

CEI CANARIAS - CAMPUS ATLÁNTICO TRICONTINENTAL

UNIVERSITY OF LAS PALMAS DE GRAN CANARIA – UNIVERSITY OF LA LAGUNA REPORT FOR ADDITIONAL FUNDING THROUGH THE AUTONOMOUS REGION

The CEI (International Campus of Excellence) of the Universities of the Canary Islands (University of Las Palmas de Gran Canaria and University of La Laguna) as a determined geo-strategic move to become the benchmark Atlantic centre as a catalyst for talent, of teaching, research, innovation and transfer projects for the Europe-Africa-South America axis, in three key areas of university knowledge: Marine-Maritime Science and Technology, Astrophysics and Biomedicine applied to development cooperation. In 2010, the Tri-continental Atlantic Campus was awarded the category of International Campus of Excellence at a regional level and the projects for which funding was received have subsequently been set up. However, in order to ensure the successful implementation of some of the most emblematic actions of the Campus, additional funding is being sought from the Autonomous Government in this call for proposals. The projects for which this additional financing is requested are listed below, with the corresponding benefits they represent for the Campus.

1. Marine Scientific-Technological Park

Contribution to Campus Enhancement: the Park constitutes a benchmark in studies of the sea in the Canary Islands. Boosting the Campus will consolidate it as a tri-continental benchmark centre in teaching, research, innovation and knowledge transfer in the marine field.

Description: the additional funding of this activity is intended to continue to develop the existing Marine Scientific-Technological Park of the Canary Islands, based on the strategy outlined in the Campus: endowing it with communication networks enabling it to be integrated in international R&D+i (innovation) networks and combine on-line teaching with face-to-face methodology: the Integral Biosecurity Plan for the Park's Aquaculture Installations; the Integral Energy Efficiency Plan; the incorporation of teaching equipment and a residence; adaptation of installations to encourage joint use of the university equipment of the Canary Islands Marine Science Institute (ICCM, in its Spanish initials) and the Oceanic Platform of the Canary Islands; and acoustic equipment for oceanographic boats.

The development of the Park covers the following activities, principally aimed at endowing it with appropriate equipment: Genetic Selection of Aquatic Organisms State (ESAC, in Spanish), Research and Technological Transfer Laboratory in Environmental Radioactivity, Underwater Automatic Systems: Installation of underwater automatic systems and devices to control organisms in seaculture; Quarantine issues. The intention is also to consolidate the Office of Valorisation and Commercialisation as a centre for the transfer of results in the marine environment.

Expected outcomes: improvement in the knowledge and innovation of and training in the marine environment; coordination of multidisciplinary research teams and projects in Marine science and Technology; to promote enhanced use of Human Resources and infrastructure dedicated to studying the sea in the Canary Islands; to broaden the education and training available and to increase knowledge transfer activities.

Budget	2012	2013	2014	2015	TOTAL
Equipment Purchasing	550,000.00 €	550,000.00 €	500,000.00 €	400,000.00 €	2,000,000.00 €
TOTAL	550,000.00 €	550,000.00 €	500,000.00 €	400,000.00 €	2,000,000.00 €

Indicators (expected by 2015)			
No. of indexed publications	40	No. of projects granted	4
No. of certified research brackets achieved	9	No. of companies participating	22
No. of researchers undertaking research stints abroad	9	No. of Spin-Off companies	1
No. of researchers from other institutions	5		

2. Spanish Algae Bank

Contribution to Campus Enhancement: boosting this Algae Bank, an internationally acknowledged body in algae study, will help to improve the Campus's indicators of excellence in research, transfer, innovation, teaching, and the development of a first-class institution on an international level within the framework of the Tri-continental Atlantic Campus.

Description: the further funding of this activity is intended to continue to develop the existing Spanish Algae Bank, based on the following strategy: to consolidate a working team in the Algae Bank in order to be able to generate visible results; to reactivate the *Master in Applied Algology*, particularly highlighting the biotechnological applications of microalgae; to channel the Bank's activity towards the creation of a Technological Centre in Algal Biotechnology, managed by a private R&D Foundation (and integrated within the Marine Science and Technology Park), with an associated pilot plan of some 10-12ha; and to promote the setting up of business clusters in algal biotechnology.

Expected outcomes: To consolidate the Algae Bank as an international depository authority for microorganisms, in accordance with the Budapest Treaty (preservation of one-off biodiversity, isolation, identification, conservation and supply of species and strains of microalgae and cyanobacteria); to promote the bio-industrial use of microalgae in the following fields: biofuel, food, biomedicine, dermo-cosmetics, animal feed, additives, climatic regulation (CO₂ sequestration), nutraceuticals; international training of experts in all aspects of algal biotechnology (from isolation and conservation to culture and processing), an little-known emerging biotechnological field that is as yet not well known; to be a benchmark on a global level in algal biodiversity, training in algal biotechnology and nurture of bio-companies working on algal biotechnology.

Budget	2012	2013	2014	2015	TOTAL
Equipment Purchasing	400,000.00 €	300,000.00 €	300,000.00 €	200,000.00 €	1,200,000.00 €
TOTAL	400,000.00 €	300,000.00 €	300,000.00 €	200,000.00 €	1,200,000.00 €

Indicatos	2015		
No. of indexed publications	20	No. of technological services on offer disseminated	5
No. of publications indexed in the top quartile	12	No. of transfer agreements	4
No. of certified research brackets achieved	4	No. of contracts with companies	5
No. of European projects granted	2	No. of transfer actions with international companies	3
No. of European projects coordinated	1	No. of income sources derived from licences	3
No. of researchers undertaking research stints abroad	4	No. of patents registered	8
No. of researchers from other institutions	12	No. of requests for services	10
No. of doctorate students awarded grants as a result of the call for proposals	4	No. of transfer experts trained	4
No. of Spin-Off companies	2	No. of companies participating	2
No. of placements in companies	2	No. of companies located on the Campus	3
No. of users of scientific and technical users	> 25		

3. Atlantic Scientific, Technological and Advanced Teaching Centre in Cetaceans

Contribution to Campus Enhancement: boosting this Centre will lead to the completion of a scientific and technological project that also includes the teaching facet, for research into the recovery and conservation of cetaceans, using biotechnological and bio-health advances.

Description: the Centre is oriented to the carrying out of the following actions: creation of a multidisciplinary research centre applied to the conservation of cetaceans and their role as a bio-indicator in terms both of animals and of the environment; generation of a consortium for research into cetaceans in the Canary Islands; implementation of the current research and conservation research Unit, a medical-surgical unit and one for image diagnosis, and a tissue and sperm bank; implementation of the current scientific and technical collaboration agreements with the Tourist Parks in the Canary Islands with cetaceans in captivity; collaboration agreement with the associations of tourist businesses for cetacean spotting or watching; generation of a node in the National and International Network for activities in the conservation of cetaceans and in other international bodies; agreement with the Canary Islands' museum of cetaceans (in Lanzarote) for the development of museum and teaching activities in the field of cetaceans; participation in teaching at undergraduate and post-graduate level.

Expected outcomes: progress in research and transfer to business interests based on cetaceans, the public and educational projection of scientific work, integration in top international networks, the conversion of the centre into a platform (together with USA) for the monitoring and diagnosis of cetaceans, creation of a benchmark Atlantic centre for the diagnosis of diseases in cetaceans as bio-indicators of marine environment health and climate change, to strengthen and consolidate the bank of tissues and sperm, and promote the dissemination of research results.

Budget	2012	2013	2014	2015	TOTAL
Setting up, construction/conversion of installations/buildings	500,000.00 €	250,000.00 €			750,000.00 €
Equipment Purchasing	200,000.00 €	200,000.00 €	50,000.00 €	50,000.00 €	500,000.00 €
TOTAL	700,000.00 €	450,000.00 €	50,000.00 €	50,000.00 €	1,250,000.00 €

Indicators of Enhanced Teaching	By 2015	Indicators of Scientific Progress	By 11-13
No. of undergraduate students	100	No. of indexed publications	80%
No. of students on master courses	25	No. of publications indexed in the top quartile	80%
No. of PhD. students	10	No. of certified research brackets achieved	2
% foreign students on master courses	10	No. of European projects granted	2
% of foreign PHD. students	5	No. of European projects coordinated	1/0
No. of officially recognised undergraduate programmes	2	No. of researchers on foreign research stints	50%
No. of officially recognised master programmes	3	No. of researchers from other institutions	5
No. of foreign lecturers	5	No. of pre-doctorate bursary students as a result of the campus competition	3
Master programmes taught in English	1	No. of spin-off companies	1/0
Average number of PhD thesis in their last 3 years	5	No. of business placements	2
No. of placements offered in bodies linked to the university	5	No. of users of scientific-technical services	3
Percentage of classrooms adapted	30%	No. of technological services offered and disseminated	2
Percentage of classrooms with Internet connection	100%	No. of transfer agreements	3
Percentage of classrooms with video projects	100%	No. of contracts with businesses	5
Percentage of spaces with wifi coverage	100%	No. of transfer actions with international businesses	2
No. of videoconference rooms	2	No. of agreements and licences	1/0
No. of small rooms for small groups	4	No. of income sources derived from licences	1/0
Nº of laboratories with computer and audiovisual equipment	3	No. of patents registered	0
Percentage of the campus signposted in English	50%	No. of requests for services	5
		No. of transfer experts trained	2
		No. of participating companies	2/3
		No. of companies located on the Campus	1
		No. of "external" companies located on the Campus	1/0

4. Centre for Biodiversity and Environmental Management (BIOGES)

Contribution to Campus Enhancement: the boosting of BIOGES will complement the (human and material) resources intended to improve the development in research and innovation in marine ecosystems, habitats and species, and to consolidate BIOGES as a centre for tri-continental excellence in the field of marine biodiversity and the sustainable development of marine resources.

Description: the centre is oriented to: promoting excellence in research into conservation and sustainable management of marine resources; facilitating a meeting point for business interests and research bodies, favouring the protection and sustainable use of marine biodiversity; furthering in-depth knowledge and biogeochemical analysis of the main ecosystems to promote the development of alternative proposals that will permit the spatial regulation of the marine and coastal environment while, at the same time, minimising human impacts; developing a space that favours greater social projection of the scientific studies and work carried out; becoming a point of reference for incentivising awareness among citizens, favouring the teaching of highly-specialised academic contents.

Expected outcomes: to be able to complement the human and material infrastructure in order better to carry out research and innovation in the use of marine biodiversity: ecosystems, habitats and marine species. Consequently, an integral advance in research, teaching and technological transfer in the field of marine resources is expected.

Apart from the above-mentioned activities, included in the 2010 CEI project, the Tri-continental Atlantic Campus also aims to strengthen its project by means of actions that will increase the strategic value of the Campus in key areas for its development and that of its environs, as well as contributing to the strengthening of teaching, research and knowledge transfer areas, as well as the transformation of the Campus, following cross-cutting sustainable criteria.

Budget	2012	2013	2014	2015	TOTAL
Equipment Purchasing	150,000.00 €	150,000.00 €	50,000.00 €	50,000.00 €	400,000.00 €
TOTAL	150,000.00 €	150,000.00 €	50,000.00 €	50,000.00 €	400,000.00 €

Indicators	2015		
No of indexed publications	8	No of transfer agreement	3
No. of certified research brackets achieved	3	No of contracts with companies	8
No of European projects granted	3	No of transfer actions with international companies.	2
No of European projects coordinated	1	No of patents registered	2
No of researchers from other institutions	6	No of undergraduate students on placements	10
No of spin-off companies	2	No of students on master programmes	8
No of business placements	6	No of PhD students	4
No of users of scientific-technical users	10	% of foreign students on master programmes	40 %
No of technological services offered and disseminated	2	% of foreign PhD students	50 %

5. Carbochange

Contribution to Campus Enhancement: the incorporation of the *Carbochange* Project aims to reinforce scientific excellence as well as the field of knowledge related to the marine-maritime field and climate change. Through this project, collaboration networks with international institutions of renowned prestige participating in the project will be strengthened. This initiative has received funding from the VII Framework Programme and the idea is to boost it from the Campus and integrate it into the strengths of the CEI project.

Description: *Carbochange* is a project that studies the processes of CO₂ exchange in the Atlantic Ocean and that aims to model the carbon dioxide exchange between the atmosphere and the ocean. This study has been developed through the observation at different latitudes of the Atlantic Ocean by measuring the pH, the temperature, salinity and CO₂ concentrations. *Carbochange* investigates the biogeochemical and physical cycles in the Atlantic Ocean and seeks to create more realistic models to predict how the ocean will behave in the different possible scenarios of carbon dioxide emissions, and to identify which points will be most vulnerable, as well as the ocean's future capacity to absorb CO₂.

The Campus would contribute an automated system for ongoing CO₂ measurements, to be installed on a boat belonging to MAERSK, as well as an autonomous submersible pH system, developed by the ULPGC, which is currently being patented. It is also important to highlight the publication in the prestigious journal *Science* of research results related to the project:

<http://www.sciencemag.org/content/326/5958/1391.short>

Expected outcomes: the human and material infrastructure needed for improved development of research in the framework of this project is expected to be complemented, and the Campus to be positioned as an institution of excellence in research into prediction of climate change by means of ocean study.

Budget	2012	2013	2014	2015	TOTAL
Staff for the development of the project	20,000.00 €	20,000.00 €	20,000.00 €	20,000.00 €	80,000.00 €
Equipment Purchasing	150,000.00 €	150,000.00 €	50,000.00 €	50,000.00 €	400,000.00 €
TOTAL	170,000.00 €	170,000.00 €	70,000.00 €	70,000.00 €	480,000.00 €

Indicators	Predicted 2015
No. of indexed publications	17
No. of certified research brackets achieved	2
No. of European projects granted	2
No. of researchers on research stints abroad	2

6. Atlantic Platform for the Control and Research in Tropical Diseases (PACIET).

International Cross-Boundary Biomedicine Network: Biomedicine Applied to Development.

Contribution to Campus Enhancement: this activity represents a step forward in terms of the proposal presented in 2010 related to Biomedicine applied to development cooperation, as it initiates epidemiological studies, clinical trials and specific field actions, particularly in Africa, for tropical disease control. Moreover, it includes Dr. Patarroyo, a prestigious researcher into immunology in the Platform.

Description: on the 1st March, 2011, the Presidents of the Canary Islands' Universities signed the founding act of the PACIET, in which 12 American and African countries participate together with 6 Spanish research centres. The objectives of PACIET are as follows:

- The training of professionals, for which funding and exchanges will be sought.
- The structuring and request for financing for Basic and Applied Research Projects.
- The development of epidemiology studies, clinical trials and field work to monitor and control tropical diseases.

Projects currently being executed are listed as follows: the **creation of laboratories** (Cape Verde,

Angola), the **setting up of a Tropical Diseases Institute in Cuzco**, the **Diagnosis and Control of the Chagas Disease project**, **studies on epidemiology, vectors and the environment in West Africa for various Tropical Diseases**, training actions and **Talent Recruitment** (top class researchers such as Dr. Patarroyo of the Colombian Immunology Institute and others are already involved)

Expected outcomes: The Creation of a Network of laboratories to establish a real, ongoing collaboration between the different centres that make up the PACIET, that will permit the transfer and development of biomedical research relating to Tropical Diseases, that will facilitate the participation of health research centres and businesses in the different countries in order to improve health in developing countries and promote the training of professionals and the joint undertaking of applied research projects.

Budget	2013	2014	TOTAL
Staff for the development of the project	230,000.00 €	230,000.00 €	460,000.00 €
Equipment Purchasing	100,000.00 €	100,000.00 €	200,000.00 €
Services or activities contracted out or sub-contracted	280,000.00 €	280,000.00 €	560,000.00 €
TOTAL	610,000.00 €	610,000.00 €	1,220,000.00 €

Indicators of scientific progress and knowledge transfer:

No of indexed publications	20	No. of technological services on offer disseminated	4
No of publications indexed in the top quartile	12	No of transfer agreements	8
No. of certified research brackets achieved	8	No of contracts with companies	6
No of European projects granted	1	No of transfer actions with international companies.	2
No of European projects coordinated	0-1	No. of agreements and licences	5
No. of researchers on research stints abroad	5	No. of income sources derived from licences	2
No. of researchers from other institutions	15	No of patents registered	6
No. of predoc. bursary students as a result of the competition	10	No. of requests for services	15
No. of spin-off companies	1	No. of transfer experts trained	4
No. of business placements	6	No. of companies participating	2
No of users of scientific-technical services	4	No. of companies located on the Campus	1
No of technological services offered and disseminated	4	No. of "external" companies located on the Campus	2

7. Production of biofuel from *Jatrofa* grown on marginal land with non-conventional water resources

Contribution to Campus Enhancement: the contribution of this activity to the value of the Campus lies in its nature as a project model carried out under integral sustainability criteria, from economic, environmental and social perspectives. In terms of transfer oriented to the tri-continental element, this Project enjoys huge potential for the exportation of its results to regions suffering from water and energy shortage problems in Africa and Latin America. And in terms of transfer to the productive sector, the project is carried out in collaboration with DISA, an energy company from the Canary Islands. As far as scientific progress is concerned, this action will contribute to advances in the treatment of water with a view to re-using it, and in the development of alternative sources of energy.

Description: The Canary Islands, and particularly Fuerteventura, given their natural and anthropic conditions, are one of the areas of the EU most at risk from desertification, degraded soil, the abandonment of agriculture and lack of conventional water resources. The project represents determined support for sustainable development and the social and economic dynamisation of the region, through: the **production of biodiesel from *Jatrofa***, the **recuperation of degraded soil**, the setting up of **Traditional Agrosystems**, **knowledge transfer from the university to the production sector**, promotion of public-private collaboration, the chance to **export the technology and learning produced by the project to other countries, particularly to developing countries.**

Expected outcomes: production of new sources of energy (biofuel), reduction in greenhouse gas emissions, strategies for fighting desertification, diversification of agriculture, promotion of integrated use and management of non-conventional water resources, improvement in the way in which biodiesel is produced leading to improved productivity, promotion of employment with social and economic benefits.

Budget	2012	2013	2014	TOTAL
Staff for the development of the project	85,000.00 €	85,000.00 €	85,000.00 €	255,000.00 €
Equipment Purchasing	75,000.00 €	65,000.00 €	65,000.00 €	205,000.00 €
Services or activities contracted out or sub-contracted	150,000.00 €	150,000.00 €	150,000.00 €	450,000.00 €
TOTAL	310,000.00 €	300,000.00 €	300,000.00 €	910,000.00 €

Indicators of scientific progress and knowledge transfer:

No. of lecturers from other institutions/universities: 3
No. of placements in companies: 3
No. of contracts with companies: 1
No. of transfer experts trained: 2

8. Wolfgang Köhler Atlantic Neuroscience Centre

Contribution to Campus Enhancement: in terms of integral sustainability linked to quality of life, the aim of this activity is to incorporate in the Campus one of the strengths of the Universities of the Canary Islands: their consolidated track record in neuro-scientific research and the promotion of the circulation of Ibero-American talent.

Description: This action pursues scientific progress, knowledge transfer and the transformation of the campus as well as its territorial integration. It involves the creation of a resource that brings together the obvious **strengths in neuro-scientific research** (particularly in cognitive-emotional fields) represented by the NeuroCog Project, and the scientific history of the island of Tenerife, based on the figure of Wolfgang Köhler and the Project of the Casa Amarilla Museum, which will be the first primatology station in the world to recreated Köhler's astounding scientific experience. The objectives of this action are as follows: **the incorporation of research and intervention lines that impact on people's quality of life in the field of neurosciences** (ageing, neuro-degenerative diseases, those groups most at risk), **the promotion of the transfer of results in the design of intervention and development cooperation strategies, training workshop in Neuroscience for researchers from Africa and Ibero-America**, setting up of a **tri-continental programme of Mobility and Talent Recruitment, improved teaching** (postgraduate level), **Network Museum** (neuroscience and psychology) and **dissemination**.

Expected outcomes: Improved diagnosis and intervention in mental health and learning difficulties, design of intervention strategies aimed at improving people's quality of life, increase in mobility and talent recruitment among researchers on a tri-continental level, development cooperation. In quantitative terms: increase in scientific publications in high-impact journals, incorporation of young researchers to the use of neuro-scientific techniques, increase in number of research projects granted in competitive competitions in the different fields, increase in the number of cooperation agreements with African, European and Ibero-American universities and public bodies, increased number of agreements with businesses and public bodies aimed at transfer and innovation in their given field, enhanced urbanistic and social integration of the University in the Puerto de la Cruz municipality, incorporation of teaching and university training opportunities in said municipality, conversion of the old towns of cities in the Canary islands into university campuses, sustainable tourism, economic and social development in municipalities with outdated, obsolete tourism models, generation of tourism based on scientific tourism and the knowledge economy.

Budget	2012	2013	2014	TOTAL
Staff for the development of the project	200,000.00 €	200,000.00 €	200,000.00 €	600,000.00 €
Setting up, construction/conversion of installations/buildings	300,000.00 €			300,000.00 €
Equipment Purchasing	80,000.00 €	10,000.00 €	10,000.00 €	100,000.00 €
Services or activities contracted out or sub-contracted	30,000.00 €	15,000.00 €	15,000.00 €	60,000.00 €
TOTAL	610,000.00 €	225,000.00 €	225,000.00 €	1,060,000.00 €

Indicators of scientific progress	11-12	12-13	Indicators of campus transformation	11-12	12-13
No of indexed publications (JCR):	12	15	No of visitors to scientific-information installations	5,000	10,000
No of competitive research projects:	2	4	No. students on training programmes	40	120
No of workshops, conferences and symposiums	17	33	No of scientific dissemination activities to be carried out	30	45
No of researchers from other institutions:	10	12	No. of scientific activities, conferences to be held	5	10
No of researchers on research stints abroad:	10	12	No. of researchers from the three continents	20	30
No. of predoc. researchers as a result of the competition	5	7	No. of direct/indirect jobs (estimate)	7	10
No of users of scientific-technical services	30	50	No. of innovative projects generated	4	6
No of agreements with companies:	3	5			
No of researchers/technical experts trained	5	9			