

Stimulating academic entrepreneurship: Cases from Crete

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OPENDAYS 2006, Brussels, 9-12 Oct.2006

Crete is located at the southern end of Europe, on the crossroads to Asia and Africa. These geographical characteristics provide Crete the unique chance to play a key role in the international scene. It is the biggest Greek Island with an area of 8,336 sq. km and a population of 603000 representing 5,5 % of the country's population.

Crete has a fascinating history and culture. During the 70's it was developed as a "sun and sea" resort destination. Its main competitive advantages are the climatic conditions, the archaeological sites, diverse natural resources, crystal blue waters combined with a wide range of activities, as well as high quality accommodation establishments with congress centres, sport facilities etc. Since 1975, a high number of HEIs were established (University of Crete, Technical University of Crete, Technological Educational Institute of Crete, Foundation for Research & Technology Hellas, Mediterranean Agronomic Institute of Chania, 3 Institutes of National Agricultural Research Centre). From the research and technology perspective, it possesses a strong infrastructure with an international presence and reputation. The RTD system is well equipped with modern facilities in a range of high-tech areas and internationally competitive, especially for EU research funding.

Specific strengths of the research and academic institution in Crete include:

1. **Biotechnology and Biomedicine** with emphasis in Molecular Biology & Genetics, Genomics, Enzyme Technology, Medical Ophthalmology and applications of Laser and Technology in Medicine and Art.
2. **Information and Communication Technologies** with emphasis in Computer Science, Robotics, Vision systems, Teleworking and Telemedicine.
3. **Laser Technologies.** The Institute of Electronic Structure and Laser (IESL) (www.iesl.forth.gr) is a European Laser Facility and training Centre for European scientists. IESL developed laser technology for industrial, medical and art applications.
4. **Marine Biology/Biotechnology & Aquaculture**, with substantial contribution to the fish farming and to the fishing policy within the country. The Institute of Marine Biology and Genetics, a part of the Hellenic Centre for Marine Research (HCMR) (www.hcmr.gr) is one of the leading institutions in Marine Biology and Biotechnology in the Mediterranean, providing technological support to the fast growing sector of fish farming.

5. **Energy Technologies** with emphasis in wind, photovoltaic and other renewable energy sources, where Crete has potential for growth due to limitations in energy supply and the growth of demand.

6. **Tourism**

Crete is an established destination with a high profile and (mostly) good image, with very strong customer loyalty from some market segments and towards certain products. Also there are a number of high quality hotels and sophisticated (local) tour operators/destination handlers.

In contrast to these strengths, there are major weaknesses. The impact of the supply side to the regional economy has been almost minimal, with the exception of FORTH. Generally, technology transfer and promotion of innovation seems to be weak. Support systems for new technology-based firms are almost non-existent and there have been no direct foreign investments in the high-tech area. Only very recently, in the framework of the 3rd CSF programmes and measures supporting the establishment of Technology Incubators exploitation of research results and spin-off companies have been implemented. Some collaboration is evident within the system with some examples of shared research projects but the capability exists for more.

The **Foundation for Research and Technology Hellas (FORTH)** (www.forth.gr), is one of the three main National Research Centres in Greece and the only one based in the periphery of the country. It consists of 7 Institutes located in the cities of Heraklion, (**Institute of Molecular Biology Biotechnology (IMBB)**, **Institute of Electronic Structure and Laser (IESL)**, **Institute of Applied and Computational Mathematics (IACM)** and **Institute of Computer Science (ICS)**), Rethymnon **Institute for Mediterranean Studies (IMS)**, Patras (**Institute of Chemical Engineering and High Temperature Processes (ICE-HT)**) and Ioannina (**Biomedical Research Institute**). The main mission of FORTH is the engagement in high quality basic and applied research. In carrying out this mission, FORTH does not neglect the development of new technologies, the diffusion of know-how and the creation of new products and services in an effort to respond to the demand of the Greek society for modernisation and innovation – features, which will allow the country to actively participate in the international economic competition.

In response to these challenges, FORTH, among other activities:

- Created 3 Science & Technology Parks (Crete, Patras, Thessaloniki) in the periphery of Greece.
- Set up in collaboration with the Greek Industrial Association in Athens and the Northern Greece Association in Thessaloniki, **HELP-FORWARD**, (www.help-forward.gr). Its mission is to make Greek enterprises and laboratories more competitive via technology transfer, to facilitate the exploitation and utilization of RTD results, to strengthen the links between research and industry, to promote and facilitate innovation and to contribute towards European cooperation.
- Created 8 spin-off companies
- Is engaged in sales of products and services of high technological content in an effort to test them in the domestic and international market and open the way for new spin-off companies.
- Developed the **HYGEIAnet** network, (www.hygeianet.gr) which aims at strengthening health care in the Region of Crete guided by the principles of

universality, accessibility, comprehensiveness, portability and public administration.

The Science and Technology Park of Crete (STEP-C), was established in 1993 by FORTH. The idea was to promote the creation of a third thrust of development on the island, in addition to the agriculture and the tourism industry. It collaborates closely with the private sector as well as with the University of Crete (UoC) and the other HEIs of the island. STEP-C gears itself to become an ever increasing attraction as an Incubator, nurturing spin-offs and small innovative companies in the areas of Medical Equipment, Biotechnology, ICT, Microelectronics and Laser applications, Environmental Technology, Polymers and Applied Mathematics, key strengths areas of FORTH and the University of Crete.

UNISTEP (**U**niversity **S**tudents **E**ntrepreneurship **P**roject) was a pilot action, financed by European Commission and the Greek Government through CRINNO, the Innovative Actions Project of the Region of Crete. (www.crete-region.gr). It focused on the creation of a positive environment for cultivating entrepreneurship among University students. The project was a joint effort between Technical University of Crete (TUC), University of Crete (UoC), Foundation of Research and Technology Hellas (FORTH) and Science and Technology Park of Crete (STEP-C). The action focused at promoting the creativity and entrepreneurship of TUC and UoC students while exploiting knowledge of academic personnel and research infrastructure. This action involved the creation of an appropriate lab type environment where groups of students or post-graduate students can work for creating, developing and testing a prototype based on their idea, and which could be the basis for development of a new product or service leading to a new technology based enterprise. The two Universities and FORTH provided access to the use of large and expensive laboratory equipment, under the supervision and direction of academic personnel, necessary for the successful development and testing of the prototypes while STEP-C offers space for the placement of created enterprises.

The supporting environment provided for appropriate training of the students participating in the Nursery of Ideas. Four training modules were offered: Introduction to Entrepreneurship, Entrepreneur and the Legal Environment, Developing a Business Plan and Financing of a New Venture. In addition, a network of Mentors from successful entrepreneurs was established, in order to support the students during the development of their prototype and help them to develop their business plans, to seek additional funding and establish start-up companies. 20 ideas have been financed during the implementation of the project.

The implementation of UNISTEP was the first attempt to cultivate an entrepreneurial culture and support university students to test their business ideas, in a Greek peripheral region. The training and financial support of the students, was very important during the first stages of the program, while the establishment of a group of Business Mentors, who supported students during their work, as well as after the end of the project, was also an important element of the programme. The successful implementation of the first projects, in addition to the continuation of the programme, through the new “Regional Innovation Pole” Project, will create an environment, which will promote entrepreneurship and innovation within the academic institutions.