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    CV - Alejandro Josa Garcia-Tornel
    CV - Joan de Pablo Ribas
    CV - Agustí Pérez Foguet
    CV - Enrique Velo Garcia
1. PRESENTATION

The Research Institute for Sustainability Science and Technology of UPC - BarcelonaTech is the responsible unit for promoting, coordinating and carrying out academic activities in the fields of sustainability science and sustainable technologies.

The Institute’s mission is to generate technical and conceptual tools to create a more sustainable production and development model and to collaborate in the UPC’s endeavour to provide scientific and technical support for human, social, cultural and economic progress.

The IS.UPC is active in higher education, research and innovation, technology transfer and promotion of sustainability culture.

Its main objectives are as follows:

- Opening up sustainability research to UPC groups and researchers, by coordinating and promoting multi and trans-disciplinary research projects.
- Organizing and promoting specific postgraduate courses and degrees (Master’s degrees, PhD programmes and other specialised teaching activities) directly linked with the UPC research in the fields of sustainability science and sustainable technologies, as well as embedding sustainability in other UPC educational programmes.
- Making the UPC management, in itself, a source for research demands in sustainability and a field of study and experimentation.
- Disseminating the results of the research carried out at the IS.UPC, both to the university community and to the society as a whole, and sparking discussion about it.
- Encouraging the commitment and interaction of the UPC within society, and encouraging UPC’s support of civic demands for promoting progress towards more sustainable development models.
1.1. LETTER FROM THE DIRECTOR

The Research Institute for Sustainability Science and Technology of UPC – BarcelonaTech (IS.UPC) was formally created by the Generalitat de Catalunya, the Catalanian Autonomous Government in November 9th of 2010. During the preceding year however, the UPC consolidated progressive steps that lead to the new Institute.

After extensive work to reach a consensus among the UPC community, in April 2010, the recently elected UPC Rector Antoni Giró gave the project a final boost by directly involving a member of the UPC Executive Council in its leadership board. This was myself acting as Vice-rector for Sustainability and Social Responsibility as well as provisional Director of the emerging IS.UPC. By the end of 2011, the institutional formalization of the Institute was completed and the first elected Director replaced me.

This first Annual Report covers the early activities of the Institute during years 2010 and 2011. Major milestones of this period include the above mentioned formal declaration the opening ceremony of the first academic year in September 2011, the approval of the Institute inclusion within the university quality assurance system, the rules for academic staff enrolment, and the roadmap for the future years by the UPC Governing Council in November 9th of 2011.

During this inception period, main efforts have focused on consolidating an interdisciplinary academic space within the UPC community to face the challenges of sustainable human development through science progress and technology innovation. The integration of economic, environmental and social aspects of technology, architecture and engineering, as well as the reference points of closing of cycles and systemic thinking, are some of the distinctive characteristics of the Institute research focus. Academic excellence, strategic international and local networking, and a trans-disciplinary approach to knowledge creation and dissemination are other key characteristics the Institute.

As major strength, the IS.UPC has its own postgraduate degree curriculums. Upon the signing of this report, the new Master in Technology for Human Development and Cooperation has already been launched. This program adds to the Master Sustainability, the PhD studies in Sustainability, Technology and Humanism, and the support for interdepartmental PhD studies in Environmental Engineering, the three academic programs that were running before formal IS.UPC creation. One of the pending challenges after this initial period is the renewal of these three academic programs. Surely, this issue will be addressed in future reports.
Many people have contributed, in a greater or lesser extent, to this process. A special mention is deserved for the efforts of my predecessor, Prof. Albert Cuchi, who led the process in its early stages, and Prof. Joan de Pablo, the first elected director who assumed this position at the end of 2011, after coordinating the research during the period covered by this report. Formal and institutional consolidation of the Institute could not have been completed without the special dedication of Eugenia Bretones, its first head of administration, of its board and council members, and obviously of the faculty, students, managers and other university members who have participated in the activities related in this report.

We, the people cited in following pages and others not explicitly indicated, are fully committed with continuously improving the contribution of UPC to sustainability science and sustainable technologies. We see this commitment as the best way to build up the future deserved by all of us, especially in the turbulent times we are facing. We expect you to enjoy the reading and consultation of this report. We are gladly committed to share with you in following reports our, hopefully, successful evolution.

Agustí Pérez Foguet
Director
2. ORGANIZATION STRUCTURE

2.1. ORGANIZATION CHART

2.2. INSTITUTE BODIES

**Single-member bodies**

- Agustí Pérez Foguet: Director
- Enrique Velo García: Secretary
- Joan de Pablo Ribas: PhD studies coordinator
- Alejandro Josa García-Tornel: Master’s degrees coordinator
- Eugenia Bretones Espejo: Head of administration
- Jordi Morató Farreras: Head of the UNESCO Chair of Sustainability

2.3. COLLEGIATE BODIES OF GOVERNMENT AND REPRESENTATION

**Institute Council**

- Agustí Pérez Foguet: Director
- Enrique Velo García: Secretary
- Joan de Pablo Ribas: PhD studies coordinator
- Alejandro Josa García-Tornel: Master’s degrees coordinator
- Eugenia Bretones Espejo: Head of administration
Institute Board

(See Institute Council)

2.4. COLLEGIATE BODIES FOR CONSULTATION

Academic Committee of the Master’s in Sustainability

Agustí Pérez Foguet  Chair and Director
Eugenia Bretones Espejo  Secretary
Alberto Cuchí Burgos
Alejandro Josa García-Tornel
Albert Masip Álvarez
Enrique Velo García
Maria Ribera Sancho Samsó
Jordi Segalàs Coral

Academic Committee of the PhD programme in Sustainability

Antoni Roca Rosell  Chair and Coordinator
José María Gil Roig  Secretary
Joan de Pablo Ribas
Antonio Aguado de Cea
Enrique Velo García
Miriam Villares Junyent

Academic Committee of the PhD programme in Environmental Engineering

Santiago Gassó Domingo  Chair and Coordinator Dept. of Engineering Projects
Miquel Casals Casanova  Dept. of Construction Engineering
Martí Crespi Rosell  INEXTER - Institute of Textile Research and Industrial Cooperation of Terrassa
Joan de Pablo Ribas  Dept. of Chemical Engineering
Xavier Flotats Ripoll  Dept. of Agricultural Engineering and Biotechnology
Joan García Serrano  Dept. of Hydraulic, Maritime and Environmental Engineering
Maria Teresa Martinez-Seara Alonso  Dept. of Applied Mathematics I
Andrés Navarro Flores  
Agustí Pérez Foguet  
Jordi Romeu Garbi  
Teresa Vidal Llúcia  
Alejandro Josa García-Tornel  

Depat. of Applied Mathematics I  
IS.UPC  Research Institute for Sustainability Science and Technology  
Dept. of Mechanical Engineering  
Dept. of Textile and Paper Engineering  
Representative of the Master’s of Environmental Engineering

### 2.5. TEAM

#### 2.5.1. ADMINISTRATIVE AND MANAGEMENT TEAM

- Eugenia Bretones Espejo  
  Head of Administration
- Ana Andres Lleo
- Clara Cullell Tebe
- Josep Maria Galabert i Pujol
- Boris Lazzarini
- Josep Lluis Moner Tomas
- Ofèlia Alba Soca

#### 2.5.2. RESEARCH AND TECHNOLOGY TRANSFER

**Academic Staff**

- Joan de Pablo Ribas
- Alejandro Josa García-Tornel
- Agustí Pérez Foguet
- Enrique Velo García

**Technical Staff**

- Pol Arranz Piera
- Ricard Giné Garriga
- Alessandro Meluni
- Alejandro Jiménez Fernández de Palencia
- Gemma Tejedor Papell

**Project leaders - Research**

- Alejandro Josa García-Tornel
- Xavier Martínez Farré
- Núria Miralles Esteban
- Augustí Perez Foguet
- Maria Ribera Sancho Samsò
- Enrique Velo García

**Project leaders - 2011 Seeds of Sustainability**

- Elena Fernández Salas
- Pau Fonseca i Casas
- Joan García Serrano
Research Assistants

- Elisenda Colàs Anguita (PhD in Chemical Process Eng.)
- Bryani Jenice Escorcia Robles (PhD in Sustainability)
- Oscar Flores Baquero (PhD in Environmental Eng.)
- Albert Oliver Serra (PhD in Civil Eng.)
- Albert Martínez Torrents (PhD in Chemical Process Eng.)
- Jordi Pascual Ferrer (PhD in Civil Eng.)
- Ivan Puig Damians (PhD in Geotechnical Eng.)
- David Vilar Ferrenbach (PhD in Sustainability)
- Cristina Yacoub Lopez (PhD in Environmental Eng.)

2.5.3. TEACHING

Master’s in Sustainability. The faculty responsible for the organization and planning of master’s subjects (2010/2011) were:

- Candela, Lucía
- Cuchi Burgos, Alberto
- Etxeberria, Miren
- Felipe Blanch, Jose Juan de Garola, Alvar
- Magrinya Torner, Francesc
- Martínez, Juan
- Miralles Esteban, Nuria
- Ortego, Maribel
- Perez Foguet, Agustí
- Segalas Coral, Jordi
- Sempere, Daniel
- Stähel, Andri
- Sureda, Bàrbara
- Velo Garcia, Enrique
- Xercavins Valls, Josep

PhD programme in Sustainability. UPC researchers responsible for the mentoring and/or supervising of doctoral theses (2010/2011) were:

- Aguado de Cea, Antonio
- Alvarez del Castillo, Javier
- Barcelo Garcia, Miquel
- Bosch Tous, Ricard
- Cayuela Marin, Diana
- Morato Farreras, Jordi
- Pablo Ribas, Joan De
- Roca Rosell, Antoni
- Rosas Casals, Marti
- Sabater Pruna, Assumpta
PhD programme in Environmental Engineering. UPC researchers responsible for the mentoring and/or supervising of the doctoral theses (2010/2011) were:

- Amante Garcia, Beatriz
- Andre, Michel
- Baldasano Recio, Jose M.
- Barra Bizinotto, Marilda
- Bonmatí Blasi, August
- Bruno Salgot, Jorge
- Calafell Monfort, Margarita
- Casals Casanova, Miquel
- Casas Pons, Ignasi
- Cortina Pallas, Jose Luis
- Crespi Rosell, Marti
- Ferrer Marti, Ivet
- Flotats Ripoll, Xavier
- Garcia Serrano, Joan
- Gasso Domingo, Santiago

- Gimenez Izquierdo, Francisco Javier
- Gonçalves Ageitos, Maria
- Lopez Grimau, Victor
- Marti Gregorio, Vicenç
- Miralles Esteban, Nuria
- Navarro Flores, Andres F.
- Pablo Ribas, Joan De
- Perez Foguet, Agusti
- Roca Ramon, Xavier
- Romeu Garbi, Jordi
- Rovira Boixaderas, Miquel
- Sierra Pedrico, Juan Pablo
- Vazquez Ramonich, Enric
- Viñas I Canals, Marc

2.5.4. UNDERGRADUATE TRAINEES

UPC students who received a training undergraduate scholarship were:

- Agea Carrera, Joan
- Balbastre Soler, Laura
- Comes, Joaquim
- Encina Íñiguez, Josu
- Esteban, Jose Miguel
- Marquez Malen, Melani

- Nuñez Arroniz, Maria
- Romagosa Rovira, Anna
- Sabate Ibañez, Josep
- Salvado, Judit
- Subirana Iborra, Moises
- Tejedor, Gemma
3. FINANCIAL INFORMATION

The following is a detailed description of IS.UPC accounts for the fiscal year 2011.

**FINANCIAL ACCOUNTS**

**2011 OPERATIONAL INCOME**

<table>
<thead>
<tr>
<th></th>
<th>UPC</th>
<th>EUROPEAN COMISSION</th>
<th>CATALAN GOVERNMENT</th>
<th>SPANISH GOVERNMENT</th>
<th>PRIVATE ENTITIES</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTERNAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current expense budget</td>
<td>140.000,00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>140.000,00</td>
</tr>
<tr>
<td>2015 Sustainable UPC Plan</td>
<td>81.000,00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>81.900,00</td>
</tr>
<tr>
<td><strong>EXTERNAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competitive Projects</td>
<td></td>
<td>39.779,91</td>
<td>77.395,00</td>
<td></td>
<td></td>
<td>117.174,91</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>24.909,04</td>
<td>40.000,00</td>
<td>161,08</td>
<td></td>
<td>201.277,18</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>221.900,00</td>
<td>64.688,95</td>
<td>40.000,00</td>
<td>77.556,08</td>
<td>136.207,06</td>
<td>540.352,09</td>
</tr>
</tbody>
</table>

**OPERATIONAL INCOME**

- **TOTAL INTERNS UPC**
  - 221.900,00€ (41%)
  - 318.452,09€ (59%)
- **TOTAL EXterns**
### 2011 EXPENSES

**Destination UPC Income, by Projects**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher education. STEP students</td>
<td>24,938,58</td>
</tr>
<tr>
<td>Higher education. STEP schools</td>
<td>20,000,00</td>
</tr>
<tr>
<td>Report of ICT and Sustainability</td>
<td>1,800,00</td>
</tr>
<tr>
<td>Reports Sirena UPC</td>
<td>6,323,82</td>
</tr>
<tr>
<td>Seeds of Sustainability - Support to Master and Doctoral studies</td>
<td>11,666,38</td>
</tr>
<tr>
<td>UPC waste characterization campaigns</td>
<td>3,000,00</td>
</tr>
<tr>
<td>UPC waste management supplies</td>
<td>62,252,98</td>
</tr>
<tr>
<td>Research Staff</td>
<td>33,676,00</td>
</tr>
<tr>
<td>General expenses</td>
<td>7,760,72</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>171,418,48</strong></td>
</tr>
</tbody>
</table>

**Destination of External Income, by Projects**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy for all</td>
<td>35,844,98</td>
</tr>
<tr>
<td>UPC Sustainable Mobility Plan</td>
<td>63,540,19</td>
</tr>
<tr>
<td>International mobility grants for Maste teaching</td>
<td>7,200,00</td>
</tr>
<tr>
<td>Private entities projects</td>
<td>24,703,38</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>131,288,55</strong></td>
</tr>
</tbody>
</table>
DESTINATION OF UPC INCOME BY PROJECTS

- Higher education. STEP students: 24,938.58 € (14%)
- STEP 2010 schools: 20,000.00 € (12%)
- ICT and Sustainability: 11,666.38 € (7%)
- Sirena: 1,800.00 € (1%)
- Seeds Projects, Master and Doctoral in Sustainability: 6,828.82 € (4%)
- Residue characterization: 3,000.00 € (2%)
- Research Staff: 1,676.00 € (1%)
- General expenses: 7,760.72 € (4%)
- Materials, cycle and waste: 62,292.98 € (36%)

DESTINATION OF EXTERNAL INCOME BY PROJECTS

- Energy for all: 35,844.98 € (27%)
- UPC Sustainable Mobility Plan: 63,540.19 € (48%)
- International mobility grants for Master teaching: 24,703.38 € (19%)
- Private entities projects: 7,200.00 € (6%)
4. UPC 2015 SUSTAINABILITY PLAN

The IS.UPC coordinates and streamlines the UPC 2015 Sustainability Plan by:

- Promoting and coordinating inter and trans-disciplinary research, development and innovation in Sustainability and Environment.
- Designing, implementing and coordinating postgraduate and lifelong-learning studies in Sustainability Science, Sustainable Technologies and Environmental Engineering.
- Promoting the inclusion of skills about sustainability and social commitment in UPC studies.
- Promoting and coordinating the implementation of sustainability principles within the university itself.
- Advising on University management and quality control processes.
- Supporting the UPC Sustainability Committee.
- Engaging in external collaboration, participating in working groups and networks.

4.1. BACKGROUND

Following an initial period where two environmental plans (1996-2005) were unveiled, the UPC 2015 Sustainability Plan was institutionally approved in 2006, with the aim of expanding the UPC’s strategic vision to focus on the challenges of sustainable human development.

The first cycle of the UPC 2015 Sustainability Plan (2006-2010) in conjunction with other actions that have merged with its objectives, has left as a legacy a series of strategic insights and tools that have enabled UPC to define further goals for the 2nd phase, 2011-2015. Key achievements include:

- The Declaration of Sustainability.
- The Commission on Sustainability.
- The institutional decision to include the competence of Sustainability and Social Commitment in all UPC degree programs of the UPC, in coordination with the Institute of Educational Sciences.
- The development of tools and processes of implementation of this competence in the plans of study (through the Sustainable Technology Excellence Program, STEP).
- The creation of the Research Institute of Science and Technology for Sustainability to collect and enhance related academic and research activities.
- The processes, tools and actions of experimentation and learning to promote the introduction of sustainability in management, research and teaching directed by different academic units and individuals of the university community.
The university community, through participatory debate, has evaluated the first five years of the implementation of the Plan as positive. It has prompted the Plan’s renewal with a long-term vision and a proposal for objectives to be achieved by the year 2015.


#### 4.2.1. VISION

The UPC envisions a just society that ensures the well-being of its people without compromising that of the future generations:

- Where people live in a healthy, unpolluted environment and can be guaranteed that their food supply is adequate, healthy and linked to their cultural traditions and local markets;
- A society able to design production systems to close the cycles of matter and energy and reduce metabolic fluxes of human systems;
- With decentralized energy production and proximity that is not dependent on fossil fuels;
- A society that protects the ecological quality of their natural systems beyond human needs and the economic value they may have;
- A society based on models of knowledge.

#### 4.2.2. MISSION

The UPC, as a public organization of knowledge, has the duty to enhance their critical view of development models that have led to the current crisis and to propose alternatives to the society from its mission. In this context, the UPC must apply models of consistency, ethics and social responsibility. This involves the voluntary integration in its governance, management and strategy of social concerns, labour, environment and respect for human rights arising from the relationship and transparent dialogue with its stakeholders. This also means taking responsibility for the consequences and impacts that result from their actions.

The concept of transition towards sustainability, which is configured as a framework for sustainability from the global and local levels, is assumed as an institutional commitment to contribute academically and with its own performance, towards the definition of sustainable development models.

This plan picks up the commitment of the UPC in its Declaration of Sustainability, specifically committed to:

- Train professionals aware of the social and environmental responsibility of their activity, and able to exercise the new skills required to achieve it.
- Promote research dedicated to generate the technical and conceptual tools necessary for transforming our production model towards sustainability.
And to apply sustainability criteria in their institutional activity and management, monitoring and regular accountability.

In short, the UPC assumes its leadership role in achieving a sustainable society.

### 4.2.3. STRUCTURE OF THE PLAN

The UPC 2015 Sustainability Plan includes two strategic dimensions: Four transverse lines and six thematic lines. Each of these lines includes several objectives and each objective has an associated set of actions.

The **transverse lines** define transdisciplinarity and respond to the complexity and how we should develop the activities and functions of the university: we talk about governance, values and how the university relates to its environment.

1. Governance and sustainability
2. Demands of the environment
3. Campuses as laboratories
4. Community culture

The **thematic lines** define the great challenges of sustainability in which the UPC as a technological university can provide different levels of experience and contribute to existing environmental demands.

5. Energy and climate change
6. Waste and zero emissions
7. Health, air quality and food
8. Supplies and responsible consumption
9. Water cycle
10. Territory and mobility

### 4.2.4. PROJECTS OF THE PLAN

**UPC Sustainable Mobility Plan**

In recent decades, accessibility and sustainable mobility have become one of the core challenges faced by our society. The current legislation obligates public companies with more than 200 employees to draw up mobility plans. Simultaneously, the Mobility Master Plan of Barcelona (PDM) establishes sustainable access to workplaces as one of its lines of action. Beyond legal requirements, the UPC is aware that it must take steps to ensure more sustainable access to their campus and create mechanisms that
facilitate mobility management. That is why a project to develop sustainable mobility plans for the Campus Nord and Sud of Barcelona, the Campus of Sant Cugat, the Campus Baix Llobregat and the Campus de Terrassa was implemented with the economical support of the Spanish Ministry of Public Works during 2009-2011.

**STEP. Sustainable Technology Excellence Program**

The STEP programme has helped introduce the competency in “Sustainability and Social Commitment” in all UPC degrees. In the first phase of the program, 2009, four teaching centres participated with the objective to define the goal of the curriculum, create faculty teams and generate supporting materials. In its second phase, 2010, the program expanded to up to ten centres and incorporated the students explicitly, through two subprograms: STEP Centres (competitive call for school focused programs) and STEP Students (projects organized by students with institutional support). The STEP Students project lasted until 2011.

**C3 Local. Organisation of Catalonia Climate Change Policies at Local Level**

This project was commissioned in 2009 by the Department of Planning and Sustainability of the Generalitat of Catalunya, and funded by the Obra Social of La Caixa. It was aimed at improving municipal management in relation to the strategies of local action against climate change. In particular, the project involved the study of various alternatives for developing and implementing local organisational structures in Catalonia to promote the fight against global warming and reduce the impacts caused by human activity

### 4.2.5. REPORTS DELIVERED IN 2011

**SIRENA UPC**

- IS.UPC (May 2011) “Sirena 2010”
- IS.UPC (September 2011) “Sirena. Waste 2011”

**UPC Sustainable Mobility**

- D. Balbás and E. Roca (April 2011) “Sustainable Mobility Plans of ETSAV of Baix Llobregat Campus”
- M. Estrada and V. Uribe (April 2011) “Sustainable Mobility Plan of North and South Campus”
- F. Astals and F. Martínez (April 2011) “Sustainable Mobility Plan of Terrassa Campus”

**ICT and Sustainability**

- IS.UPC (October 2011) “TIC and Sustainability”
5. RESEARCH AND PROJECTS

This section details Research projects, Agreements and collaborations, and “Seeds of Sustainability” projects undertaken by IS.UPC researchers during 2011.

5.1. RESEARCH AND KNOWLEDGE TRANSFER PROJECTS

Energy Access for the poor in Sub-Saharan Africa to meet the Millennium Development Goals. Energy for All 2030

Access to energy services is essential for achieving the eighth Millennium Development Goal (MDG). In Sub-Saharan Africa, 2 out of 3 families, especially in rural areas, live without electricity or access to modern energy services. Solutions based on decentralized infrastructures and renewable energy sources are often the only feasible option for users with low energy demands in remote areas. The main objectives of this project are i) to contribute to the achievement of the MDGs in marginalised rural and urban areas in the poorest Sub-Saharan Africa countries, through improved energy access at local level; and ii) to raise public and political support across the EU for the European Union resolution on energy access for the poor and to ensure that support of energy access is turned into action.

**Internal code:** IS-P10/01  
**Scope:** European Union  
**Partners:** Practical Action (UK), Stockholm Environment Institute (Sweden), EDUCON (Czech Republic) and Universitat Politècnica de Catalunya (Spain)  
**Led by:** Practical Action  
**Funded by:** EuropeAid  
**Code:** DCI-NSA ED/2009/201-885 (with co-financing of CCD - 0.7% UPC funds)  
**Dates:** 01.2010-01.2013  
**Principal Investigator (PI):** Velo, Enrique

Recovery of organic waste in the Mediterranean Technology Park

This project aims to meet the need for treatment of organic waste generated in the Mediterranean Technology Park (PMT). The project is being carried out by administrative staff, teaching and research staff, and students of the ESAB, in collaboration with members of the EETAC and experts in the field, and is in agreement with the university’s environmental policy and regional laws on solid waste management. The overall objective is to implement a separate collection system for the organic fraction, in addition to raising awareness among the community of the PMT and involving it in the activity. The project has two stages: separate collection of organic waste generated by the campus restaurant and treatment of part of the organic fraction in 330-litre composters.

**Internal code:** IS-P11/01
**Scope:** Regional  
**Partners:** Diputació de Barcelona and Universitat Politècnica de Catalunya  
**Funded by:** Diputació de Barcelona and Universitat Politècnica de Catalunya (Llavors de Sostenibilitat 2010)  
**Dates:** 11.2010-11.2011  
**Principal Investigator (PI):** Martínez Farré, Xavier

**Improving monitoring and evaluation of WASH services in rural areas and small towns, from a human rights perspective**

Access to water, sanitation and hygiene (WASH) is a priority for the international community because of its clear link to development and poverty reduction. In recent years various strategies have been applied to ensure safe access to these basic services. The aim of this study is to develop specific tools for improving the assessment and planning of WASH services at the local level. The study will be carried out in the town of Manhiça and will consider both the peri-urban area of the municipality and the rural area. Main goals of the action include i) an identification of reliable and relevant indicators for evaluating the sector; ii) strengthening of the capacity of local public institutions; and iii) development of urban planning projects that integrate the provision of basic services.

**Internal code:** IS-P11/06  
**Scope:** International  
**Partners:** UN Habitat (Mozambique), Municipalitat Manhiça (Mozambique), Fundació FCBarcelona (Spain) and Universitat Politècnica de Catalunya (Spain)  
**Led by:** Universitat Politècnica de Catalunya  
**Funded by:** AECID  
**Code:** AECID 11-CAP2-1562 (with co-financing of CCD - 0.7% UPC funds)  
**Dates:** 01.2011-10.2012  
**Principal Investigator (PI):** Pérez Foguet, Agustí

### 5.2. AGREEMENTS AND COLLABORATIONS

**International Master’s in Sustainability, Technology and Innovation**

The Master’s in Sustainability, Technology and Innovation is an international master’s created by a consortium of three universities: Dublin Institute of Technology (DIT); Purdue University (PU) and UPC. In particular, the master’s curriculum is based on the existing Master’s of Sustainability, Technology and Innovation (DIT), Master’s in Technology (PU) and Master’s in Sustainability (UPC). The Master’s STI is a quality program, designed under the framework of the Atlantis project for the development of joint degrees between the European Union and the United States of America in the field of Sustainability, Technology and Innovation.
Internal code: IS-P09/01
Scope: International
Agreement signed with: EU-US Transatlantic Degree Program (Atlantis)
Partners: Dublin Institute of Technology (Ireland), Purdue University (USA), and Universitat Politècnica de Catalunya (Spain)
Funded by: Fund for the Improvement in Post-Secondary Education - FIPSE (USA), Education, Audovisual and Culture Executive Agency - EACEA (EU)
Dates: 02.2010-08.2013
Agreement manager: Ribera Sancho, María

Framework for UPC Postgraduated Training degrees in the area of Sustainability

The UPC, through the Polytechnic Foundation of Catalonia (FPC), offers a wide range of postgraduate programs related to their field of expertise. To guarantee that these programs are qualified and relevant it is necessary to review and classify the set of programs currently taught at the FPC. This project aims to reflect on and analyze the training that is offered in the field of sustainability. The objective of this study will be to determine if gaps and/or overlaps in the program exist and to establish a map of complete and adequate degree programs relevant to the professional context of Catalonia. The proposed methodology will first identify the training needs of professionals and then evaluate the trends in related sectors. Then it will compare it with the training currently offered by FPC. Based on the result of this analysis and its conclusion, a proposal will be made to develop the degree programs for the future academic years.

Internal code: IS-P10/02
Scope: Local
Agreement signed with: Fundació Politècnica de Catalunya
Dates: 10.2010-01.2011
Agreement manager: Josa, Alejandro

Development of a multi-year WASH Sector Action/Investment Plan for water, sanitation and hygiene service delivery in Suba and Homa Bay Districts (Kenya)

In Homa Bay and Suba, access to safe water and improved sanitation remains elusive; which is strongly correlated to the outbreak of waterborne diseases such as diarrhoea, typhoid and cholera. Both districts have recurrently been cholera prone. The investment in water and sanitation therefore appears as a key strategy to improve health. In recognition of this fact, and to support the Districts of Homa Bay and Suba in its efforts to promote regional development and reduce poverty, this project aims to prepare a strategic plan for the delivery of water, sanitation and hygiene (WASH) services to the population. This has been identified as a core area of support, since such plan should contribute to a coordinated and focused implementation of WASH activities. In brief, the plan will achieve sustainable and equitable growth in the sector, being a comprehensive road map on how
to increase sustained access to safe water and adequate sanitation as well as to improve hygienic behaviour.

**Internal code:** IS-P11/05  
**Scope:** International  
**Agreement signed with:** UNICEF - Kenya Country Office  
**Partners:** UNICEF (Kenya), Alternative Programme Solutions (Kenya), District Water Offices of Homa Bay and Suba Districts (Kenya), and Universitat Politècnica de Catalunya (Spain)  
**Led by:** Universitat Politècnica de Catalunya  
**Funded by:** UNICEF (with co-financing of CCD - 0.7% UPC funds)  
**Dates:** 11.2010-09.2011  
**Principal Investigator (PI):** Pérez Foguet, Agustí

### Assessment of three irrigation projects in Central Rift Valley (Ethiopia)

Ethiopia’s economy is mainly based on agriculture, but productivity of this activity is low. Intermón Oxfam has a project in the country to improve their productivity through the construction of three irrigation systems for users’ cooperatives in rural communities in the district of Arsi Zone. Irrigation infrastructure costs are not insignificant, in addition to effects on water and soil in which it develops. But having a correct technical execution and a proper systems’ management, they can provide a significant amount of income in the communities. The project consisted of technical support to Intermón Oxfam for validation studies prior to construction of the three systems, studying the feasibility and relevance to ensure the effectiveness, and impact on investment. Main aspects considered were water availability, infrastructure design, budget, economic aspects (definition, revenue, etc) and targeted population.

**Internal code:** IS-P11/04  
**Scope:** International  
**Agreement signed with:** Intermon Oxfam  
**Partners:** Intermon Oxfam (Ethiopia) and Universitat Politècnica de Catalunya (Spain)  
**Led by:** Universitat Politècnica de Catalunya  
**Funded by:** Intermon Oxfam  
**Dates:** 02.2011-06.2011  
**Principal Investigator (PI):** Pérez Foguet, Agustí

### Study for the development of an environmental monitoring system for the Titicaca Lake (Peru)

This study falls within the framework of the Programme of Support to Artisanal Fisheries, Aquaculture and Sustainable Management of the Environment (PROPESCA), whose management unit has identified the need to establish a cross-cutting environmental management system based on the ecosystem, fisheries and aquaculture. The aim is to design and implement an environmental monitoring system
with a dual approach: i) to determine the current ecological quality of the study area (the baseline) in order to establish policies and standards for protecting and conserving environmental quality and natural resources; and ii) to determine whether trace metals have caused alterations in the region that may affect the sustainable use of water resources. This study was conducted in the northern part of the Titicaca basin in November 2011. Sediments and microinvertebrates were monitored and studied using indices developed for assessing the ecological quality of the Puno region. The study is currently in the sediment analysis stage, which is expected to conclude by the end of May.

**Internal code:** IS-P11/08  
**Scope:** International  
**Agreement signed with:** Fondo de Cooperación Hispano Peruano (Peru)  
**Partners:** Unidad de Gestión de PROPESCA (Peru), Ministerio de la Producción (Peru), and Universitat Politècnica de Catalunya (Spain)  
**Led by:** Universitat Politècnica de Catalunya  
**Funded by:** AECID (with co-financing of CCD - 0.7% UPC funds)  
**Dates:** 10.2011-12.2011  
**Principal Investigator (PI):** Miralles, Núria

### 5.3. “SEEDS OF SUSTAINABILITY” PROJECTS 2011-2012

**Energy resources and crisis. The end of an unrepeatable period of 200 years**

**Internal code:** PLL11/19  
**Project leader:** Riba Romeva, Carles  
**School/Department:** ETSEIB / DEM  
**Other:** Elena Blanco (PAS)  
**Dates:** 01.2011-12.2012

**Support for teaching the subject ICT4D**

**Internal code:** PLL11/04  
**Project leader:** Vidal Lopez, Eva  
**School/Department:** ETSETB / DEE  
**Other:** Jordi García Almiñana (PDI)  
**Dates:** 09.2011-07.2012

**Sustainable lifestyle in the LOW3 solar house at Sant Cugat Campus**

**Internal code:** PLL11/17  
**Project leader:** Seguí Santana, Víctor  
**School/Department:** ETSAV / DCAI
Other: Cesc Viñas (student), Andreu Carpi (student)

**Getting material for the conference Recycle**

**Internal code:** PLL11-02  
**Project leader:** Sánchez Carracedo, Fermín  
**School/Department:** FIB / DAC  
**Other:** Marcos Etevez (student), Xavier Pegenaute (PAS)  
**Dates:** 11.2011- 07.2012

**Upcycling50/50. Developing sustainability projects by students at UPC**

**Internal code:** PLL11/05  
**Project leader:** Sabaté Nolla, Jordi  
**School/Departament:** ETSAV / DEGA  
**Other:** Jordi Ibars (student), Carla Mas (student), Johathan Navarro (student)  
**Dates:** 11.2011- 06.2012

**System for simulating an integrated energy and environmental analysis for new and rebuilt buildings**

**Internal code:** PLL11/06  
**Project leader:** Fonseca i Casas, Pau  
**School/Departament:** FIB / DEIO  
**Other:** Antoni Fonseca i Casas (student)  
**Dates:** 11.2011- 06.2012

**Zero Energy Building Lab. Small-scale experimental platform physically emulating electric power system of buildings**

**Internal code:** PLL11/13  
**Project leader:** Gomis Bellmunt, Oriol  
**School/Departament:** ETSEIB / DEE  
**Other:** Roberto Villafáfila (PDI), Eduard Prieto (student).  
**Dates:** 11.2011- 07.2012

**Solar Flare Map. Reconciliation of Energy**

**Internal code:** PLL11/15  
**Project leader:** Zamora Mestre, Joan Lluís
School/Departament: ETSAB / DCAI
Other: Rodrigo A Vásquez (student)

Innovation Site on Water & Energy Efficiency

Internal code: PLL11/12
Project leader: García Serrano, Joan
School/Departament: ETSECCPB / DEHMA
Other: Ivet Ferrer (PDI), Jaume Puigagut (PDI), Marianna Garfí (PDI), Manuel Espino (PDI), Agustín Sánchez-Arcilla (PDI), Xavier Sanchez Vila (PDI)
6. TEACHING

6.1. MASTER’S DEGREE IN SUSTAINABILITY

The aim of the Master’s degree in Sustainability is to provide advanced training in sustainable human development that enables students to understand the complex interaction between society, technology, the economy and the environment, so that they can tackle the social and environmental challenges inherent to sustainability: climate change, the depletion of natural resources, North-South imbalances, environmental justice, etc. This master’s degree prepares students to become entrepreneurial professionals and agents of change for sustainability who will, depending on their specialization, design and assess global, sustainable solutions for the uncertain, complex scenario we are living in. They will take an interdisciplinary approach and ensure scientific and technical rigour in the diverse cultural and professional contexts they work in.

The main profile of the applicant corresponds to a candidate with a degree in Engineering or Architecture, or a Bachelor in Natural Sciences or Environmental Science, Geography or Mathematics, who wants to develop an academic or professional activity oriented to sustainability. In addition, other specific skills include amongst others:

- A global vision of the limits, problems, conflicts and challenges associated with the management of fresh water on the planet, energy production and consumption, the evaluation and resources and the sustainable management of energy and food, in addition to food security.

- Knowledge of the basic principles of the sustainability paradigm, its debates and its environmental, socio-cultural and economic implications.

- In-depth knowledge of the concept of human development and other alternative theories, such as development on a human scale and the debates surrounding this theme.

- Understanding of the dynamics and problems that have emerged within the globalisation phenomenon and their relationship with global sustainability.

- Knowledge of international organisations and their decision-making mechanisms on a global level, analysing their theoretical bases and their proposals for the future that are coherent with the notion of sustainable development.

- Knowledge of the impact that the use of technology has on the society that adopts it and the basic principles for sustainable technology.

- Knowledge of the principles of ecology as a basic discipline for guiding relations between society and nature and progressing towards the sustainable management of natural resources.

The following courses were offered during 2010-2011:
### Compulsory courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>31106</td>
<td>Sustainable Human Development</td>
<td>A. Pérez-Foguet</td>
</tr>
<tr>
<td>32500</td>
<td>Environmental and Ecological Economics</td>
<td>A. Stahel</td>
</tr>
<tr>
<td>32501</td>
<td>Ecology and Management of Natural Resources</td>
<td>J. Morató</td>
</tr>
<tr>
<td>32502</td>
<td>Systemic and Complexity</td>
<td>M. Rosas</td>
</tr>
<tr>
<td>32504</td>
<td>Urban Ecology and Land</td>
<td>F. Magrinyà</td>
</tr>
<tr>
<td>32505</td>
<td>Culture, Technology and Innovation</td>
<td>M. Barceló</td>
</tr>
<tr>
<td>32570</td>
<td>Introduction to the Final Master Project</td>
<td>E. Velo</td>
</tr>
<tr>
<td>32571</td>
<td>Final Master Project</td>
<td></td>
</tr>
</tbody>
</table>

### Elective courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Professor</th>
</tr>
</thead>
<tbody>
<tr>
<td>31108</td>
<td>Sustainable Construction</td>
<td>M. Casals</td>
</tr>
<tr>
<td>31114</td>
<td>Environmental Impact of Public Works</td>
<td>E. Ojeda</td>
</tr>
<tr>
<td>31518</td>
<td>Infrastructure Projects as Instrument of Env. Regulation</td>
<td>F. Magrinyà</td>
</tr>
<tr>
<td>31519</td>
<td>Urban and Regional Analysis</td>
<td>F. Magrinyà</td>
</tr>
<tr>
<td>31520</td>
<td>Socio-territorial Impact of Infrastructure</td>
<td>M. Villares</td>
</tr>
<tr>
<td>31555</td>
<td>Water Resources in Developing Countries</td>
<td>L. Candela</td>
</tr>
<tr>
<td>32513</td>
<td>Workshop on Sustainability in the Area of Building</td>
<td>A. Cuchi</td>
</tr>
<tr>
<td>32515</td>
<td>Interdisciplinary Workshop</td>
<td>A. Cuchi</td>
</tr>
<tr>
<td>32530</td>
<td>Int. Cooperation and Social Responsibility of Organizations</td>
<td>À. Garola</td>
</tr>
<tr>
<td>32532</td>
<td>Projects of Int. Cooperation for Development Humanitarian aid, Eng. and Risk</td>
<td>A. Pérez-Foguet</td>
</tr>
<tr>
<td>32533</td>
<td>Manag. in Emergencies</td>
<td>D. Sampere</td>
</tr>
<tr>
<td>32535</td>
<td>Construction of Housing and Social Infr. in Coop. Contexts</td>
<td>M. Etxeberria</td>
</tr>
<tr>
<td>32536</td>
<td>Basic Services and Local Dev. in the Context of Coop.</td>
<td>M. Ortego</td>
</tr>
<tr>
<td>32539</td>
<td>Measurement of Sustainability</td>
<td>B. Sureda</td>
</tr>
<tr>
<td>32540</td>
<td>Models of Human Development</td>
<td>A. Stahel</td>
</tr>
<tr>
<td>32541</td>
<td>Natural Resources</td>
<td>J. Martínez</td>
</tr>
<tr>
<td>32542</td>
<td>Political Ecology</td>
<td>A. Stahel</td>
</tr>
<tr>
<td>32543</td>
<td>Modelling Sustainability</td>
<td>J. J. de Felipe</td>
</tr>
<tr>
<td>32544</td>
<td>Governance, Sovereignty and Participation</td>
<td>J. Xercavins</td>
</tr>
<tr>
<td>32549</td>
<td>Int. Seminar on Sustainable Innovation: Technology</td>
<td>J. Segalàs</td>
</tr>
<tr>
<td>32551</td>
<td>Sustainable Urbanism</td>
<td>F. Magrinyà</td>
</tr>
<tr>
<td>32559</td>
<td>Sustainable Building</td>
<td>A. Pagès</td>
</tr>
<tr>
<td>32560</td>
<td>Water Cycle and Building</td>
<td>A. Cuchi</td>
</tr>
<tr>
<td>32561</td>
<td>The Life Cycle of Building Materials</td>
<td>A. Cuchi</td>
</tr>
<tr>
<td>32562</td>
<td>Energy Efficiency in Buildings</td>
<td>A. de Bobes</td>
</tr>
<tr>
<td>32563</td>
<td>Bioclimatic Architecture</td>
<td>E. Corbat</td>
</tr>
<tr>
<td>32564</td>
<td>Cases Studies in Sustainable Building</td>
<td>A. Cuchi</td>
</tr>
<tr>
<td>32569</td>
<td>Sustainable Tech. for Integrated Water Management</td>
<td>N. Miralles</td>
</tr>
<tr>
<td>32572</td>
<td>Sustainability Policy for the City and the Area</td>
<td>J. Xercavins</td>
</tr>
</tbody>
</table>
Graduated Students 2010-2011

Ahumada Ossio, Ximena A. Alvarez Alves, Lilian Andreu Lozano, Miguel Bellver Martí, Ángel Manuel Browne Pinochet, Edmundo Busquets Hidalgo, José M. Cañadó Expósito, Marta Cardenas Guzman, Lorena Carminati Bettarello, Mariana Casanova Chia, Claudia A. Castillo Guererro, Andrea C. Cintas Sánchez, Olivia Corridoni, Lucia Dethoor, Jeremy Diaz Osorio, Andrea Florit Moll, Andreu Galindo Fernandez, Monica Garcia Esteban, Sonia


Nielfa Llongueras, Ana Nuñez i Arroniz, Maria Olavarrieta Cabezas, Juan P. Oliva Lopez, Jordi J. Paternoster, Agustin Patron Coppel, Julian A. Perez Lopez, Alfonso Prandina, Renato Primbas, Alejandro J. Pulgarin Giraldo, Natalia Ramos Mota, Christopher Rojas Caro, Patricia Marleny Ruiz Martorell, Galdric Tejedor Papell, Gemma Tijero De Las Heras, David Unibazo Carrillo, Marcelo

Graduated Students (before 2010-2011)

Alba Fraga, Diego Alonso Pazos, Joaquin Campos Rodrigues, Luis Del Rio San Pio, Juan Gay, Eleonora Jerez Mesa, Ramon Llobet Domingo, Jordi

Marchegiani, Silvia Montilla Calvo, Laura Motta Noronha, Debbie Nogueira Berrocal, Gabriela Perez Vazquez, Cristina Pons Pons, Marc Quintana Suarez, Jimena

Rigau Escavias, Neus Rodrigues De Oliveira, Ana L. Sanchez Balvas, Lizeth A. Torres Acosta, Leorl S. Vega Moreno, Guido A. Verdu, Alexandre Joan L. Weisman, Jose Luis

6.2. DOCTORAL PROGRAMME IN SUSTAINABILITY

Sustainability research involves specialists from different origins and backgrounds with a variety of disciplinary perspectives but with the common desire to contribute to the development of society by providing future generations with the options and skills required to forge their own path.

The doctoral programme in Sustainability encompasses the research and courses that deal with the current challenges to sustainability: exhaustion, distribution and management of natural resources, including energy and water; climate change impacts and adaptation and mitigation mechanisms; modelling of socio-environmental systems and assessment of their evolution and development; poverty and imbalances in urban and rural environments; technological innovation and integrated concepts in construction, architecture and management of public services and the environment; and preservation...
and promotion of environmental and cultural heritage.

Sustainability science and technology is a highly interdisciplinary field of research that offers the opportunity to make original contributions in understanding and solving problems that affect the welfare and development of peoples and societies, and in shaping a new perspective from which to analyse our reality, integrating approaches from different disciplines and embracing the very agents of change.

This doctoral programme opens the door to professionals and researchers with the determination and abilities to meet these challenges and provide solutions through academic contributions with an international impact.

**PhD in Sustainability – Enrolled 2010-2011**

**Teaching (RD 1393/2007)**
- Bosch Gonzalez, Montserrat
- Enguita Rovira, Oscar
- Vilar Ferrenbach, David

**Research (RD 1393/2007)**
- Agredo Cardona, Gustavo A.
- Ahmed Nasreldin, Osama
- Arellano Escudero, Nelson A.
- Arrache Santibáñez, Lizbette
- Arranz Piera, Pol
- Avitia Rodríguez, Jessica A.
- Avolio, Ciro
- Baba El Mokhtari, Yasmina
- Cañada Expósito, Marta
- Carres Gonzalez, Jordi
- Cerda Díaz, Francisca
- Clavera Ibañez, Gloria
- Cubí Montanyà, Eduard
- de Balanzó Joue, Rafael
- Escobar Gonzalez, Cristina
- Escoria Robles, Bryan Jenice
- Fonseca Casas, Antonio
- Guesmi, Bouali
- Jimenez Redal, Ruben
- Lomeña Gelis, Monica
- M. I. K. Hassouneh, Islam
- Martínez Magaña, Juan
- Molins Duran, Gemma
- Ortega Espes, Delphine J.
- Vilar Ferrenbach, David

**Research (RD 778/1998)**
- Adrados Ruiz, Bárbara
- Álvarez Castillo, M. Dolores
- Antequera Baiget, Jose
- Bernal Pérez, Rolando J.
- Boñill Abello, Jordi
- Busquets Rubio, Pere
- Casañ Guerrero, Maria J.
- Cifuentes Ruiz, Paula A.
- Cortés Cardona, Adriana C.
- Cucina, Manuela
- Fittipaldi Gustavino, Mariana
- Gallón Londoño, Luciano
- Horta Bernus, Ricard
- Landeros Suárez, Arturo
- Llistar Bosch, David
- Londoño Linares, Juan Pablo
- Lopez Lopez, Maria Jose
- López Villegas, Luis Ignacio
- Michelutti, Enrico
- Paolini Ruiz, Jorge
- Pires Carneiro, Alex
- Salas Prat, Josep Maria
- Salas Zapata, Walter A.
- Sanjuanero Caballero, Luis R.
- Tollin, Nicola
- Vargas Collazos, Monica
6.3. DOCTORAL PROGRAMME IN ENVIRONMENTAL ENGINEERING

The doctoral programme in Environmental Engineering provides doctoral students with advanced training and a high capacity for research in the field of environmental engineering, that is, having a knowledge and understanding of the impacts on the environment, both derived from human activities and natural processes, with the ability to evaluate the interactions between them, and the ability to propose and define possible actions to protect and recover the environment.

This programme is a multidisciplinary training framework in an international context that allows doctoral students to obtain the scientific, methodological and technical skills to address the challenges of innovation and research that society demands in the field of environmental engineering.

It can be considered the first doctoral programme in Environmental Engineering imparted in Spain.

PhD Environmental Engineering Enrolled 2010-2011

Teaching (RD 1393/2007)

| Guevara Vilardell, Marc | Roig Planasdemunt, Maria |

Research (RD 1393/2007)

| Affes, Rim | Gasparini, Andrea | Pizarro Loaiza, Carlos A. |
| Avila Martin, Cristina | Giannakis, Stefanos | Rodríguez Abalde, Ángela |
| Badea, Cristian Adrian | Illa Alibes, Josep | Samsó Campà, Roger |
| Badia Moragas, Alba | Juznic Zonta, Zivko | Scaini, Chiara |
| Bori Dols, Jaume | Laureni, Michele | Soret Miravet, Albert |
| Borkel, Christoph | Lopes Del Rei Passos, Fabiana | Spada, Michele |
| Camino González, Carlos | López Roldán, Ramon Manuel | Suárez Silgado, Sindy Sofía |
| Flores Baquero, Óscar | Lopez Xarbau, Josep | Witlox, Katarzyna Jolanta |
| Galvañ Salazar, Carmen | Pedrosa Portugal, Rubén | |

Research (RD 778/1998)

| Basart Alpuente, Sara | Granados Granados, Ricardo J. | Rincon Rodríguez, Angel A. |
| Casas Garriga, Sandra | Haustein, Karsten | Silvestre Torno, Gracia M. |
| Chaperón Cordero, Wilson B. | Marras, Simone | Solé Carbonell, Marta |
| Domenech Rubio, Luis M. | Pay Pérez, María T. | Yacoub López, Cristina |
| Garcia Almiñana, Daniel | Pinto Varela Alberite, Elaine | |
7. DISSERTATIONS

This list includes Ph.D. theses defended during 2011 that were supervised by the academic staff of IS.UPC.

Viñolas, B.

*Aplicaciones y avances de la metodología mives en valoraciones multicriterio*

Ph.D. Programme in Construction Engineering - UPC  
**Supervisors:** Aguado, A. and Josa, A.  
**Date:** February 11th, 2011  
**Qualifications:** Excellent Cum Laude

Oliva, J.

*Avaluació i caracterització d’una apatita biogènica pel tractament in situ d’aigües subterrànies i sòlid contaminats per activitats mineres.*  
Ph.D. Programme in Natural Resources and Environment  
**Supervisors:** De Pablo, J. and Cortina, J.L.  
**Date:** April 27th, 2011  
**Qualifications:** Excellent Cum Laude

Pérez Fortes, María del Mar

*Conceptual design of alternative energy systems from biomass*  
PhD in Chemical Process Engineering - UPC  
**Supervisors:** Puigjaner, L. and Velo, E.  
**Date:** June 27th, 2011  
**Qualifications:** Excellent Cum Laude

Gonzalez-Robles Corrales, Ernesto

*Study of Radionuclides Release in Commercials UO2 Spent Nuclear Fuels*  
Ph.D. Programme in Chemical Process Engineering - UPC  
**Supervisors:** de Pablo Ribas, Joan and Serrano Purroy, Daniel  
**Date:** November 22nd, 2011  
**Qualifications:** Excellent Cum Laude
8. PUBLICATIONS

8.1. BOOKS

This list includes books from IS.UPC researchers published in 2011.


8.2. SCIENTIFIC PRODUCTION

This list includes papers from IS.UPC researchers published in 2011 in Journal Citation Report indexed journals, ordered by ISI Impact Factor.


9. ACTIVITIES

9.1. RESEARCH SEMINARS AND WORKSHOPS

Energy access and poverty: Energy for All 2030
Speaker: Enric Velo, Associate Professor at the Department of Heat Engines, UPC.
Date: 30 May 2011

4th International Seminar on Sustainable Technology Development
Coordinator: Jordi Segalàs, Associate Professor at the Department of Fluid Mechanics, UPC.
Date: 3-10 June 2011

The State of Sustainability Reporting in Universities
Speaker: Rodrigo Lozano, Professor of Corporate Sustainability at Sustainability Research Institute, University of Leeds, UK.
Date: 6 June 2011

Energy and SIRENA project
Speaker: Milena Ràfols, Research support staff at the IS.UPC.
Date: 27 June 2011

Community Communication Networks and Social Development: CONFINE Project
Speaker: Leandro Navarro, Associate Professor at the Department of Computer Architecture, UPC.
Date: 4 July 2011

Composting the Organic Fraction of Municipal Waste
Xavier Martínez Farré, Associate Professor at the Department of Agri-Food Engineering and Biotechnology, UPC.
Date: 11 July 2011

Development of Reliable Hydrologic Data Sets in Difficult Environments: Case Studies from Benin, West Africa
Stephen Silliman, Professor of Civil Engineering and Geological Sciences at the University of Notre Dame, USA.
Date: 23 September 2011

Geophysical Science and Modelling Activities (with an emphasis in Numerical Weather Prediction) at Alaska’s Arctic Region Supercomputing Center
Don Morton, Research Professor of Alaska’s Arctic Region Supercomputing Center, USA.
Date: 26 October 2011
Regional Sustainability Model. System Dynamics Applied to the Study of South America

Luciano Gallón, PhD student IS.UPC, MSc. in Technology Management from the Pontificia Universidad Boliviana (UPB) in Medellín, Colombia.

Date: 28 November 2011

9.2. PRESENTATIONS

Inauguration of Academic Year 2011-2012. Masters in Sustainability and Environmental Engineering

Presentation:
Agustí Pérez Foguet, Director IS.UPC.
Xavier Flotats, Co-coordinator of Master of Environmental Engineering UPC.

Lectures:
Rafael Mujeriego. Dr. Engineering from the University of California (Berkeley) and Professor of Environmental Engineering of the UPC, retired.
Carles Riba i Romeva, Professor of Mechanical Engineering UPC.
Josep Enric Llebot, Secretary of Environment and Sustainability, Department of Planning and Sustainability of the Generalitat of Catalonia.

Closing:
Antoni Giró, Rector of the UPC

Date: 12 September 2011

Call for IS.UPC Seed projects

Presentation:
Agustí Pérez Foguet, Commissioner for Sustainability and Social Responsibility UPC.
Marta Subirà i Roca, General Director for Environmental Policy of the Generalitat of Catalonia.

Lectures:
Júlia Garcia Pastor, head of the Department of Environmental Education at the Catalan Foundation for Recreation.
Rosa García Segura, Technical Director of the Foundation for Waste Reduction and Consumption.
Ricard Riol Jurado, President of the Association for the Promotion of Public Transport.
Anna Subirana Iborra, Responsible for communication of the Land Stewardship Network.

Date: 3 November 2011

SIRENA UPC 2011

Presentation:
Eugènia Bretones Espejo, Head of administration IS. UPC.
Josep-Manel Sabaté and Alessandro Meluni, Research support staff at the IS.UPC.

Date: 22 November 2011
10. ANNEX

Two-page CVs of permanent academics of UPC with formal adscription to IS.UPC in December 2011 are presented in alphabetical order in this section.
CV – ALEJANDRO JOSA GARCIA-TORNEL

ACADEMIC CAREER

Alejandro Josa finished his Master Degree in Civil Engineering in 1981. He obtained the PhD from UPC with honours with a thesis in the field of Geotechnics (elastoplastic modelling of partially saturated soils) in 1988. This work got the “Extraordinary Award” for 1988 UPC thesis.

In the 80s and early 90s his research was mainly focused on the experimental analysis and modelling of partially saturated soils, the behaviour of foundations and the application of different types of concretes in low-volume road pavements. In the late 80s and 90s he joined different European groups working in the field of the environmental impact and LCA of cement-based products. Since then his research was mainly focused first on the environmental impact of cement and its applications through the LCA methodology and later, since the beginning of this century, on the assessment of sustainability through the application of the multi-attribute utility theory and the value analysis. His research in recent years has been focused on the LCA of different construction applications (different types of urban pavements, rainwater harvesting infrastructures, electrical mobility), the quantitative assessment of sustainability (theoretical models and application to different infrastructures) and the behaviour of geotechnical structures. The current academic activity is also developed in such fields (soil mechanics and geotechnical engineering, LCA in construction and assessment of sustainability).

He is author or coauthor of 14 books, 20 book chapters, 50 articles in journals (20 in indexed journals), over 100 congress communications and numerous research reports. He has participated in 22 research projects funded by open calls (3 EU) (5 national projects as project director). He has participated in 21 contracts with administrations and companies (9 as principal researcher). He has co-directed 8 PhD theses.

He is responsible for a postgraduate course on LCA and sustainability assessment of infrastructures; co-director of the UPC University Master program on Environmental Engineering; member of the board of the UPC Research Institute for Sustainability Science and Technology IS.UPC, as responsible for University Masters; member of the academic board of the UPC University Master in Sustainable Development; and deputy director of the UPC Department of Geotechnical Engineering and Geosciences.

WORK EXPERIENCE

- Dates (from – to): June 2012 to date
  - Position held (Name of employer): Responsible for a postgraduate course on LCA and sustainability assessment of infrastructures (Universitat Politècnica de Catalunya)

- Dates (from – to): April 2011 to date
  - Position held (Name of employer): Co-director of the UPC University Master program on Environmental Engineering (Universitat Politècnica de Catalunya)

- Dates (from – to): September 2010 to date
  - Position held (Name of employer): Member of the board of the UPC Research Institute for Sustainability Science and Technology IS.UPC, as responsible for University Masters (Universitat Politècnica de Catalunya)

- Dates (from – to): September 2010 to date
  - Position held (Name of employer): Member of the academic board of the UPC University Master in Sustainable Development (Universitat Politècnica de Catalunya)

- Dates (from – to): March 2006 to date
  - Position held (Name of employer): Deputy director of the UPC Department of Geotechnical Engineering and Geosciences (Universitat Politècnica de Catalunya)

- Dates (from – to): July 1990 to date
  - Position held (Name of employer): Associate Professor at the Geotechnical Engineering and Geo-Sciences Department (Universitat Politècnica de Catalunya)
CV – ALEJANDRO JOSA GARCÍA-TORNEL

Reasearch Projects & Contracts (Selected)

- Title: Cuantificación de la sostenibilidad en ingeniería de la construcción con y sin incertidumbre
  - Name of employer: MCINN Spanish Government (ref. BIA2010-20789-C04-01)
  - Role and Main activities: Principal Researcher

- Title: Hacia la sostenibilidad en construcción a través del análisis de valor con enfoques determinista y probabilista
  - Name of employer: MCINN Spanish Government (ref. BIA2009-14171-C04-01)
  - Role and Main activities: Principal Researcher

- Title: Movilidad y distribución de metales en la zona no saturada y sus efectos sobre cambios de calidad de aguas subterráneas. MAROMA
  - Dates (from – to): 2007 – 2010
  - Name of employer: MEyC Spanish Government (ref. CGL2007-66861-C04-03/HID)
  - Role and Main activities: Researcher

- Title: TRAGA-CONSOLIDER
  - Dates (from – to): January 2006 – December 2010
  - Name of employer: CICYT Spanish Government (ref. Consolider CSD2006-0004)
  - Role and Main activities: Researcher

- Title: Proyecto Cemento. Desarrollo técnico, medioambiental, de sostenibilidad e institucional de cementos y sus derivados
  - Dates (from – to): 2003 – 2012
  - Name of employer: Ciment Català
  - Role and Main activities: Principal Researcher

Publications in Peer-Review Journals (Selected)


CV - JOAN DE PABLO RIBAS

ACADEMIC CAREER

Prof. Joan de Pablo is the director of the IS.UPC, and is full professor in Chemical Engineering at the Universitat Politècnica de Catalunya since 2002. He obtained his PhD in Chemistry with a thesis in the field of chemical heat storage in 1984 at the UAB. His doctoral studies included 18 months at the Royal Institute of Technology (Stockholm, Sweden).

As researcher, he has been the project leader of European, Spanish and Catalan Research Projects in the fields of waste management, environmental risk assessment, contaminated soil and groundwater remediation. His R+D group has been involved in the scientific basis for the waste management. In particular, they are working since 1989 in the performance assessment of the spent nuclear fuel disposal in geological formations. The studies focused on the spent fuel behaviour under repository conditions as well as on actinide and fission products chemistry. They are developing models to predict radionuclide release from the interaction between spent fuel and groundwater. Another area of expertise focuses on reactive transport of pollutants in geological systems. The understanding of the mineral-water interface is the main objective in this study. Experimental techniques such as X-Ray Photoelectron Spectroscopy, Atomic Force Microscope, X-Ray Absorption Spectroscopies (EXAFS, XANES), Scanning Electron Microscope as well as powerful reactive transport models are used to characterize and understand the interaction between mineral surfaces and pollutants. Finally, part of their research also includes groundwater remediation by means of Reactive Permeable Barriers. The development and combination of different materials to be used in such systems are of special interest.

He has co-authored more than 160 publications, including 100 in SCI journals. He has organised three international workshops.

As regards teaching activities, he is lecturer of Environmental Science and Technology Courses.

WORK EXPERIENCE

- Dates (from – to): January 2012 to date
  Position held (Name of employer): Director of the UPC University Research Institute for Sustainability Science and Technology IS.UPC (Universitat Politècnica de Catalunya)

  Position held (Name of employer): Head of the Chemical Engineering Department (Universitat Politècnica de Catalunya)

- Dates (from – to): 2001 to date
  Position held (Name of employer): Scientific Director of the Fundació CTM Centre Tecnològic

- Dates (from – to): February 2002 to date
  Position held (Name of employer): Full Professor at the Chemical Engineering Dept. (Universitat Politècnica de Catalunya)

- Dates (from – to): July 1986- February 2002
  Position held (Name of employer): Assistant Professor at the Chemical Engineering Dept. (Universitat Politècnica de Catalunya)

RESEARCH PROJECTS & CONTRACTS (SELECTED)

- Title: Behavior of Actinides and Fission Products in the Environment
  Dates (from – to): January 2012 - December 2014
  Name of employer: MCINN Spanish Government (ref CTM2011-27680-C02-01)
  Role and Main activities: Principal Researcher
## CV - JOAN DE PABLO RIBAS

**Title** Fast / Instant Release of Safety Relevant Radionuclides from Spent Nuclear Fuel (FIRST-Nuclides)

**Dates (from – to)** January 2012 – December 2014

**Name of employer** European Commission (Grant Agreement Number 295722)

**Role and Main activities** Workpackage Leader

**Title** Ground Water Pollution from Agricultural and Industrial Sources: Contaminant Fate, Natural and Induced Attenuation, and Vulnerability

**Dates (from – to)** December 2005 - December 2008

**Name of employer** MCINN Spanish Government (ref CGL2008-06373-C03-02)

**Role and Main activities** Researcher

**Title** Natural attenuation processes and passive remediation of groundwater contamination

**Dates (from – to)** 2004 – 2006

**Name of employer** MEC Spanish Government – CAP (ref. CGL2005-08019-C04-03/HID)

**Role and Main activities** Principal Researcher

**Title** ECOSIND Etablissement de bases scientifco-techniques et de stratégies pour la recherche de nouvelles voies de valorisation régionales de résidus industriels

**Dates (from – to)** 2004 – 2006

**Name of employer** European Comission (MESVAL. Interreg III)

**Role and Main activities** Principal Researcher and Project Coordinator

### PUBLICATIONS IN PEER-REVIEW JOURNALS (SELECTED)

CV - AGUSTÍ PÉREZ FOGUET

ACADEMIC CAREER

Agustí Pérez Foguet finished the studies of Ing. de Caminos, Canales y Puertos (Civil Eng.) in 1996. He obtained the PhD from UPC with honours with a thesis in the field of nonlinear computational solid mechanics in 2001. His doctoral studies included a half-year stay at UC Berkeley. In 2002, he was recognized with the Juan Carlos Simo Award for Young Researchers (Premio Juan Carlos Simó para Jóvenes Investigadores), given by the Spanish Society for Numerical Methods in Engineering (SEMI).

After some years being actively involved in the development cooperation sector, in 2006 he was awarded with the Quality in University Teaching Award (Premio a la Calidad en la Docencia Universitaria) by the UPC Board of trustees for his continuous work in promoting sustainable human development in engineering studies. The Catalan government also recognized his work with the Jaume Vicens Vives Distinction Award.

From 2006 to present, he has focused his academic activities in applied maths on environmental engineering and sustainable development through two research lines, i.e. “Modelling, simulation and forecasting air quality at local scale” and “Management of water resources and WASH services in developing countries”.

He is responsible for postgraduate courses on Advanced Numerical Methods, Technology for Sustainable Human Development, and International Cooperation Projects for Development; director of the UPC University Master program on Sustainable Development, and is a member of the Civil and Environmental Engineering PhD academic boards.

Between 2010 and 2011, he has been actively involved in the consolidation of the UPC Research Institute for Sustainability Science and Technology IS.UPC.

WORK EXPERIENCE

• Dates (from – to) April 2010 – September 2012
  • Position held (Name of employer) Vice-rector for Sustainability and Social Responsibility (Universitat Politècnica de Catalunya)

• Dates (from – to) April 2010 – December 2011
  • Position held (Name of employer) Director of the UPC University Research Institute for Sustainability Science and Technology IS.UPC (Universitat Politècnica de Catalunya)

• Dates (from – to) October 2007 – March 2010
  • Position held (Name of employer) Assistant to the Vice-rector of Academic Affairs (Universitat Politècnica de Catalunya)

• Dates (from – to) January 2007 – August 2010
  • Position held (Name of employer) Academic director Cooperation for Development Centre (Universitat Politècnica de Catalunya)

• Dates (from – to) February 2006 to date
  • Position held (Name of employer) Co-founder and member of the Research Group on Cooperation and Human Development GRECDH. UPC (Universitat Politècnica de Catalunya)

• Dates (from – to) March 2003 – March 2007
  • Position held (Name of employer) Vice-dean of Civil Engineering Studies, Civil Engineering School (Universitat Politècnica de Catalunya)

• Dates (from – to) July 2002 to date
  • Position held (Name of employer) Associate Professor of the Applied Math III Dept. (Universitat Politècnica de Catalunya)

• Dates (from – to) September 1996 to date
  • Position held (Name of employer) Member of the Research Group Laboratory of Computational Methods and Numerical Analysis – LaCàN (Universitat Politècnica de Catalunya)

• Dates (from – to) September 1996 – July 2002
  • Position held (Name of employer) Lecturer at the Applied Math III Dept. (Universitat Politècnica de Catalunya)
CV - AGUSTÍ PÉREZ FOGUET

RESEARCH PROJECTS & CONTRACTS (SELECTED)

• **Title**
  Improving the monitoring and evaluation of WASH services in small towns

• **Dates (from – to) / Country**
  November 2011 – 2012 / Mozambique

• **Name of employer**
  UN Habitat / AECID Spanish Government – CAP (ref 11-CAP2-1562)

• **Role and Main activities**
  WASH data collection; Data analysis; Development of planning tools to support local decision-making / principal researcher

• **Title**
  Development of an Action Plan for the delivery of WASH services in Homa Bay and Suba Districts

• **Dates (from – to) / Country**
  November 2010 – July 2011 / Kenya

• **Name of employer**
  UNICEF Kenya Country Office

• **Role and Main activities**
  Development of planning tools to support local decision-making / principal researcher

• **Title**
  Improvement of the “Territory and Natural Resources Programme” monitoring system in Viejo river upper-basin

• **Dates (from – to) / Country**
  January 2010 – February 2013 / Nicaragua

• **Name of employer**
  ONGAWA

• **Role and Main activities**
  Technical assistance for monitoring “Terrena” program and introducing Human Right to water perspective in rural water and sanitation governance / principal researcher

• **Title**
  Predictive numerical models for environmental management

• **Dates (from – to) / Country**
  January 2009 – December 2011 / Spain

• **Name of employer**
  ULP CG, U Salamanca / Spanish minister of Science (CGL2008-06003-C03-02)

• **Role and Main activities**
  Numerical methods for local Air Quality modelling, Multiscale coupling / principal researcher (UPC team)

• **Title**
  Development of a Demonstration System to Support Water Resources Management in the Pucara Basin

• **Dates (from – to) / Country**
  July 2008 – December 2012 / Bolivia

• **Name of employer**
  Centro AGUA (Universidad Mayor de San Simón) / AECID Spanish Government

• **Role and Main activities**
  Integrated Water Resources Management / principal researcher (Spanish team)

PUBLICATIONS IN PEER-REVIEW JOURNALS (SELECTED)


CV - ENRIQUE VELO GARCIA

ACADEMIC CAREER

Enrique Velo graduated on Chemical Engineering at UPC in 1986. He obtained his PhD with honours with a thesis in the field of antiknock additive for unleaded gasoline in 1992 at the UPC Department of Chemical Engineering. His doctoral studies included two summer internships at UC Davis (CA, USA).

Since 1993, his research is focused on the utilization of biomass and waste as energy resource, specifically through gasification and pyrolysis processes within CEPIMA (Center for Process Engineering and Environment, UPC). Since 2006, his research activity also includes the implementation of renewable energy projects in rural areas of developing countries within the GRECDH (Research group on Cooperation and Human Development).

He is author or co-author of 4 books, 30 book chapters, 50 articles in journals (30 in indexed journals), over 100 congress communications and numerous research reports. He has participated in 18 research projects funded by open calls (7 EU) (5 national projects as project director). He has participated in 18 contracts with administrations and companies (2 as principal researcher). He has co-directed six PhD theses.

He is responsible for postgraduate courses on renewable energy applied to human development projects. He has been the programme director for the MSc in Renewable Energy (an EIT labelled KIC Innoenergy Programme) and the MSc in Technology for Human Development and Cooperation (a UPC official degree) since 2012. He is the UPC programme coordinator for the MSc Environomical Pathways for Sustainable Energy Systems – SELECT (an Erasmus Mundus – KIC Innoenergy programme). Additionally, he is member of the academic boards of the MSc in Sustainable Development (UPC), the PhD programme in Sustainable Development (UPC), and the PhD programme in Thermal Engineering (UPC).

He is co-founder of the UPC Research Institute for Sustainability Science and Technology IS.UPC, acting as the Institute’s Secretary from its creation to present day.

WORK EXPERIENCE

- Dates (from – to) September 2009  to date
- Position held (Name of employer) Secretary of UPC University Research Institute in Sustainability Science and Technology (IS.UPC)

- Dates (from – to) February 2006 to date
- Position held (Name of employer) Co-founder and member of the Research Group on Cooperation and Human Development GRECDH.UPC (Universitat Politècnica de Catalunya)

- Dates (from – to) December 1998 to date
- Position held (Name of employer) Associate Professor at the Department of Heat Engines (Universitat Politècnica de Catalunya)

- Dates (from – to) December 2002-June 2009
- Position held (Name of employer) Secretary of the Department of Heat Engines (Universitat Politècnica de Catalunya)

- Position held (Name of employer) Lecturer at the Heat Engines Dept. (Universitat Politècnica de Catalunya)

RESEARCH PROJECTS & CONTRACTS (SELECTED)

- Title Energy access for the poor in sub-Saharan Africa to meet the millennium development goals (Energy for All 2030)
- Dates (from – to) January 2010 - January 2013
- Name of employer EuropeAid (ref code DCI-NSA ED/2009/201-885)
- Role and Main activities Principal Researcher (UPC Team)
CV - ENRIQUE VELO GARCÍA

• Title Onsite power generation with modular gasifiers
  • Dates (from – to) / Country October 2008 – October 2011
  • Name of employer ACC1Ó (CIDEM COPCA) Catalan Government (Project ref VALTEC08-2-0020)
  • Role and Main activities Principal Researcher

• Title Expanding horizons production from the paradox of integration (EHMAN)
  • Dates (from – to) / Country January 2010 – December 2012
  • Name of employer Spanish Ministry of Science and Technology (Project ref DPI2009-09386)
  • Role and Main activities Researcher

• Title Research on the characterization of biomass resources and energy consumption in the Amazon jungle areas of Peru
  • Dates (from – to) / Country January 2011 – January 2012 / Peru
  • Name of employer AECID Spanish Government PCII programme. C-032223-10
  • Role and Main activities Principal Researcher

• Title Promoting agricultural development in areas not connected to the grid using bio energy technologies and other renewable energy sources
  • Dates (from – to) / Country January 2011 – January 2012 / Mozambique
  • Name of employer AECID Spanish Government PCII programme. C-032141-10
  • Role and Main activities Principal Researcher

PUBLICATIONS IN PEER-REVIEW JOURNALS (SELECTED)


