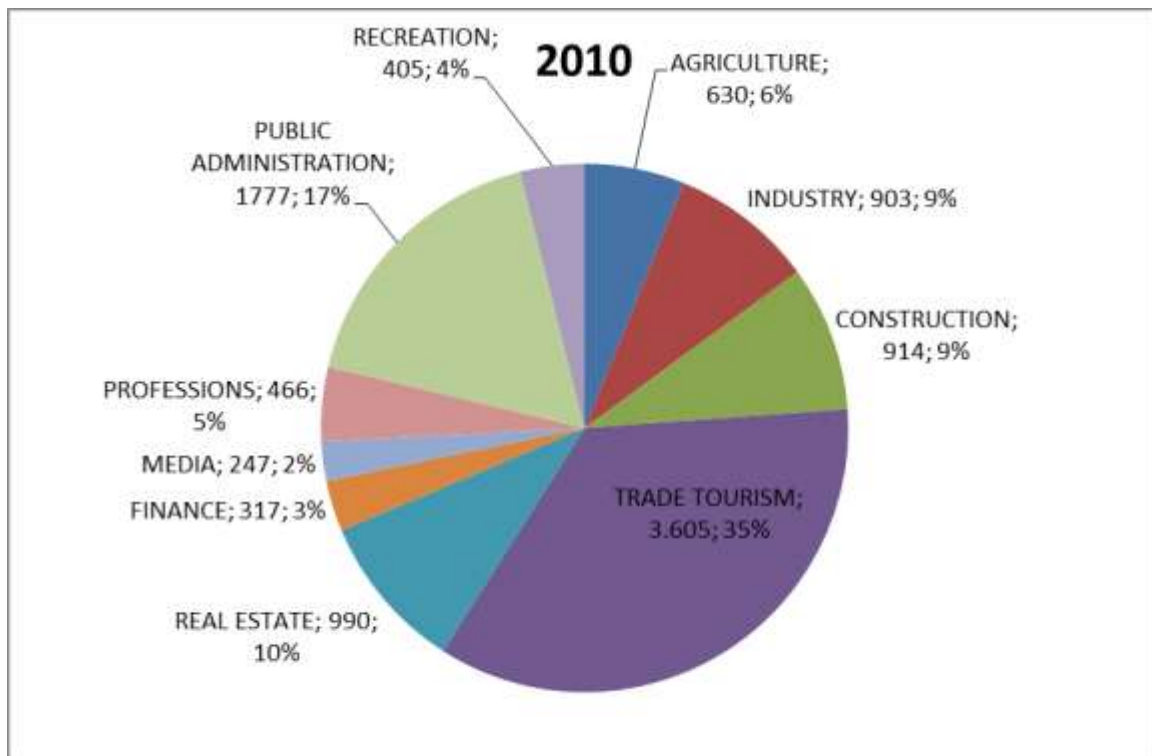
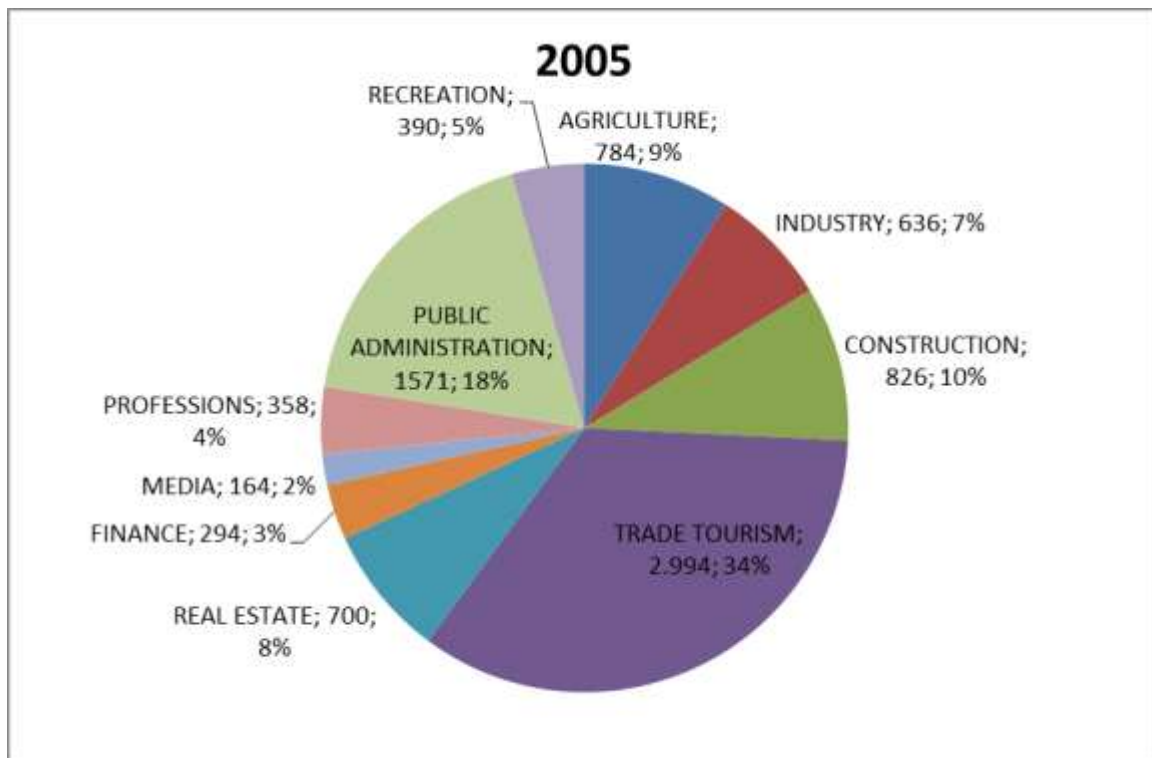
Greece's GDP per capita in PPS terms declined to 75% of the EU27 average in 2012. Actual Individual Consumption per capita was 84% of EU27.

## c. Gross Added Value

	2005	2006	2007	2008*	2009*	2010*	Change 2005/2010
GREECE	172.595	183.659	195.622	205.035	205.901	195.223	13%
CRETE	8.716	9.218	9.611	10.088	10.145	9.627	10%

Table 2: Gross Added Value evolution

The **Gross Added Value** in the total of the productive branches in Crete amounts to 9.627 million euro (data of the year 2010). GAV peaked in 2009 and then started to decline as a result of the on-going crisis (Table 2).



**Chart 1:** Gross Value Added by sector in Crete (Source: EL.STAT. 2012)

Agriculture has considerably declined in the 2005-2010 period, both in absolute terms and as a percentage of total GAV. By contrast Industry, Trade and Tourism and Real Estate have considerably strengthened their position in the regional economy (Chart 1).

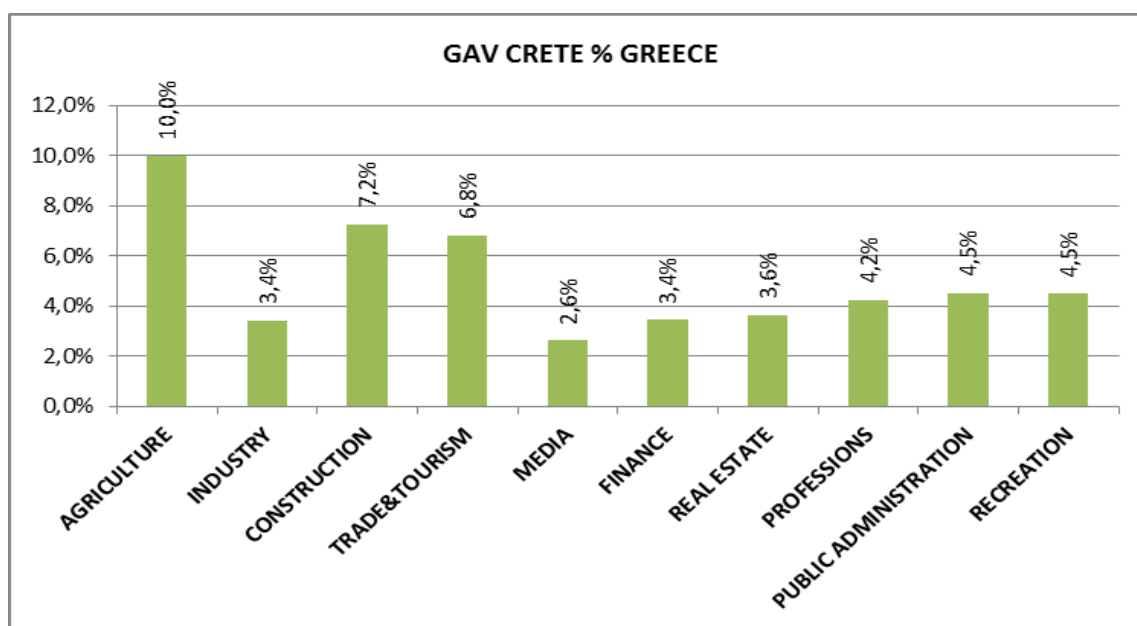


Chart 2: GAV Crete % Greece 2010

In the **Primary sector** Crete contributes 10% to the added value of the branch at national level (chart 2). This figure, however, can further be considerably improved, focusing on matters of standardization, packaging and promotion of the quality agricultural products of Crete.

The decrease of the added value in agriculture can be explained to a certain degree by the abandonment of some traditional cultivations, such as the vineyard cultivation, in combination with the constantly falling prices of olive oil and some vegetables. The areas with a large decline in agriculture are those exhibiting a rapid development of tourism. Mass tourism increases revenues but also creates imbalances. While the more developed areas mainly along the northern coast continue to develop, inland rural areas are declining and their economic situation is deteriorating.

The **Primary sector** has a balancing effect to regional growth position in terms of products and employment, but it is characterized by small size and fragmented lots, dependence on traditional models and cultivations, structural backwardness with imperfect infrastructures, largely outdated production systems and low postproduction added value. The cultivations of vegetables cover 3% of the total cultivation areas, but Crete has 50% of the greenhouses in Greece, with considerable advantages in the productions of vegetables and flowers. Animal breeding is also fragmented, with few organized animal farms. However, there are significant preconditions for the development of dairy products.

In the **Secondary sector** there are structural problems concerning the usually small size and the family form of the businesses. This structural characteristic of most of the businesses largely explains their organizational and economic weaknesses and the subsequent low innovation.

Manufacturing mainly involves the processing of the products of the primary sector (foods and drinks), supporting activities to the construction sector and the sub-sector of plastics which has been supplying the primary sector with materials.

The relations between manufacturing and services, networking and interconnection with research centres are kept at low level. The degree of relocation to organised industrial zones has been limited and this situation creates environmental problems and pressures along with the expansion of settlement and the development of other sectors in the local economy. The trends in the exports are hopeful, showing an increase of 13.5% in Crete for the period 07/2010-06/2011.

The sector of **Energy** and in particular the Renewable Energy Sources can be an important source of economic activity and employment growth in the island and can also reduce dependence on fossil fuels. The potential of the sector remains strong and there are great possibilities in the field of hybrid systems. The widest possible use of renewable energy sources technologies contributes to the safety of energy supplying and the development of new economic sectors, creating new jobs.

The sector of "Green" energy can also be a pillar of development, promoting economic growth through large "clean" investments, social cohesion through the creation of new decentralised work positions and complementary incomes, the protection of the environment and the development of local expertise and technology.

In the **Constructions sector** Crete participates in the country total with a satisfactory percentage (7.2%).

The sector is generally undergoing a period of deep depression. In the past it has benefitted mainly from the development of the tourism branch and extensive public works.

The strongest sector of the Cretan economy remains "Trade and Tourist Services" contributing 6.8% to the country total. , The Regional Units of Heraklion and Chania appear to be stronger than the rest of the regional units, having some of the most important tourist developments of the island and the two largest cities.

**Tourism** is the most dynamically developing sector and the demand gave incentives for important investments in hotel units, resulting in the qualitative and quantitative upgrading of hotel infrastructures. At the same time it is facing structural problems, consisting mainly in its seasonal nature and the limited expansion of the tourist movement to the inland settlements, as tourist infrastructures are mainly gathered in the northern coast and small centers in the south, while its course is largely influenced by outward, uncontrollable conditions, contributing to fluctuations in its performance.

An important competitive advantage of the tourist branch is the high percentage of high standard hotel infrastructures. As seen in Table 3, Crete has 30.31% of the total of 5 star beds in Greece and 24.57% of 4 star beds respectively.

	<b>Total</b>	<b>5*****</b>	<b>4****</b>	<b>3***</b>	<b>2**</b>	<b>1**</b>
<b>Units</b>	15,84%	24,55%	18,80%	14,50%	15,77%	13,71%
<b>Rooms</b>	21,64%	30,51%	24,59%	16,36%	19,92%	19,22%
<b>Beds</b>	21,31%	30,31%	24,57%	16,08%	19,06%	18,48%

**Table 3:** Hotel capacity (percentage to Greece) by category in Crete, 2011 (Source: SETE 2012)

During the four months of the high tourist season (June – September) the Airport of Heraklion is the first airport in international tourist arrivals in Greece.

In the tertiary sector, the administrative, educational and financial services, as well as transportation, are mostly concentrated in the large urban centres.

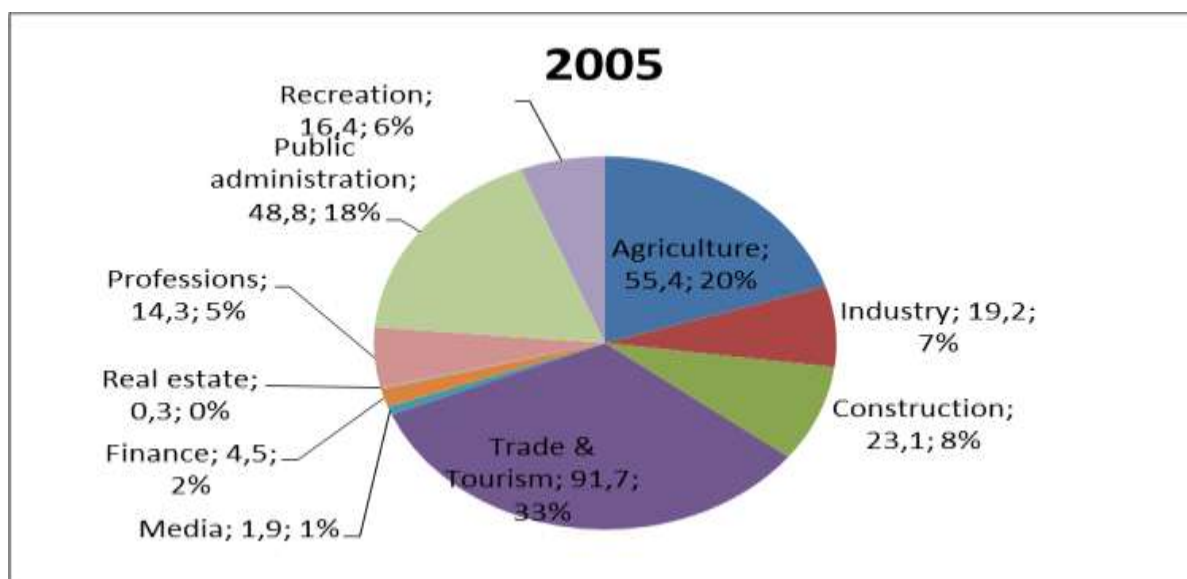
Because of the insular nature of the economy and its exporting orientation, very powerful transportation and shipping companies have been founded.

Since 1980 a University, a Technical University and Technological Institutes, as well as important Research Centers (Foundation of Research & Technology, Hellenic Centre for Marine Research etc.) were founded in Crete.

The participation indices of Crete to **research activities** are considerable higher than those of the rest of the Regions of Greece.

## Employment

Employment in the Region of Crete has declined from 275.549 in 2005 down to 263.658 in 2010. Some significant changes took place in the different branches of the regional economy. The crisis has led to further declines in 2011/2012 but it seems now that there is a reversal to this trend and as a result unemployment is falling over the last year.



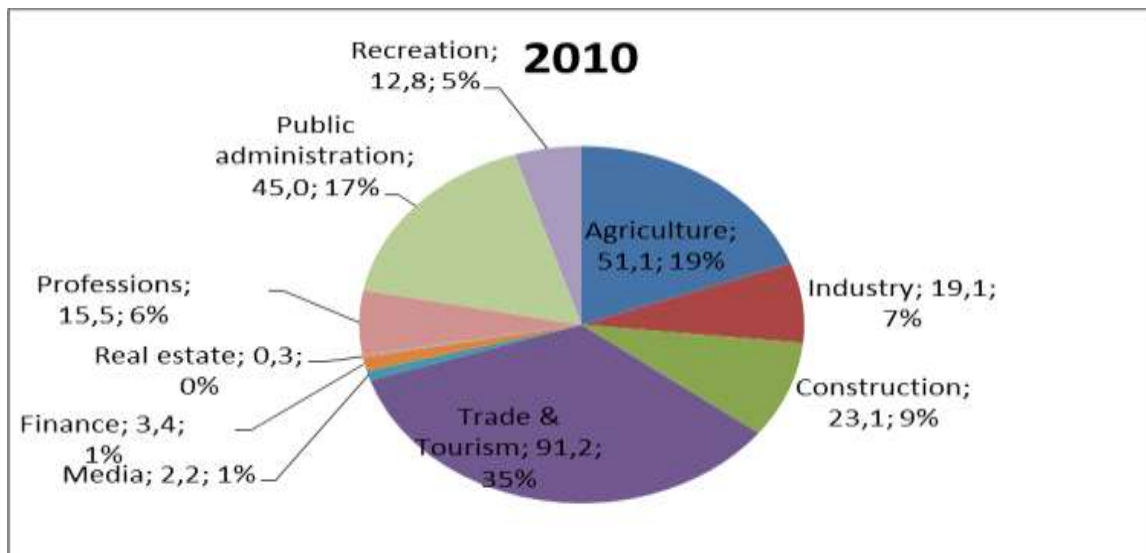


Chart 3: Employment structure 2005-2010

## Regional Innovation Performance

Crete is the largest and most populous of the Greek Islands, accounting for 5.4% of the Greek population in 2011. 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).

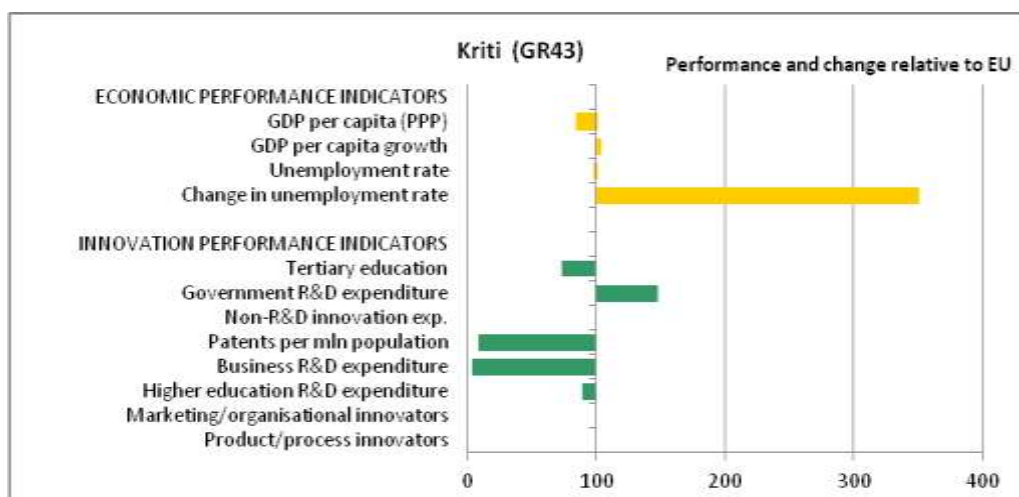


Figure 1. Summary benchmark of regional innovation performance

The European Regional Innovation Scoreboard<sup>1</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>2</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. The Technical University of Crete (TUC) 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>3</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 and medical and health sciences, whereas the TUC is mainly active in natural sciences and engineering and technology. The main fields of publication of FORTH are natural sciences, medical sciences and health sciences and engineering and technology.

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

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<sup>1</sup> MERIT & Technopolis 2012

<sup>2</sup> More recent data is not available to judge whether there has been brain drain since the financial crisis.

<sup>3</sup> The relative number of citations to publications of a university compared to the world average



industries in which Crete is most specialised compared to other regions<sup>4</sup>. Crete is highly specialised in the renting of automobiles; growing of crops, market gardening, horticulture; and hotels.

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

Figure 2: Relative regional specialisation in 20 industries – Crete

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

## 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

<sup>4</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).

including local authorities, higher education and research organisations, chambers (business, technical, geotechnical, hospitality) and other non-governmental bodies.

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.

## **Regional Innovation Council of Crete (RIC)**

### **Vision**

The vision of RIC, which was established in 2011, is the creation of a strong and continuously developing Economy of Knowledge, based on technological innovation, aimed at upgrading the quality of life of the residents of the Region of Crete and achieving sustainable development which respects the environment and culture.

### **Scope**

The RCIC operates as an advisory body of the Region, dealing with issues related to the promotion of innovation and the strengthening of the competitiveness of Crete, proposes actions which could be realized by bodies or partnerships of bodies with financing from various sources. Furthermore, it proposes changes and revisions in case the actions realised are not effective. The RIC may constitute ad hoc working groups with the responsibility of recommending issues for elaboration, which will be either proposed for discussion or selected for this reason by the Council on the basis of Region's priorities and Strategy.

10 **Working Groups** are currently in operation. Participation is voluntary and anyone interested should contact the RIC at [info@crete2020.eu](mailto:info@crete2020.eu).

### **Structure**

The RCIC is composed of a relatively small number of personalities and experts who represent the academic/research community and the world of business and bodies which plan and realize actions for the development of Crete. No payment is foreseen for the participants.

After the completion of its establishment, the Council will compile a Regulation of Operation which will be approved by the Regional Authorities. The Regulation will describe in detail its structure and way of operation and its revision will be possible upon proposal of the Council to the Regional Governor.

The Chairman and the Vice-Chairman of the Council are appointed by the Governor of Crete. In case of absence the Vice-Chairman replaces the Chairman. The Governor summons the Council upon proposal of the Chairman or whenever issues evolved for which the proposals and/or the opinion of the Council are required.

### **Strategic Targets**

The Council has immediate, short-term and long-term targets. The immediate and short-term targets of the Council may include:

- The contribution to the compilation of a Strategic Plan of the Region for Innovation including the registration of new sectors for entrepreneurial activity and the identification of legal or other obstacles to entrepreneurial or other action.
- The contribution to the development of a policy for better utilization of the impending Innovation Pole of Crete. The development of this policy should take into account the experience of the last 30 years and the need for a structure that will facilitate and promote innovation and entrepreneurial activity, like the Centers of Service of Citizens facilitated the life of citizens.
- Finding and highlighting Best Practices of entrepreneurial activity for imitation and/or support.
- The establishment of the institution of "Innovation Days" in Crete and organization of various events with thematic focus.
- The establishment of yearly prizes and awards of Youth & Student Entrepreneurship.
- The creation of a Network of Technology Transfer in the Region with the cooperation of all institutes, bodies and businesses and creation of a "technological portfolio" for the utilization of mature technologies.
- The creation of a Regional Observatory of Innovation & Digital Centre of Information in the Region for registration, data processing, production of indices and dependable facts about the Region of Crete and creation of tools to support Innovation.
- The promotion of networking through clusters, technology platforms etc.
- The creation of a network of experienced businessmen who will be Mentors to new businessmen through the existing bodies (Unions, Chambers etc.).