

Energy and environment science and technology in Castilla-La Mancha

By Julián Garde, Vice-Chancellor of Research and Scientific Policy and Francisco J. Sáez-Martínez, Coordinator of CYTEMA

Nowadays University is central to a model of social and productive change based on the knowledge triangle: education, research and innovation. In this context and in line with our commitment to promoting excellence, the University of Castilla-La Mancha is developing its Energy and Environment Science and Technology Campus -CYTEMA-, awarded the status of regional "Campus of International Excellence" (CIE) by the Spanish Ministry of Education. The objective of this project is to make the University of Castilla-La Mancha a reference point in Europe for energy and environment science and technology by 2020.

CYTEMA is a commitment by the UCLM to teaching, research and innovation in energy and the environment. This project utilises the strengths of our university in energy and environment R&D&I. The university has fifteen research institutes, more than fifty research groups and more than 500 researchers working on energy and the environment in the fields of engineering, experimental sciences, social and legal sciences, architecture, the arts and humanities and health sciences.

The following graph shows the main activities developed in CYTEMA, grouped in three strategic axes:

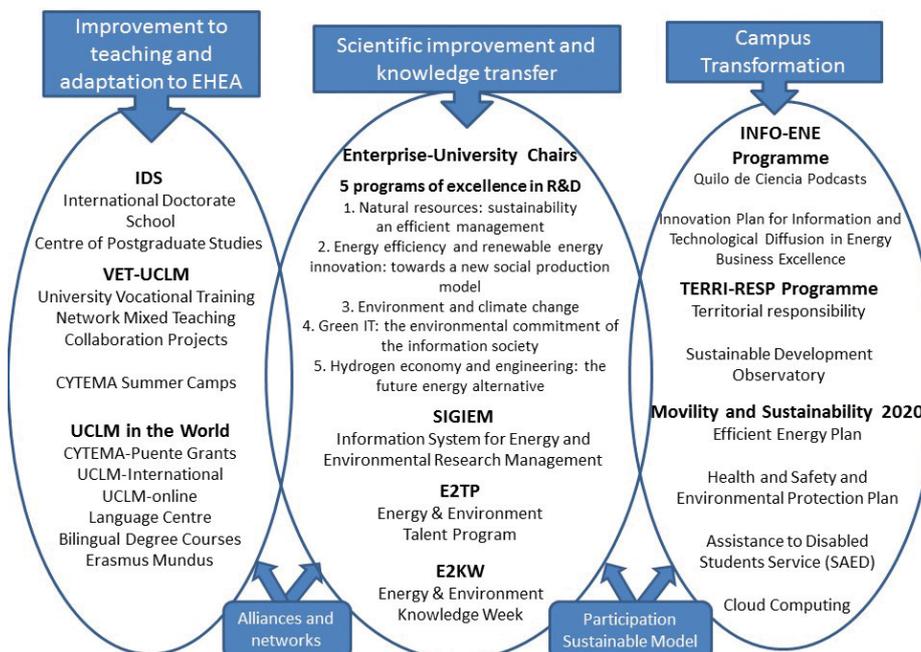
- Improvement to teaching and adaptation to the European

Higher Education Area

- Scientific improvement and knowledge transfer
- Transformation of campus and interaction with the community.

Regarding the first of these axes, **Improvement to teaching and adaptation to the European Higher Education Area**, the most important activity is the creation of the International Doctorate School - IDS -. Furthermore, in order to increase the number of internationally recognised doctorates specific grants have been created, as part of the CYTEMA-PUENTE programme, to give PhD students access to study at prestigious international centres in the field of energy and the environment.

Actions of the Energy and Environment Science and Technology Campus



As part of links with vocational education and training (VET), the *University Vocational Training Network* was created as a network comprising all the agents involved in a higher level VET college specialising in Energy and Environment.

Finally within the framework of the action "UCLM in the world", a series of actions have been developed, aimed at consolidating language training, bilingual qualifications, and the creation of dual qualifications, as well as increasing the geographical sphere of influence of CYTEMA.



With regard to the second strategic axis **Scientific Improvement and Knowledge Transfer** it is important to note that UCLM has 6 university-company chairs related to subjects from the Campus of Excellence: the Innovation and Enterprise Development Caja Rural de Castilla-La Mancha Chair, the ELCOGAS Chair, the INDRA Chair, the Santander Chair of Corporate Social Responsibility, the Manuel de las Casas Lafarge Foundation Chair and the ENRESA Chair. The activities developed under these agreements allow other members of the community to be integrated in the aims and objectives of CYTEMA and they foster the development of research and knowledge transfer activities.

Among the actions conducted within the framework of the second strategic axis we highlight the development of 5 programmes of excellence in R&D: Natural resources: sustainability and efficient management; Energy efficiency and renewable energy innovation: towards a new social production model; Environment and climate change; Green IT: the environmental commitment of the information society; Hydrogen economy and engineering: the future energy alternative. These programmes have been divided into 28 specific actions, coordinated by UCLM research groups and in which researchers from outside Castilla-La Mancha have participated. The wealth of science provided by the diversity of national and international groups and institutes, working together on the same

programme, has boosted the viability and originality of the results and the media capacity to transmit the results to the scientific community and the business world. The development of these programmes, together with the initiative and research quality of the groups comprising CYTEMA has meant that despite the economic hardships, in terms of science production, the results have maintained the highest level. UCLM has managed to position nine scientific disciplines among the ten best in Spain according to the I-UGR ranking of Spanish Universities according to Scientific Fields and Disciplines (4th edition 2013): Chemical Engineering (3rd), Ecology and Environmental Sciences (4th), Veterinary Science and Livestock Breeding (4th), Statistics, Electrical and Electronic Engineering, Civil Engineering, Industrial Engineering, Geography and Town Planning and Neurosciences are also among the top ten.

Additionally, the Conference Energy and Environment Knowledge Week - E2KW- has been celebrated. This international, multidisciplinary congress will celebrate its second edition in Toledo in October 2014 presenting cutting edge research in all aspects of the energy and environment science and technology. Prestigious researchers will be in attendance as well as leading companies in the application of efficient energy systems.

Finally, the third strategic axis, **Campus Transformation and Community Outreach** has involved the development of, among others, a series of

actions as part of the *INFO-ENE Programme* such as the participation in the *Plan for Innovation in Information and Technological Diffusion in the Field of Energy Business Excellence*. This project aims to inform about, publicise and promote a model of business excellence based on energy efficiency and technological innovation, which will continue to increase the competitiveness of the industrial framework of Castilla-La Mancha, making economic growth compatible with sustainability. Furthermore, as part of the Responsible Territory Programme, *TERRI-RESP*, the *Sustainable Development Observatory* has been created.

To conclude, the action *Mobility and Sustainability 2020* has led to the creation of a series of measures aimed at improving campus sustainability. The most important action is the *Energy Efficiency Plan* which has notably reduced energy consumption and expenditure in university buildings and campuses.

The CYTEMA initiative is encountered in the Research and Innovation Strategy for Smart Specialisation (RIS3) developed by the Regional Government of Castilla-La Mancha where the UCLM has a crucial role. ●

Contact details:

cytema@uclm.es
www.cytema.es/en

