

# Environmental Statement 2013

## Universitat Politècnica de València





**UNITAT DE MEDI AMBIENT**

Universitat Politècnica de València.  
Environmental Unit  
Camino de Vera s/n – Edificio 8H

Document code: UPV.MA-DA.2013-UPV-01  
Revision: 01  
Date: March 2014.

Approved by:

Francisco Mora Mas

Rector of the UPV

May 2014

# Contents

<b>1. Introduction.....</b>	<b>5</b>
1.1. Scope of the environmental management system: UPV in figures.....	5
1.2. UPV campuses.....	9
<b>2. Description of the environmental management system. ....</b>	<b>¡Error! Marcador no definido.</b>
2.1. Environmental policy .....	10
2.2. Structure and environmental responsibilities.....	10
2.2.1. University bodies with environmental responsibilities.....	12
2.2.2. Individuals with environmental responsibilities.....	12
2.3. Documental description of the environmental management system.....	13
<b>3. Description of the environmental aspects of the organisation .....</b>	<b>14</b>
3.1. Evaluation criteria.....	14
3.2. Significant environmental aspects.....	14
<b>4. Environmental plan.....</b>	<b>17</b>
<b>5. Description of environmental performance.....</b>	<b>22</b>
5.1. General data for the calculation of indicators.....	22
5.2. Environmental indicators.....	22
5.2.1. Energy efficiency. Total direct consumption of electricity and fuel.....	23
5.2.2. Renewable energy in the UPV.....	25
5.2.3. Electrical consumption.....	26
5.2.4. Efficiency in use of materials.....	27
5.2.5. Total water consumption.....	28
5.2.6. Mains water consumption.....	30
5.2.7. Consumption of well water.....	¡Error! Marcador no definido.
5.2.8. Generation of non-hazardous waste.....	33
5.2.8.1. Generation of paper and cardboard waste.....	33
5.2.8.2. Generation of light packaging waste.....	35
5.2.8.3. Generation of electrical and electronic equipment waste.....	37
5.2.9. Generation of hazardous waste.....	39
5.2.10. Land use.....	41
5.2.11. Emissions.....	42
5.2.11.1. Emission of greenhouse gases.....	42
5.2.11.2. Emissions of contaminating gases.....	46
5.2.12. Mobility.....	49
5.2.13. Employee training actions.....	52
5.2.13.1. Training actions aimed at employees.....	52
5.2.13.2. Training activities for the entire university community.....	53
5.2.13.3. Participative actions.....	53
5.2.14. Communication.....	54
<b>6. Environmental legal requirements .....</b>	<b>55</b>
6.1. Major environmental requirements.....	56

<b>7. Other factors</b> .....	<b>57</b>
7.1. Improving energy efficiency .....	57
7.2. Biodiversity conservation .....	¡Error! Marcador no definido.
7.3. Conservation of biodiversity .....	59
7.3.1. 'Rocalla Cavanilles' micro-reserve at Gandia campus .....	59
7.3.2. Native flora garden at Vera campus .....	59
7.4. Membership of a working group of EMAS organisations in Valencia.....	60
7.5. Membership of the Use Efficiency Association. ....	60
7.6. Environment, society, and university in the media. ....	61
<b>8. The next environmental declaration</b> .....	<b>62</b>
<b>9. Verification</b> .....	¡Error! Marcador no definido.



## 1. Introduction

***The inspiration for decisions by the university:***

- Liberty
- Equality
- Justice
- Compassion
- Pluralism

***with respect for the environment***

(Article 01, section 4 of the Statutes)

The Universitat Politècnica de València (UPV) is a public institution with its own assets. As an institution of higher education, the UPV enjoys academic, economic, administrative, and financial independence.

The third pillar of UPV Strategic Plan 2007/2014 addresses social commitment and values, and sets a target (III.2) that includes a **strategy of favouring sustainability and the environment**. An **environmental**

**commitment plan** has been defined to set an environmental policy to control and minimise the environmental impact of the UPV, and increase environmental awareness of staff and future professionals who are in training.

The environmental commitment plan materialised with the registration of the UPV in May 2009 in the Eco-Management and Audit Scheme (EMAS). With this action the UPV became the first Spanish university to have a verified environmental management system.

### 1.1. Scope of the environmental management system: UPV in figures

The scope of the environmental management system (EMS) of the UPV includes all activities related to teaching, and supporting services, and the processes of administrative management and maintenance in the university campuses at Alcoy, Gandia and Vera (Valencia).

#### ORGANISATIONAL DATA

**Organisation:** Universitat Politècnica de València.

**Address:** Camino de Vera

**CIF:** Q4618002B

**NACE:** 85.42 (Higher education)

**Registered centres:** campuses at Alcoy, Gandia, and Vera (Valencia)



## CENTRE: VERA CAMPUS



**Address:**

Camino de Vera  
46022 Valencia.

**WWW server:** <http://www.upv.es>.

**Members of the university community 2012-2013:**

Students : **33,503**

Staff: **7,117**

**Size:**

Buildings: **631,093 m<sup>2</sup>**.

Gardens: **120,234 m<sup>2</sup>**.

**Number of faculties:** 11.

**Activities include:**

**Teaching:** Teaching official and UPV degrees, including master's degrees.

**Research:** Research conducted by staff of the 41 teaching departments at Vera, as well as the 35 research organisations on the campus.

**Administrative management and maintenance processes:**

- Process of organising the teaching and research activities of the 11 schools/faculties, as well as research centres and institutes.
- Support services for teaching and research.
- Central services.
- Maintenance activities on campus.



## CENTRE: GANDIA CAMPUS



**Address:**

C/ Paranimf, 1  
46730 Grao de Gandia.

**WWW server:**

<http://www.gandia.upv.es>

**Members of the university community 2012-2013:**

Students: **1,896**

Staff: **243**

**Activities included:**

**Teaching:** Teaching official and UPV degrees, including master's degrees.

**Research:** Conducted by staff of the 26 teaching departmental at Gandia and one research institute.

**Administrative management and maintenance processes:**

- Process of organising teaching and research: information area, secretarial services, administration, and management.
- Support services for teaching and research.
- Maintenance activities on campus.

**Size:**

Buildings: **32.416 m<sup>2</sup>.**

Gardens: **7,020 m<sup>2</sup>.**

**Number of faculties: 1**



## CENTRE: ALCOY CAMPUS

**Address:**

Plaza Ferrándiz y Carbonell s/n.  
03801 Alcoy (Alicante).

**WWW server:** <http://www.epsa.upv.es/>.

**Members of the university community 2012-2013:**

Students: **2,556**

Staff: **265**

**Size:**

Buildings: 23,633 m<sup>2</sup>.

**Number of faculties: 1**

**Activities included:**

**Teaching:** Teaching official and UPV degrees, including master's degrees.

**Research:** Research conducted by the staff of the Department of Textile and Paper Engineering and 22 departmental sections at Alcoy.

**Administrative management and maintenance processes:**

- Process of organising teaching and research: information area, secretarial services, administration, and management.
- Support services for teaching and research.
- Maintenance activities on campus.





## 1.2. UPV campuses





## 2. Description of the environmental management system

### 2.1. Environmental policy

The Universidad Politécnica de Valencia is aware of the need to incorporate environmental ethics in all its activities and has accepted this responsibility. It is understood that the main objective of universities is the training of professionals and the generation of science and technology, as well as advancing intellectual development and freedom of thought. These objectives can be promoted by protecting nature and better managing natural resources.

The university supports the United Nations Agenda 21 and assumes responsibility for producing training, science, and technology within the principles of solidarity with the peoples of the world and applying sustainability criteria to extend that solidarity to future generations.

As an institution of higher education, we encourage a sense of responsibility for the preservation and enhancement of the environment among all members of the university community. We are aware that training has an exceptional responsibility in the transformation of society.

As a tool to achieve these ends we are committed to implementing an environmental management system within the European Eco-Management and Audit Scheme (EMAS), and consequently, we endeavour to continuously improve environmental practices.

We endeavour to improve by:

- Analysing and evaluating the actions undertaken in our community in terms of impacts on the environment.
- Supporting an adequate environmental training for all students.
- Providing training and environmental information to all members of the university community.
- Complying with all environmental legal requirements, and endeavouring to go beyond regulatory minimums where possible.
- Rationalising the consumption of natural resources and energy.
- Preventing pollution and minimising emissions and waste generated by our activities.

We agree to work with people and organisations inside and outside the university to help them improve their environmental performance. To carry out these commitments, publicly available



environmental objectives are established that are (insofar as possible) quantifiable and can be used to continuously monitor our progress.

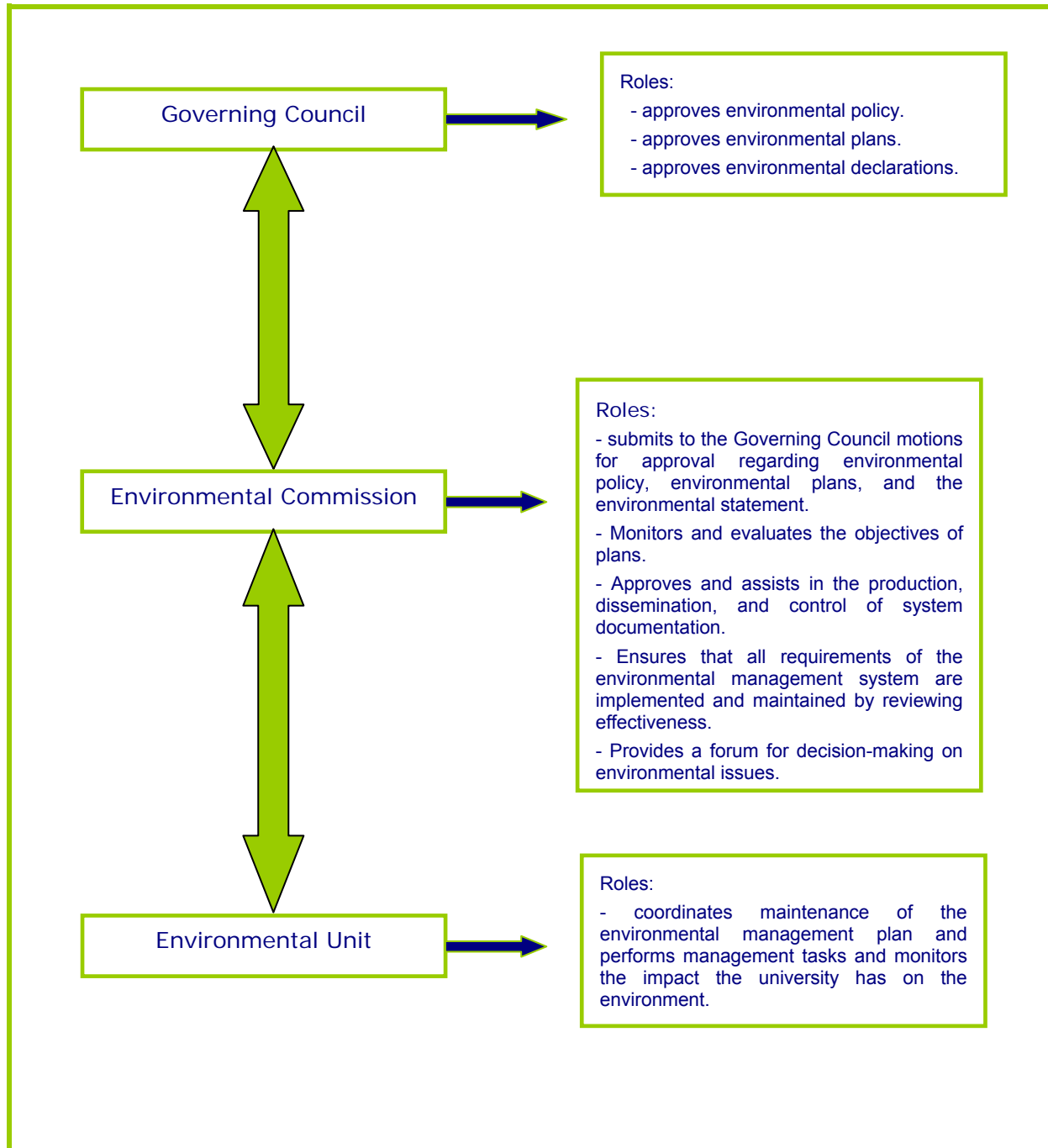
We publish annual environmental statements that contain a review of our environmental actions.

(Approved by the Governing Council on 21 June 2007 and published in the Official Bulletin of the *Universidad Politécnica de Valencia* (BOUPV Number 6/2007)).



## 2.2. Structure and environmental responsibilities

### 2.2.1. University bodies with environmental responsibilities



In addition to the structure described, units may choose to constitute environmental committees. These committees would be management bodies and centres for discussion on environmental issues – but always acting in line with the strategic environmental policy of the UPV.

### 2.2.2. Individuals with environmental responsibilities

Individuals with environmental responsibilities:

- President of the Environmental Commission
- UPV environment manager
- Unit representatives
- Unit environmental managers.

### 2.3. Documental description of the environmental management system

The environmental management system (EMS) of the UPV is documented as follows:

- **Manual:** Document that describes the EMS and acts as a guide for the entire system.
- **Procedures:** Documents that describe processes related to environmental management and describe who is responsible and their responsibilities and establish how compliance is monitored.

A distinction is made between structural and operational control procedures.

- **Structural:** Describes methods used to meet EMS requirements.
- **Operational control:** Describes the control that the system performs on all environmental aspects of the university operation.
- **Technical instructions:** Documents that describe how to perform certain tasks arising from the procedures.
- **Other documents:** The remaining EMS documentation consists of plans, reports, templates, etc.

All valid documents are available to the university community through the UPV intranet.



### 3. Description of the environmental aspects of the organisation

#### 3.1. Evaluation criteria

The UPV has established systems to identify and assess the environmental aspects of its activities, and determine those aspects that may have a significant impact on the environment. Environmental aspects, both direct and indirect, that generate both normal and abnormal situations are evaluated on two criteria, which vary according to the characteristics of the aspect.

The criteria used are:

PARAMETER	DEFINITIONS
<b>Magnitude</b>	Indicates the environmental amount or concentrations (Kw-h, m <sup>3</sup> , kg, credits, etc.).
<b>Limits</b>	Indicates the situation regarding the limit fixed by law or the limits set by the UPV (reference values).
<b>Threat</b>	Indicates the final destination, condition, or effect on people, animals, or the environment – and locations where this activity takes place at the UPV.
<b>Participation</b>	Indicates the degree of participation of members of the university community.

#### 3.2. Significant environmental aspects

The following table shows the significant environmental aspects identified, assessed, and prioritised in 2013.

Environmental aspects		Significance		Potential environmental impacts
		Campus	University	
Teaching (I) <sup>1</sup>	Curriculum greening: optional subjects	Significant throughout campus	Yes	Lack of environmental training for future professionals.
	Curriculum greening: core subjects, optional and otherwise	Significant throughout campus	Yes	
Research (I)	Research greening	Not significant	No	Not favouring sustainable development

<sup>1</sup>(I): Elements of the activities, products, or services of an organisation that have or may have a significant environmental impact, which may be the result of interactions between the organisation and third parties, and which may influence the organisation to a reasonable degree.



Consumption of materials (D) <sup>2</sup>	Use of ink cartridges and toner	Significant throughout campus	Yes	Resource consumption. Pollution from manufacturing.
	Use of paper	Not significant	No	
	Use of chemical products	Not significant	No	
Use of natural resources (D)	Use of piped water	Significant in Vera	No	Depletion of natural resources.
	Use of well water	Significant in Gandia and Vera	Yes	
	Energy use	Significant in Alcoy	No	Depletion of natural resources. Emission of greenhouse gases.
	Fuel use	Significant in Alcoy and Vera	Yes	
Activity of external companies (I)	Environmental behaviour of external companies	Not significant	No	Depletion of non-renewable natural resources. Emission of greenhouse gases. Resource consumption. Contamination of soil, etc.
Generation of atmospheric gases (D)	Diesel emissions	Not significant	No	Air pollution
	Emissions from burning natural gas	Significant in Alcoy and Vera	Yes	
Generation of waste (D)	Paper and cardboard waste	Not significant	No	Soil pollution
	Light packaging waste	Significant in Gandia	No	
	Vegetable waste	Not significant	No	
	Domestic glass waste	Significant in Alcoy	No	
	Garbage waste	Significant in Gandia	No	
	Construction and furniture waste	Significant in Alcoy	No	
	Ink cartridge and toner waste	Significant in Gandia and Vera	Yes	
	CD waste	Not significant	No	
	Sanitary waste	Not significant	No	
	Sanitary, bio-sanitary & biological waste	Not significant	No	
	Sanitary & cytotoxic waste	Not significant	No	
	Solid chemical waste	Not significant	No	
	Chemical & inorganic acid waste	Significant in Gandia and Vera	Yes	
	Chemical & organic acid, organic salts, and peroxide waste	Significant in Alcoy and Gandia	Yes	
	Chemical substance waste	Significant in Gandia	No	
	Unknown or highly dangerous chemical waste	Not significant	No	
	Chemical dissolvent or halogenated waste	Not significant	No	
	Chemical dissolvent or non-halogenated waste	Significant in Alcoy and Gandia	Yes	
Chemical products – COD measurement	Significant in Alcoy and Vera	Yes		

<sup>2</sup> (D): Direct environmental aspect or elements of activities, products, or services that may have a significant environmental impact – and over which direct management control is exercised.



UNITAT DE MEDI AMBIENT

	Product chemical packaging and glass pyrex waste	Significant in Gandia	No	
	Chemical phenol and phenolic compound waste	Significant in Vera	No	
	Photo development chemical waste	Significant in Vera	No	
	Chemical salts and compounds of Hg, CrVI, and heavy metal waste	Significant in Gandia and Vera	Yes	
	Chemical reactive waste from old laboratories	Significant in Gandia	No	
	Chemical organohalogen and organic phosphate waste	Significant in Gandia and Vera	Yes	
	Alkali and inorganic salt waste	Significant in Gandia and Vera	Yes	
	Electric and electronic material waste	Not significant	No	
	Battery and accumulator waste	Significant in Gandia	No	
	Mineral oil waste	Significant in Gandia	No	
	Vegetable oil and fat waste	Not significant	No	
	Slurry waste	Not significant	No	
	Water treatment waste	Not significant	No	
Dead animal waste	Not significant	No		
Generation of waste (D)	Wastewater discharges	Significant in Alcoy and Gandia	Yes	Pollution of water resources
Noise generation (D)	Noise	Not significant	No	Noise pollution
Commuting and travel by university community (I)	Mobility	Significant in Gandia and Vera	Yes	Depletion of non-renewable natural resources. Emission of greenhouse gases. Resource consumption. Soil contamination, etc.





## 4. Environmental plan 2013

The evaluation of the degree of compliance with the objectives of the environmental plan involves:

OBJECTIVES	GOALS	CAMPUS	STATE	COMMENTS ON COMPLIANCE	ENVIRONMENTAL ASPECT
1. Reduce electricity consumption in UPV buildings by 1%.	<p>1.1. Meet managers responsible for energy use in at least 15 UPV buildings and establish criteria for energy efficiency.</p> <p>1.2. Adopt energy improvements in buildings by replacing and adapting facades to improve energy efficiency.</p> <p>1.3. Start a helpdesk for UPV energy control.</p> <p>1.4. Replace 24-hour car park lighting with LEDs.</p> <p>1.5. Publish the results obtained by each building on the intranet.</p>	Alcoy, Gandia and Vera	ACHIEVED	<p><b>OBJECTIVE:</b> The value of the indicator is 77.24 kw-h/m<sup>2</sup> Given that the starting value of the indicator was 84.45 kw-hr/m<sup>2</sup> this is a reduction of 8.54%.</p> <p><b>GOALS:</b> <u>Goal1.1:</u> During 2013 there were two meetings with managers responsible for energy in nearly every building of the UPV (a total of 46 meetings). <u>Goal1.2:</u> The planned claddings of ETSIAMN and ETSII buildings have been changed and sunscreens installed at the bottom of the glass. During early 2014 slats will be placed on the upper parts to protect glass from the sun. <u>Goal1.3:</u> A contract was awarded on 15/03/2013. A problem in the bidding process created a delay until January 2014. <u>Goal 1.4:</u> In September 164 x 36 W and 274 x 58W fluorescent bulbs for the 24 hour lighting of underground car parks were replaced with 18 W and 24 W LEDs. <u>Goal 1.5:</u> Due to the appointment of a new energy service company this goal is expected to be completed during the first quarter of 2014.</p> <p>Other actions: in addition to the set goals: DERD systems have been installed in buildings, air-conditioning units have been replaced with more efficient units, and air-conditioning was turned off in August.</p>	Electrical consumption.
2- Reduce by 1% the consumption of well water for irrigation in Vera campus gardens.	2.1. Install counters to monitor consumption of water for irrigation.	Vera	ACHIEVED	<p><b>OBJECTIVE:</b> Use of well water for garden irrigation reached a value of 0.9983 m3/m2, producing a decrease of 13.29% over the previous year (1,1514 m3/m2). <b>GOALS:</b> <u>Goal 2.1:</u> A new meter was finally installed in building 4Q.</p>	Consumption of well water

During **August 2013** electricity consumption fell **21.35% on the Vera campus in comparison with the previous year.**



UNITAT DE MEDI AMBIENT

OBJECTIVES	GOALS	CAMPUS	STATE	COMMENTS ON COMPLIANCE	ENVIRONMENTAL ASPECT
	<p>2.2. Establish a mechanism for preventive maintenance for the irrigation system.</p> <p>2.3. Modify the irrigation management application to calculate the optimum values with respect to the climate.</p> <p>2.4. Include weather factors in the irrigation management application.</p> <p>2.5. Include weather predictions in the irrigation management system.</p>			<p><u>Goal 2.2:</u> New version of the procedure for controlling water consumption includes this mechanism.</p> <p><u>Goal 2.3:</u> Optimal dose of surface irrigation per sprinkler is being calculated.</p> <p><u>Goal 2.4:</u> Due to a lack of maintenance of the measuring instruments, it has been necessary to abandon this goal. Innobo has been asked to install a new rain sensor.</p> <p><u>Goal 2.5:</u> Goal rejected because it appears that weather forecasts are not reliable enough to base decisions about starting or stopping irrigation.</p>	
<p>3. Decrease of 6% in the number units with deviations in waste management of chemical, sanitary, oil, and fats.</p>	<p>3.1. Design a label with correct instructions for management of waste containers.</p> <p>3.2. Include in the next tender for dangerous waste management at the UPV, the production of an explanatory</p>	<p>Alcoy Gandia Vera</p>	<p>ACHIEVED</p>	<p><b>OBJECTIVE:</b> In 2013 there were 22 points with deviations associated with waste management of chemical, sanitary, and oil and fat products, a reduction of 57% on 2012.</p> <p><b>GOALS:</b> <u>Goal 3.1:</u> Part of the content used in the posters for dangerous waste management used for the label design.</p>	<p>Waste generation</p>



UNITAT DE MEDI AMBIENT

OBJECTIVES	GOALS	CAMPUS	STATE	COMMENTS ON COMPLIANCE	ENVIRONMENTAL ASPECT
	label for the correct use of containers.			<p><u>Goal 3.2:</u> On 24/07/2013 the text for the tenders was changed to include the production of an explanatory label by the management company.</p> <p><u>Goal 3.3:</u> On 27/09/2013 the information regarding waste management was finalised. On 07/10/2013 the draft of the first announcement was made in the unit's web. On 26/12/2013 initial information on chemical waste was published.</p>	
	3.3. Create a space in the AMA web with information on the management of chemical, sanitary, and oil waste in the UPV.				
4. Reduce by 1% the number of students who travel by car to the UPV during weekdays.	<p>4.1. Study the feasibility of implementing a carpool project.</p> <p>4.2. Publish five stories in the blog on sustainable mobility.</p> <p>4.3. Publish five stories in the AMA web encouraging sustainable mobility.</p>	Alcoy Gandia Vera	PENDING	<p><b>OBJECTIVE:</b> The focus of the questions in the survey assessment were changed, and so the indicator in 2013 is not comparable with the indicator for 2012, and it is not possible to determine if the objective has been met or otherwise. This data can be checked with the 2014 survey and we are awaiting verification.</p> <p><b>GOALS:</b> <u>Goal 4.1:</u> The possibility of sharing the use of a platform for car-sharing managed by the city council is being examined. <u>Goal 4.2 and 4.3:</u> News stories were published in the blogs and web on 22/04/2013, 30/07/2013, 17/09/2013, 02/10/2013 and 03/01/2014.</p>	Mobility
5. Improve the environmental performance of companies in the UPV.	5.1. During the first quarter of 2013 informative meetings to be held with all contract cleaning staff.	Alcoy Gandia Vera	ACHIEVED	<p><b>OBJECTIVE:</b> In addition to achieving the goals, a proposal for greening the tender documents (PCAP) has been made.</p>	Environmental behaviour of external companies



UNITAT DE MEDI AMBIENT

OBJECTIVES	GOALS	CAMPUS	STATE	COMMENTS ON COMPLIANCE	ENVIRONMENTAL ASPECT
	5.2. Greening two stages of bidding.			<p><b>GOALS:</b>  <u>Goal 5.1:</u> During the first quarter of 2013 informative meetings were held with all contract cleaning staff.  <u>Goal 5.2:</u> During 2013 two tender contracts were greened – linked with the cafeterias in Alcoy and Gandia.            We went beyond the goal set and on 23 April 2013 a proposal for greening the PCAP contract was made. This proposal was approved by the legal department.</p>	





## 5. Description of environmental performance

### 5.1. General data for the calculation of indicators

	Number of staff				Population (staff + registered students)			
	2010	2011	2012	2013	2010	2011	2012	2013
<b>Alcoy campus</b>	288	279	270	265	2,450	2,534	2,541	2,821
<b>Gandia campus</b>	273	271	252	243	2,296	2,236	2,103	2,139
<b>Vera campus</b>	7,769	7,278	7,113	7,117	40,776	41,000	38,600	40,620

	Building surface (m <sup>2</sup> )			
	2010	2011	2012	2013
<b>Alcoy campus</b>	23,633	23,633	23,633	23,633
<b>Gandia campus</b>	32,416	32,416	32,416	32,416
<b>Vera campus</b>	618,757	618,757	624,319	631,093

	Building surface (m <sup>2</sup> )			
	2010	2011	2012	2013
<b>Alcoy campus</b>	23,633	23,633	23,633	23,633
<b>Gandia campus</b>	32,416	32,416	32,416	32,416
<b>Vera campus</b>	618,757	618,757	624,319	631,093



## 5.2. Environmental indicators

### 5.2.1. Energy efficiency. Total direct consumption of electricity and fuel

The data presented corresponds to the total energy consumption, including consumed electrical power and energy from fuels such as natural gas, gasoline, and diesel.

Units: Mw-h	2010	2011	2012	2013
<b>Alcoy</b>	3,955.49	3,103.23	2,923.98 <sup>3</sup>	2,662.40
<b>Gandia</b>	2,576.68	2,661.47	2,134.60	2,019.85
<b>Vera</b>	59,284.91	66,144.91	65,672.74 <sup>4</sup>	61,021.28

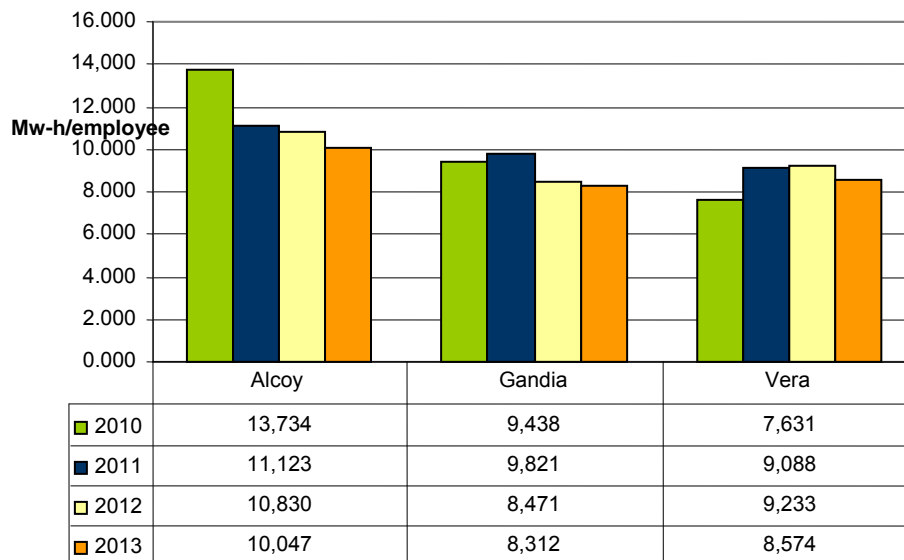


Figure 1. Total energy consumption per employee in each campus (2010-2013).

<sup>3</sup> The 2012 data has been modified with respect to the value stated in the previous declaration in order to include a missing value. The value of the Alcoy indicator in the figure is changed from 10.76 to 10.83.

<sup>4</sup> The 2012 data has been modified with respect to the value stated in the previous declaration in order to include a missing value. The value of the Alcoy indicator in the figure is changed from 9.13 to 9.23.

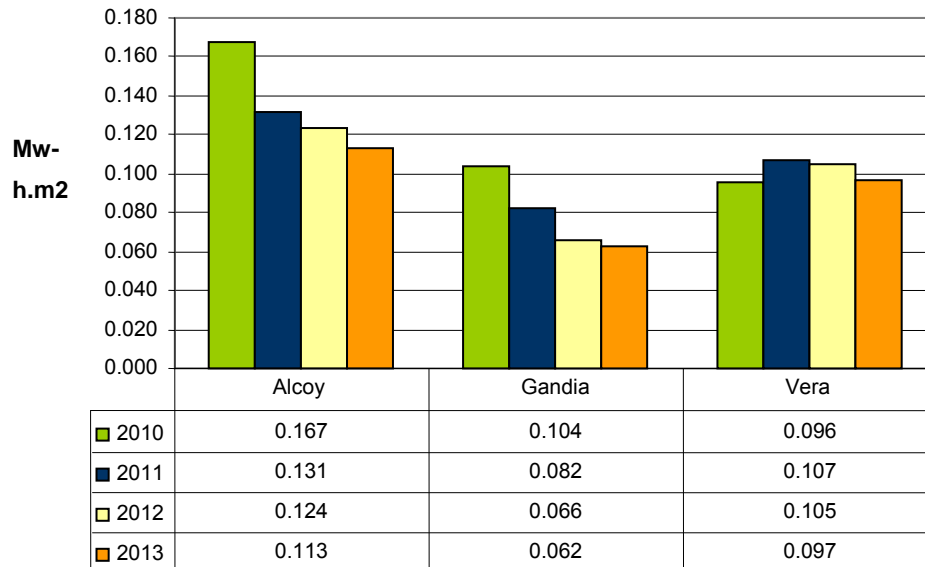


Figure 2. Total power consumption relative to building surface at each campus (2010-2013)

### Alcoy

Total energy consumption per employee, as well as floor area, has fallen by **7.23%** and **8.95%** respectively. There was a decrease in power consumption of **12.33%**, and natural gas consumption of **5.42%**. Some 49.25% of consumed energy is from electricity and 50.68% from natural gas.

### Gandia

Total energy consumption per employee and floor area decreased by **1.87%** and **5.38%** respectively. Some 99% of the total energy is electrical, and only 1% is propane gas (used in the campus cafeteria).

### Vera

Total energy consumption per employee decreased by **7.14%**, while consumption per floor area decreased by **8.08%** (although floor area did increase slightly). The absolute value of the total energy consumption fell by **7.08%** mainly due to the decrease in electricity consumption and a decline in natural gas consumption (down 4.87%). Some 82% of consumed energy is from electricity and the remainder from natural gas.





### 5.2.2. Renewable energy in the UPV

Units: Kw-h	2010	2011	2012	2013
ETSID 1 building	12,230.0	13,355.1	11,482.9	9,803
ETSID 2 building	2,660.0	4,832.4	5,270.3	4,831
Nexus (c-Si) building		4,067.3	5,532.6	4,145
Nexus (a-Si) building		1,315.2	1,680.9	1,450.9
<b>TOTAL</b>	<b>14,890.0</b>	<b>23,570.0</b>	<b>23,966.7</b>	<b>20,229.9</b>



Figure 3. Renewable energy generation per employee in the campus de Vera (2010-2013).

#### Vera

Solar photovoltaic power installations generated 20.23 MW-h of energy, which is fed into the power grid of the UPV. This represents 0.03% of the total electrical energy consumption of the campus. The amount of electricity produced by photovoltaic systems relative to the number of employees fell by **15.64%**. This is because the installations are used for teaching and research and therefore suffers variations in use.



### 5.2.3. Electrical consumption

Units: Mw-h	2010	2011	2012	2013
<b>Alcoy</b>	1,875.28	1,641.31	1,495.78	1,311.28
<b>Gandia</b>	2,536.65	2,590.54	2,118.96	1,991.48
<b>Vera</b>	57,646.60	56,578.43	53,847.78 <sup>5</sup>	49,771.55

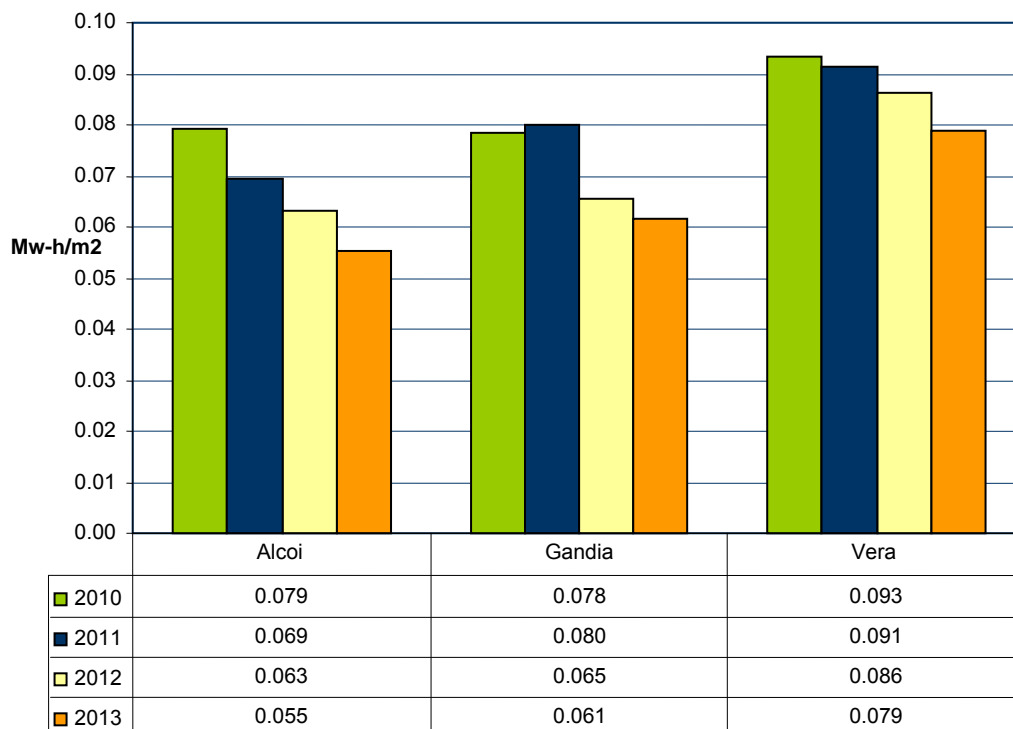


Figure 4. Electricity consumption relative to building area in each campus 2010-2013.

#### Alcoy

Electricity consumption per area fell by **12.33%**.

#### Gandia

<sup>5</sup> The data for 2012 has been modified from the validated figure in the previous statement after including the missing values for 26/12/12 to 31/12/12 which was 724.599 Mwh. The value of the indicator for Vera 2012 changes from 0.085 a 0.086.



Electricity consumption per floor area fell by **6.02%**.

### **Vera**

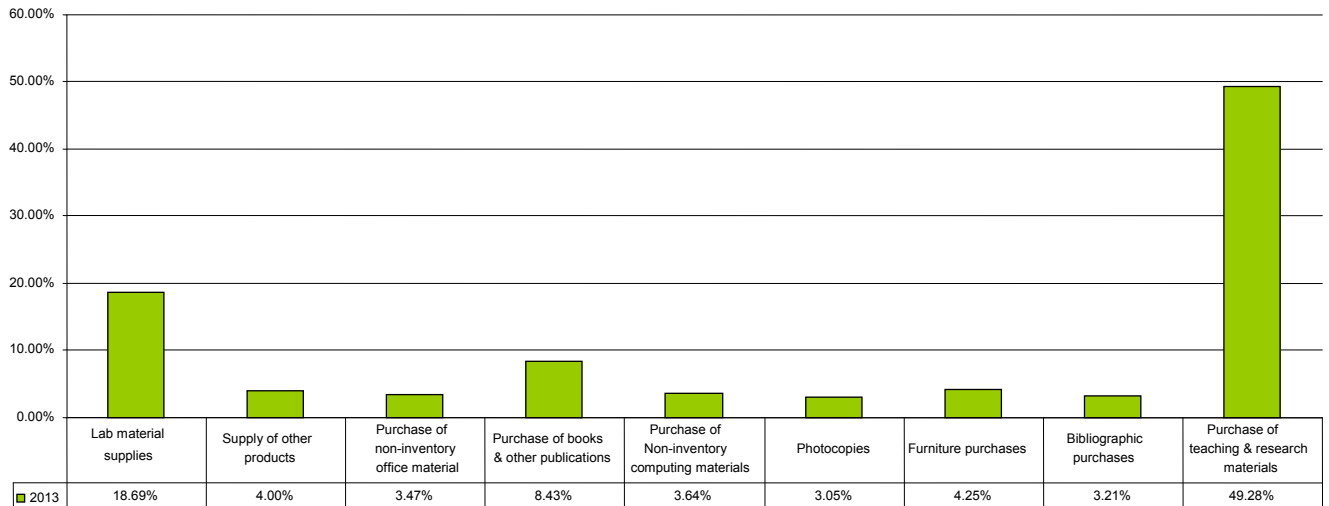
Electricity consumption per area fell by **8.55%** over the previous year, although the area increased slightly by 1.09%.

This reduction is because the three campuses have implemented numerous energy efficiency measures that have reduced consumption by more than the reduction in 2012. Measures taken include:

- Establishing schedules for the use of air conditioning and lighting in the local control of buildings, emphasising reductions for Friday afternoons and Saturday mornings and concentrating teaching schedules as much as possible.
- Turning off the air conditioning in the months of low energy demand in buildings with central air conditioning systems, making a special effort in the month of August.
- Implementation of measures to raise awareness of energy efficiency in the use of installations.

### **5.2.4. Efficiency in use of materials**

Of the items described in the general budget of the UPV under *Economic classification of expenditure* we have selected those related to the consumption of materials (items whose aggregate percentage represents over 97% of expenditure are shown below).


**UNITAT DE MEDI AMBIENT**

**Figure 5: Consumption of materials at the UPV (2013).**
**UPV**

To improve control of this aspect, during 2013 the methods of counting efficiency in the consumption of materials were changed, and as a result no data is available from previous years that would enable us to make a comparison for measuring environmental performance.

**5.2.5. Total water consumption**

Units: m <sup>3</sup>	2010	2011	2012	2013
<b>Alcoy</b>	6,641.00	5,770.00	4,085.00	5,168.00
<b>Gandia</b>	10,607.00	10,275.00	8,548.00	7,082.00
<b>Vera</b>	313,481.35	342,274.55	340,938.40	307,545.70



UNITAT DE MEDI AMBIENT

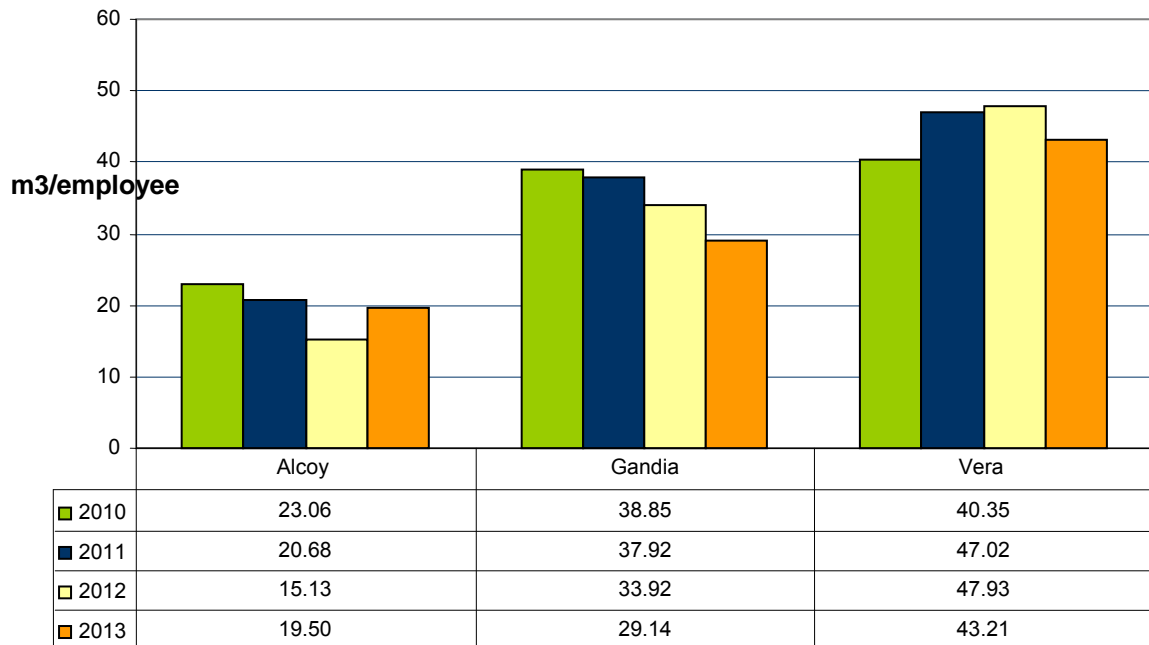


Figure 6. Water consumption per employee in each campus (2010-2013)

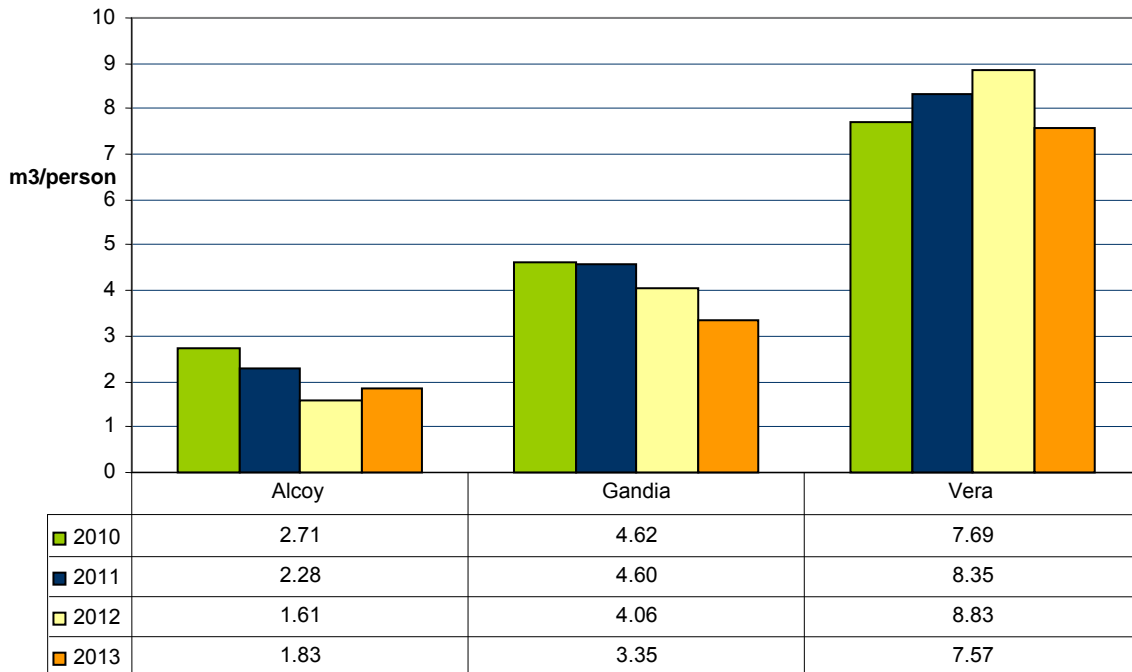


Figure 7. Water consumption per person in each campus (2010-2013).

### Alcoy

Water consumption in the Alcoy campus **increased** in 2013 because water-proofing tests were made on the roof of a new building.

### Gandia

Water consumption **fell by more than 10%** per employee and per member of the university **community**. This reduction is due to the implementation of good practices and a reduction of teaching on campus.

### Vera

Water consumption **fell by 9.85%** per employee and **14.28%** per member of the university **community**. The decrease is largely due to a decline in the use of well water for garden irrigation (which was one of the objectives of the 2013 environmental plan).

## 5.2.6. Mains water consumption

Units: m <sup>3</sup>	2010	2011	2012	2013
-----------------------	------	------	------	------



UNITAT DE MEDI AMBIENT

<b>Alcoy</b>	6,641.00	5,770.00	4,085.00	5,168.00
<b>Gandia</b>	9,662.00	9,921.00	8,030.00	5,549.00
<b>Vera</b>	168,278.00	179,119.00	161,510.00	153,318.00

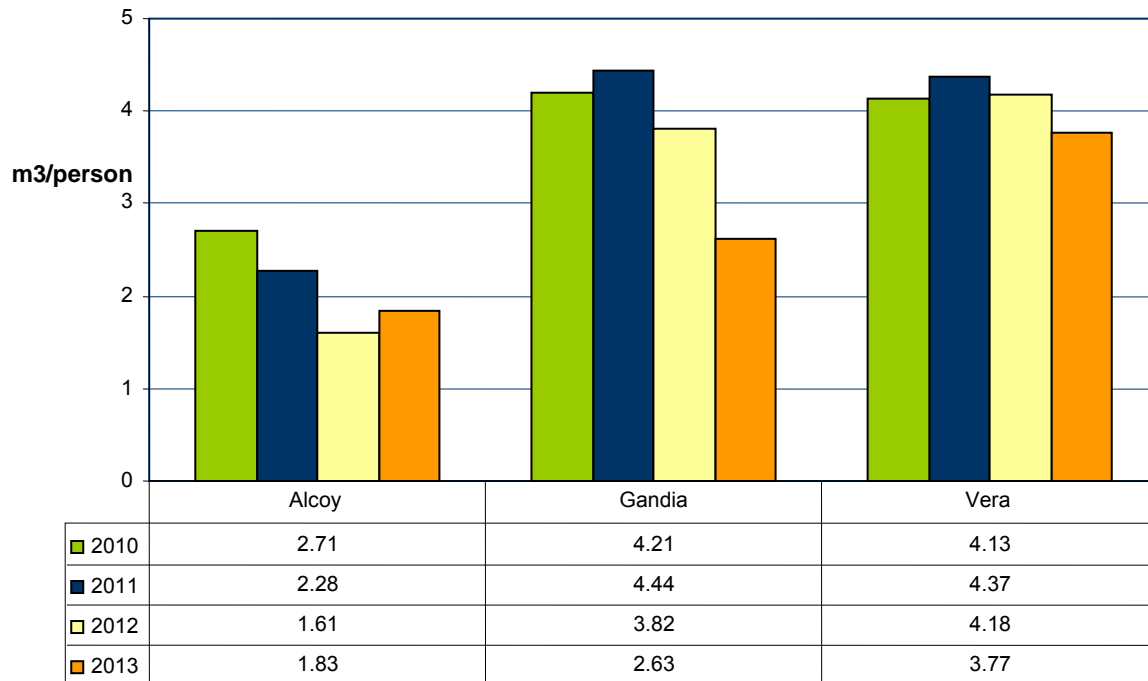


Figure 8: Mains water consumption per person (2010-2013)

### Alcoy

Water consumption in the Alcoy campus increased in 2013 because water-proofing tests were made on the roof on a new building.

### Gandia

Water consumption per person fell by more than 30%. This is because in 2013 the pump that draws water from the well in the CRAI building operated correctly during the year (it had been faulty in 2012). This meant more well water and less mains water was used.

### Vera

Mains water consumption per person decreased by 9.79% and it is believed that this fall is due to the university community becoming more aware of the need to use water wisely.



### 5.2.7. Consumption of well water

Units: m <sup>3</sup>	2010	2011	2012	2013
<b>Gandia</b>	945.00	354.00	518.00	1,533.00
<b>Vera</b>	259,216.70	145,203.35	179,428.40	154,227.70

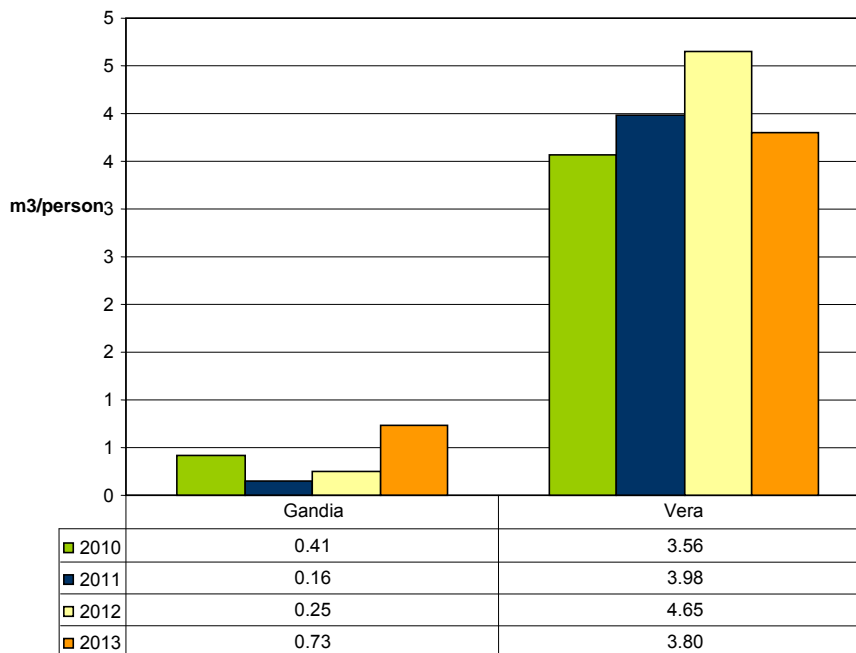


Figure 9. Well water consumption per person in each campus (2010-2013).

#### Alcoy

Not applicable.

#### Gandia

Well water consumption per person increased by 194.49%, representing a consumption of 1,014 m<sup>3</sup> more than the previous year. This increase is because in 2012 the pump that draws water from the well was inoperative for much of the year – it was repaired in late 2012. The pump worked correctly in 2013 so it was possible to extract more well water than in previous years. Consequently, mains water use decreased, as shown in the previous section.

#### Vera





Well water consumption per person decreased by 18.32%, representing a consumption of 25,200.70 m<sup>3</sup> less than the previous year. This is because less well water was used for watering the gardens – one of the actions taken to comply with the objectives of the 2013 environmental plan.

None of the wells exceeded the use limits stated in the administrative concession.

## 5.2.8. Generation of non-hazardous waste

### 5.2.8.1. Generation of paper and cardboard waste

Units: Tn	2010	2011	2012	2013
Alcoy	22.18	35.57	39.96	26.38
Gandia	21.95	25.81	15.60	14.84
Vera	306.42	208.65	165.856	152.429

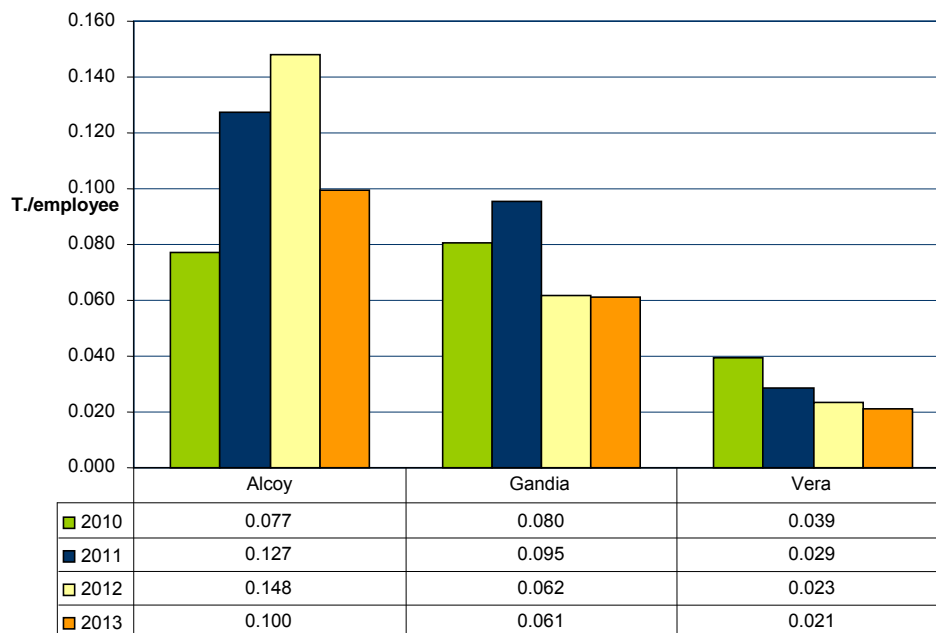


Figure 10. Generation of paper and cardboard waste per employee in each campus (2011-2013)

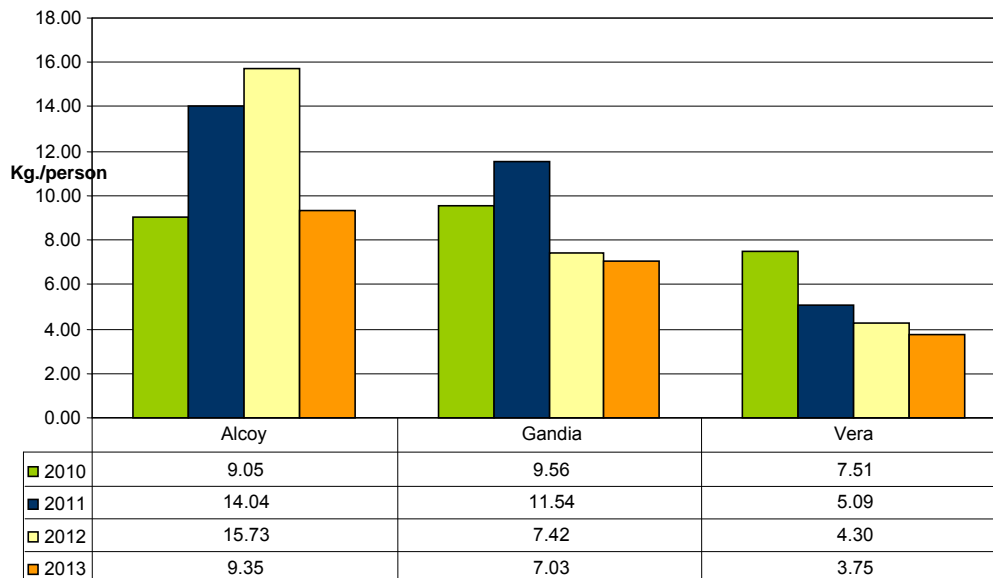


Figure 11. Generation of paper and cardboard waste per person at each campus (2011-2013)

### Alcoy

The quantity of paper and cardboard waste handled per employee decreased by 32.74%. If we also consider students, the decrease is 40.54%. This variation is due to a special cleaning of the campus library made in 2012 that was not repeated in 2013.

### Gandia

The quantity of paper and cardboard waste handled per employee has decreased by 1.35%. If we also consider the students, the decrease is 5.28%. This variation is not considered significant because the value of the indicators is similar to previous years. This is because there have been no significant changes on campus that imply an increase or decrease in the amount generated.

### Vera

In 2013 the amount of paper and cardboard waste handled on-campus was estimated because the management system was changed in January to a form that does not facilitate accurate quantitative data. The estimate has been based on the weight of containers collected by the city council at one of its collection points. To calculate the value of the campus, this data has been extrapolated for the amount collected in all the selective containers in the sector.



The estimated data is similar to data obtained for previous years leading to the conclusion that the estimation method is appropriate because there has been no significant change on campus that involves an increase or decrease in waste generation.

The decrease reflects the handling of less paper.

### 5.2.8.2. Generation of light packaging waste

Units: Tn	2010	2011	2012	2013
<b>Alcoy</b>	19.32	29.61	32.20	21.96
<b>Gandia</b>	20.59	21.34	23.38	38.34
<b>Vera</b>	76.85	102.87	58.33	79.12

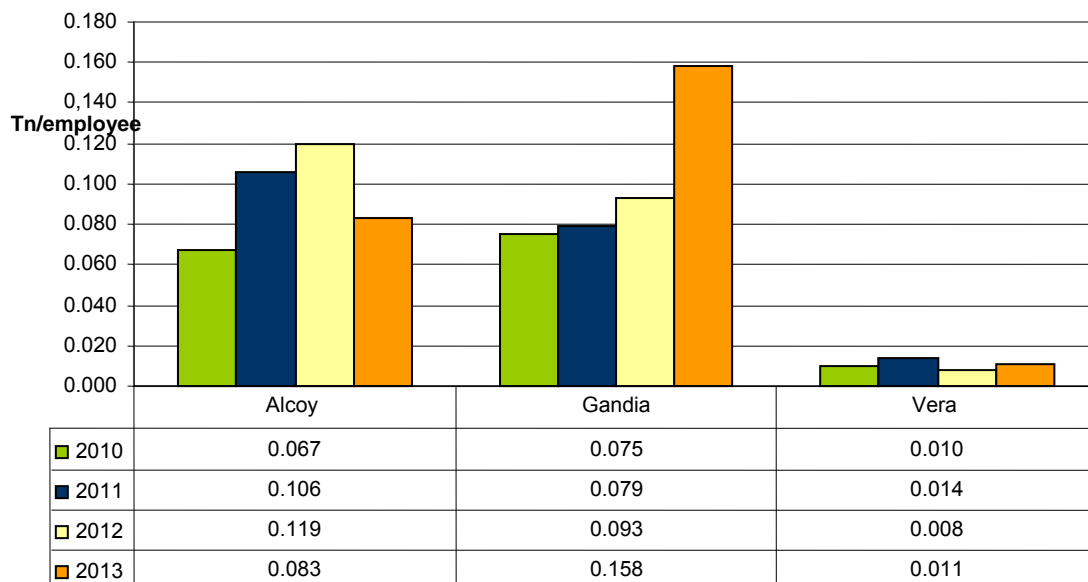


Figure 12. Generation of light packaging waste per employee in each campus (2009-2012)

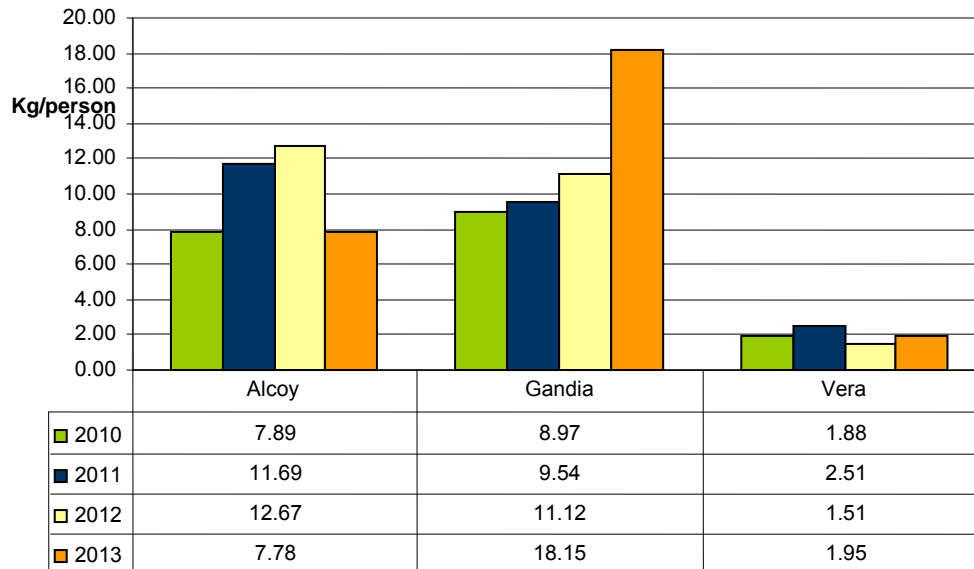


Figure 13. Generation of light packaging waste per person at each campus (2009-2012)

### Alcoy

The volume of light packaging waste handled per employee decreased by 30.51%, or 38.57% if we consider students. This variation is due to a special cleaning that was made in the campus library in 2012 but not in 2013.

### Gandia

The volume of light packaging waste handled per employee increased by 70.07%, or 63.30% if consider students as well. This increase is explained by the fact that in 2013 an informative presentation was organised for campus contract cleaning staff. In addition, a new cafeteria contractor was more disciplined in the selective collection of waste than the previous company.

### Vera

In 2013 the amount of light packaging waste handled on-campus was estimated because the management system was changed in January to a form that does not facilitate accurate quantitative data. The estimate was based on the weight of containers collected by the city council at one of its collection points. To calculate the value of the campus, this data was extrapolated for the amount collected at all the selective containers in the sector.



The estimated data is similar to that obtained on average over the previous three years – leading to the conclusion that the estimation method is appropriate because there was no significant change on campus that involved an increase or decrease in waste generation.

### 5.2.8.3. Generation of electrical and electronic equipment waste

Units: T.	2010	2011	2012	2013
Alcoy	1.48	2.05	0.45	1.91
Gandia	0.77	2.60	1.62	0.98
Vera	44.86	34.16	27.11	25.91

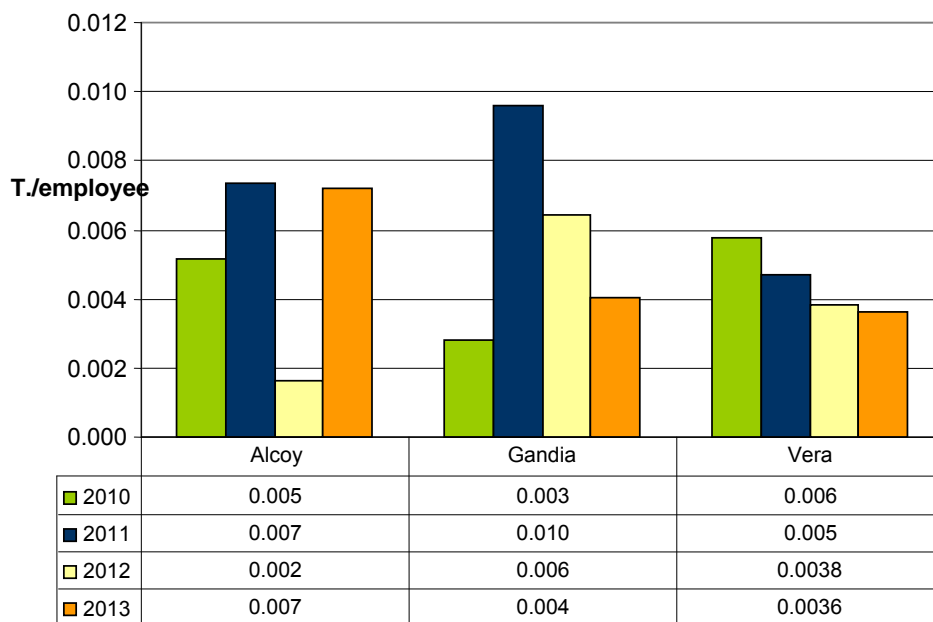


Figure 14. Generation of electrical and electronic equipment waste per employee in each campus (2010-2013).

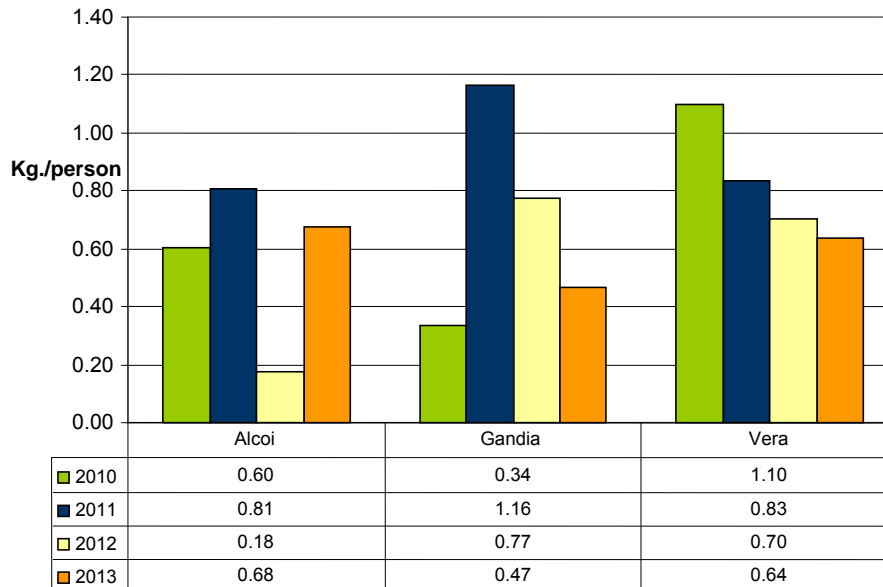


Figure 15. Generation of electrical and electronic waste per person at each campus (2010-2013)

### Alcoi

The amount of electrical and electronic equipment waste increased considerably. This is because in April 2012 a collection of accumulated waste was made for disposal in February 2013. The amount listed for 2012 is therefore considered anomalous.

### Gandia

The amount of electrical and electronic equipment waste per employee decreased by 37.10% or by 39.61% when students are taken into account. The reduction is because less equipment is being replaced.

### Vera

The amount electrical and electronic waste handled was similar to the previous year. The amount generated per employee decreased by 4.49%, or 9.19% when students are included.



### 5.2.9. Generation of hazardous waste

Since 2010 electrical and electronic equipment has been divided into two categories: hazardous and non-hazardous. Therefore, hazardous waste can now be measured – unlike in previous environmental reports.

Units: Tn (with electricals)	2010	2011	2012	2013
<b>Alcoy</b>	2,954	3,092	1,160	2,717
<b>Gandia</b>	1,855	3,323	2,855	1,689
<b>Vera</b>	76,397	78,034	89,741	100,062

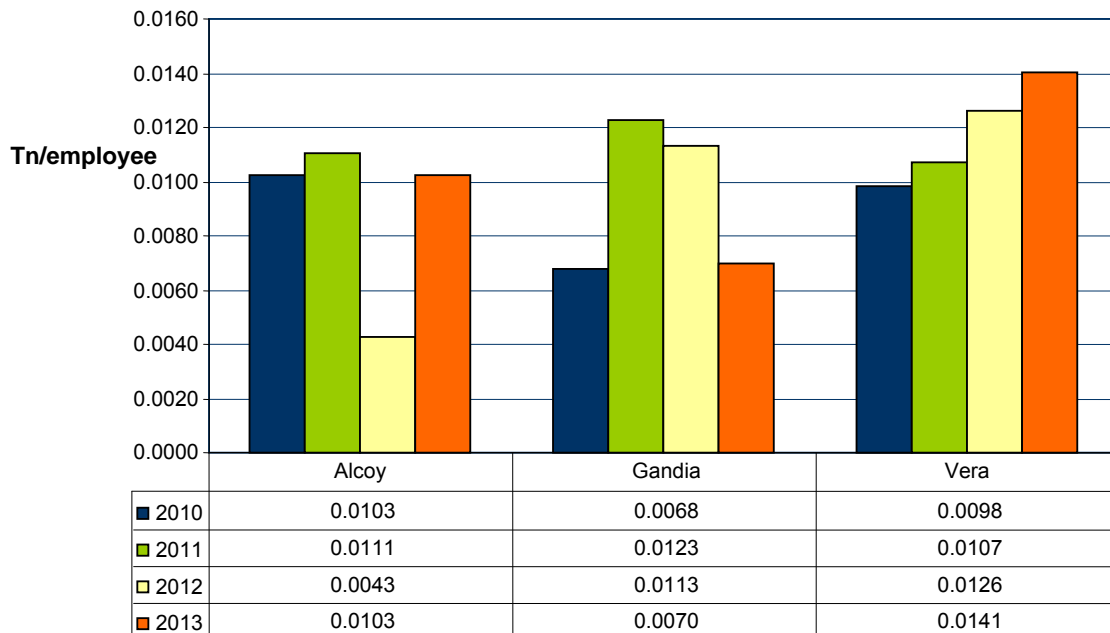


Figure 16. Hazardous waste generated per employee in each campus (2010-2013)

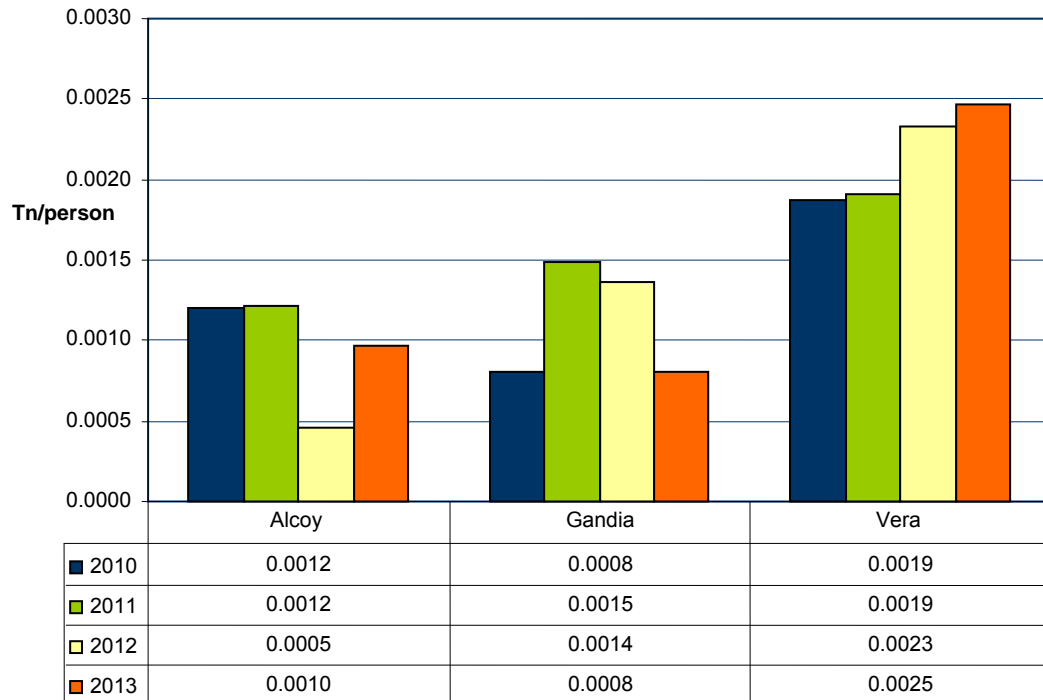


Figure 17. Hazardous waste generated per employee at each campus (2010-2013)

### Alcoy

The amount of hazardous waste generated per employee in 2013 is similar to 2010 and 2011, with 2012 being somewhat exceptional. The probable reason is that insufficient removals were made in 2012 and so material accumulated to 2013 (the increase was 138.6% in 2013 in comparison with the previous year).

### Gandia

The amount of hazardous waste generated per employee decreased by 41.1%. This variation may be due to a reduced amount of teaching and research activities. Moreover, the consideration of some electrical and electronic waste as dangerous may explain the significant decrease in the amount of hazardous waste generated per employee.

### Vera





The amount of hazardous waste generated per employee increased by 11.4% or 6% when taking student numbers into account. The cause of the increase is the increase in hazardous waste producing units and/or the activity of these units.

### 5.2.10. Land use

Units: m <sup>2</sup>	2011	2012	2013
<b>Alcoy</b>	23,633	23,633	23,633
<b>Gandia</b>	32,416	32,416	32,416
<b>Vera</b>	618,757	624,319	631,093

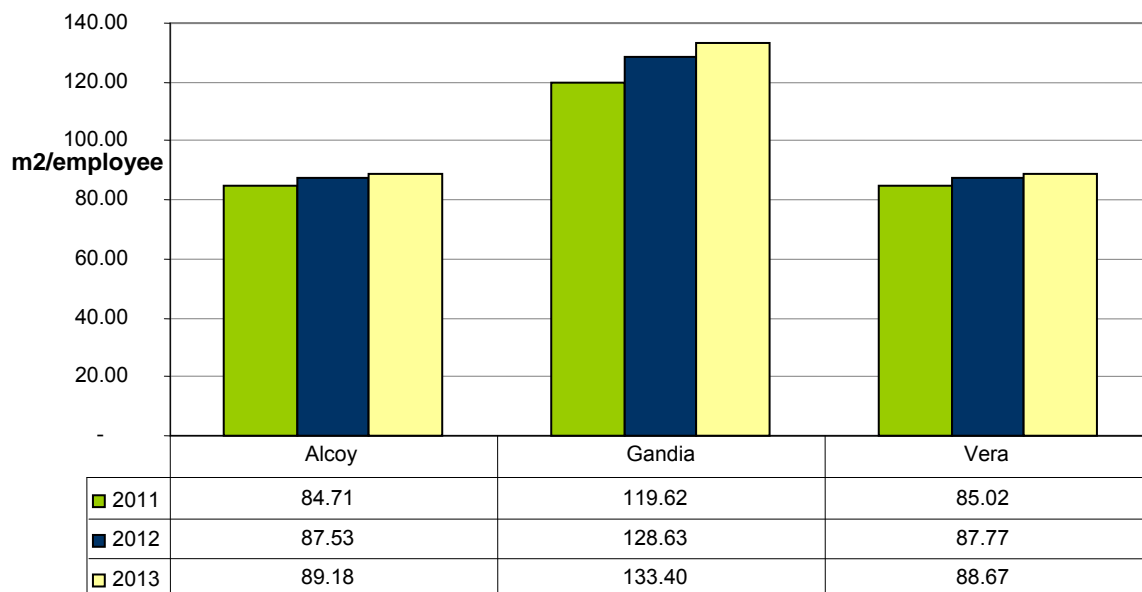


Figure 18. Building area per employee on each campus

#### Alcoy

The constructed surface per employee increased by 1.85% because of a slight decrease in the number of employees. This variation is not significant, since the constructed surface of the campus has not changed.

#### Gandia

The constructed surface per employee increased by 3.57% because of a decrease in the number of employees. In this case, the constructed surface has not changed.

#### Vera



The constructed surface per employee increased by 1.02% due to a slight increase in both built surface area (1.07%) and the number of employees (0.06%).

## 5.2.11. Emissions

### 5.2.11.1. Emission of greenhouse gases<sup>6</sup>

Emissions of greenhouse gases (GHG) related to university activities are directly related to energy consumption, fuel consumption, and consumption of refrigerants and HFCs.

Calculations have been made for each campus for: **indirect** CO<sup>2</sup> equivalent emissions associated with electricity consumption, and **direct** CO<sup>2</sup> equivalent emissions related to fuel consumption and HFCs.

To convert the values of fuel consumption to CO<sup>2</sup> emissions, we have used the conversion factors published by the Catalan Climate Change Office - Canvi Climàtic [8].<sup>7</sup>

Units: CO <sub>2</sub> eq ton for indirect emissions	2010	2011	2012	2013
<b>Alcoy</b>	656.35	443.15	433.78	325.20
<b>Gandia</b>	887.83	699.45	614.50	493.89
<b>Vera</b>	20,176.31	15,276.18	15,403.69	12,343.35

<sup>6</sup> Only CO<sub>2</sub> emissions were calculated since the remaining GHG emissions are almost negligible.

<sup>7</sup> Emission factor extracted from NOTE ON THE METHODOLOGY FOR ESTIMATING THE ELECTRIC MIX published by Catalan Climate Change Office - Canvi Climàtic 27 February 2014.  
([http://www20.gencat.cat/docs/canviclimatic/Home/Redueix%20emissions/Factors%20emissio%20associats%20energia/140227\\_Nota%20metodol%C3%B2gica%20mix\\_cast.pdf](http://www20.gencat.cat/docs/canviclimatic/Home/Redueix%20emissions/Factors%20emissio%20associats%20energia/140227_Nota%20metodol%C3%B2gica%20mix_cast.pdf))

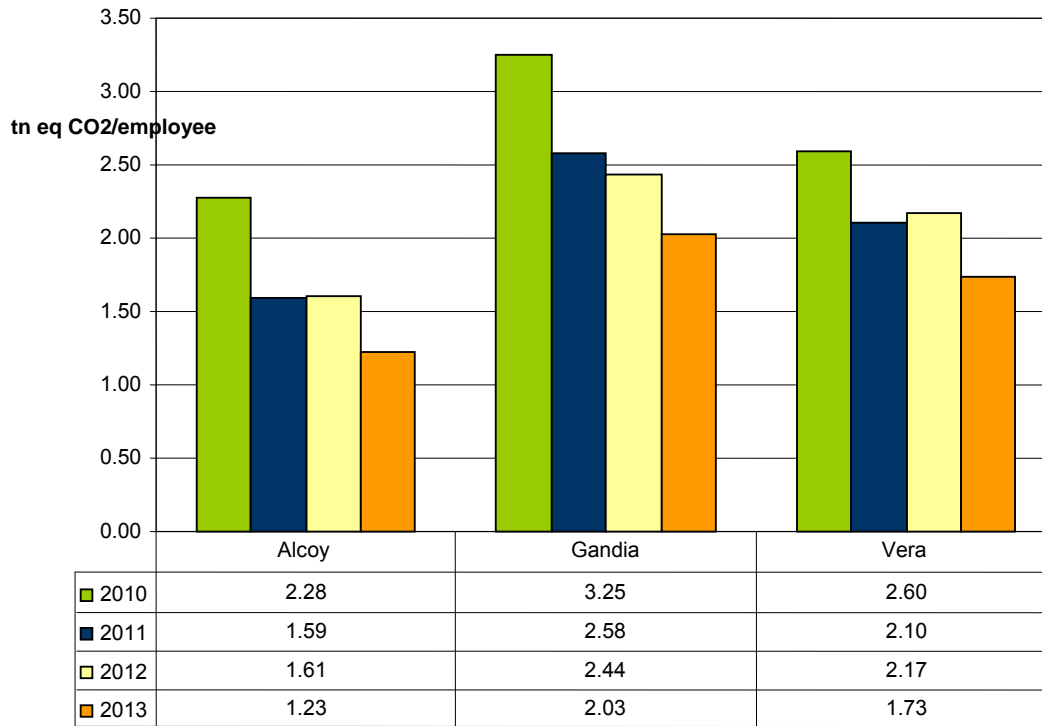


Figure 19: Generation of indirect greenhouse gas emissions per employee in each Campus (2010-2013)

### Alcoy

Indirect CO<sub>2</sub> emissions per employee fell by 23.62% as a result of the application of targets in the efficient use of energy consumption during 2013.

### Gandia

Indirect emissions of CO<sub>2</sub> per employee fell by 16.65% as a result of the application of energy efficiency targets during 2013.

### Vera

Indirect CO<sub>2</sub> emissions per employee fell by 19.91% as a result of the application of energy efficiency targets during 2013.



To convert the values of fuel consumption to CO<sub>2</sub> emissions, we have used the conversion factors published by the Catalan Climate Change Office - Canvi Climàtic.<sup>8</sup>

Units: CO <sub>2</sub> eq ton for indirect emissions	2010	2011	2012	2013
<b>Alcoy</b>	421.65	294.25	303.37	290.61
<b>Gandia</b>	9.25	16.59	4,60	8.34
<b>Vera</b>	335.01	1,914.64	2,542.30	2,416.18

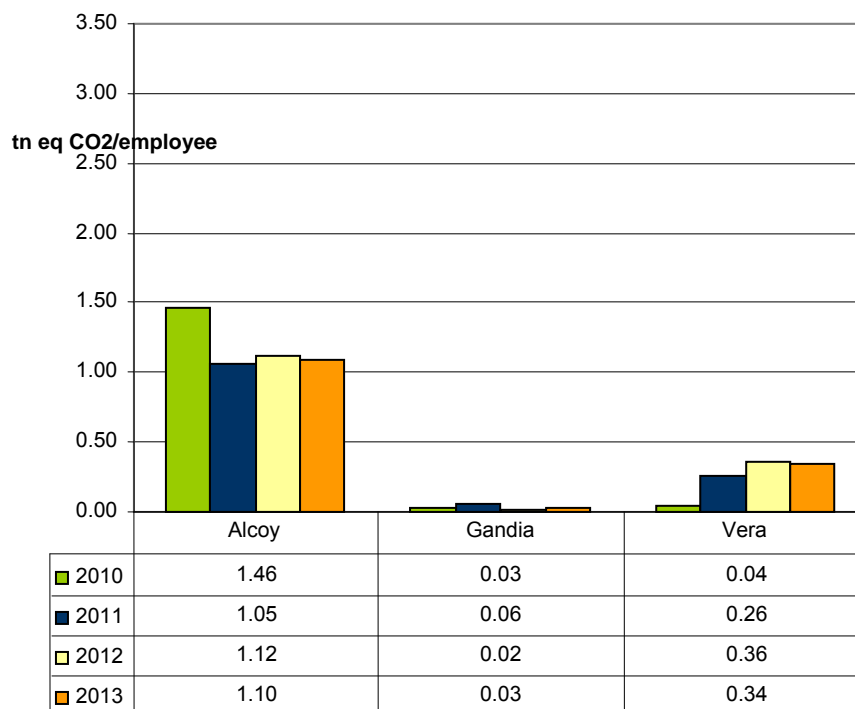


Figure 20: Generation of direct greenhouse effects per employee in each campus (2010-2013)

<sup>8</sup> Energy emission factors as published by the Practical Guide for the Calculation of Greenhouse Gases. Versión March 2012. ([http://www20.gencat.cat/docs/canviclimatic/Home/Politiques/Politiques%20catalanes/La%20mitigacio%20del%20canvi%20climatic/Guia%20de%20calcul%20de%20emissions%20de%20CO2/120301\\_Guia%20practica%20calcul%20emissions\\_rev\\_ES.pdf](http://www20.gencat.cat/docs/canviclimatic/Home/Politiques/Politiques%20catalanes/La%20mitigacio%20del%20canvi%20climatic/Guia%20de%20calcul%20de%20emissions%20de%20CO2/120301_Guia%20practica%20calcul%20emissions_rev_ES.pdf))



### Alcoy

Direct CO2 emissions per employee fell by 2.40% following a slight decrease in the consumption of natural gas and zero gas consumption in 2013.

### Gandia

Direct CO2 emissions per employee increased by more than 88.02% following an increased consumption of propane.

### Vera

Direct CO2 emissions per employee declined by 5.01% mainly due to a decrease in the consumption of natural gas.

For the calculation of emissions of greenhouse gases arising from the use of refrigerant gases and HFCs, we used the Global-warming Potential (GWP) associated with each of these gases.

Units: HFC (ton eq of CO <sub>2</sub> )	2012	2013
Alcoy	0.00	0.00
Gandia	21.00	0.00
Vera	2,084.42	716.55

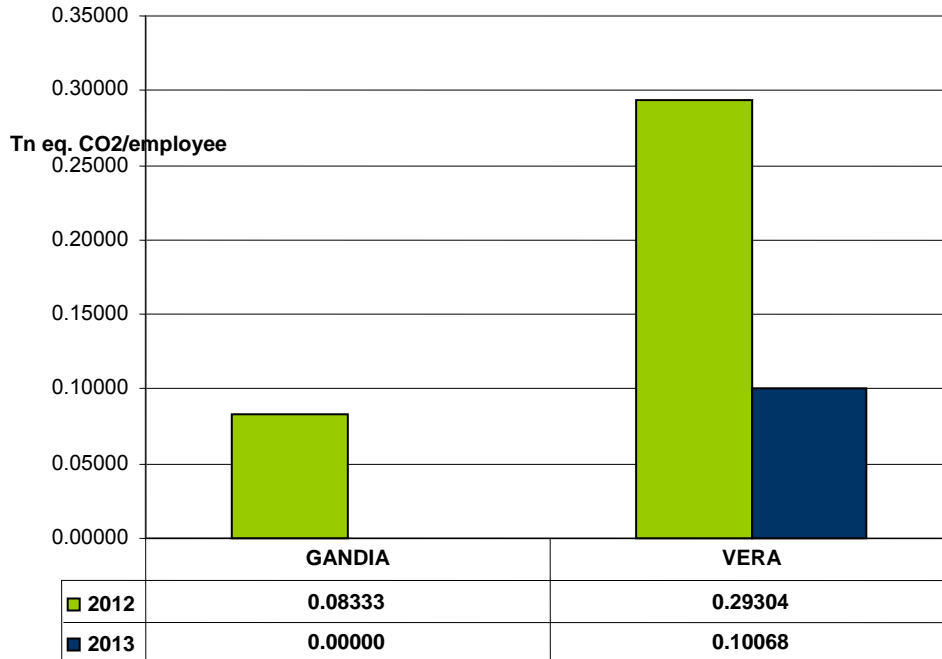


Figure 21. Emissions of greenhouse gases arising from the use of HFCs per employee on each campus (2012-2013)

**Alcoy**

No refrigerant or extinguishing gases were used and so no greenhouse HFC gases were produced.

**Gandia**

No refrigerant or extinguishing gases leaked during 2013 so the reduction with respect to the previous year was 100%.

**Vera**

Greenhouse gas emissions from the consumption of HFCs fell by 89.93% due to the implementation of a leak prevention policy by the air conditioning maintenance contractor.

**5.2.11.2. Emissions of contaminating gases**

Units: tn CO	2012	2013
Alcoy	0.1876	0.1069

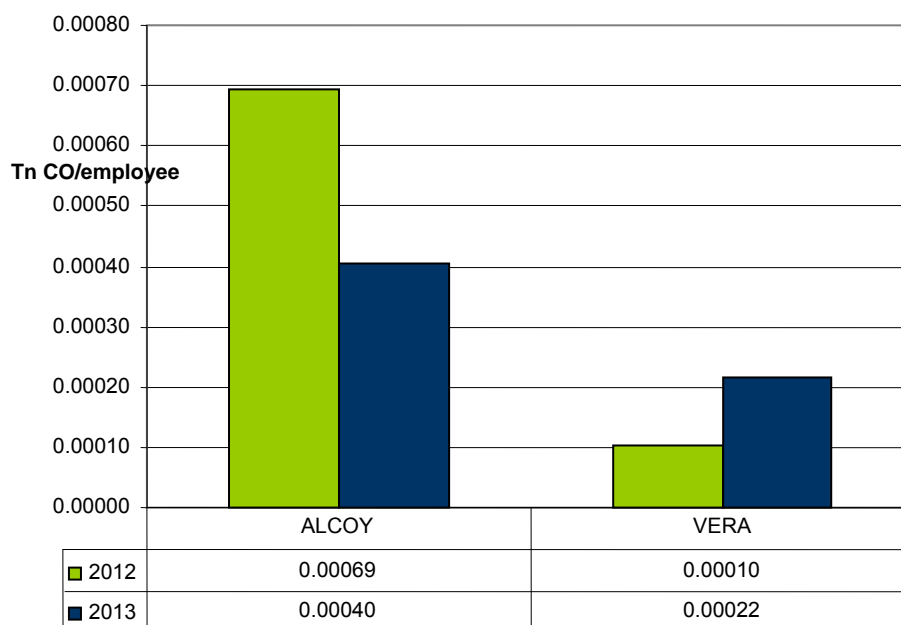


UNITAT DE MEDI AMBIENT

Vera	0.7350	1.5459
------	--------	--------

Units: tn SO <sub>2</sub>	2012	2013
Alcoy	0.0293	0.0742
Vera	0.2710	0.6780

Units: tn NO <sub>x</sub>	2012	2013
Alcoy	0.1488	0.4189
Vera	1.2250	3.3828



Generation of CO<sup>2</sup> per employee in each campus (2012-2013)

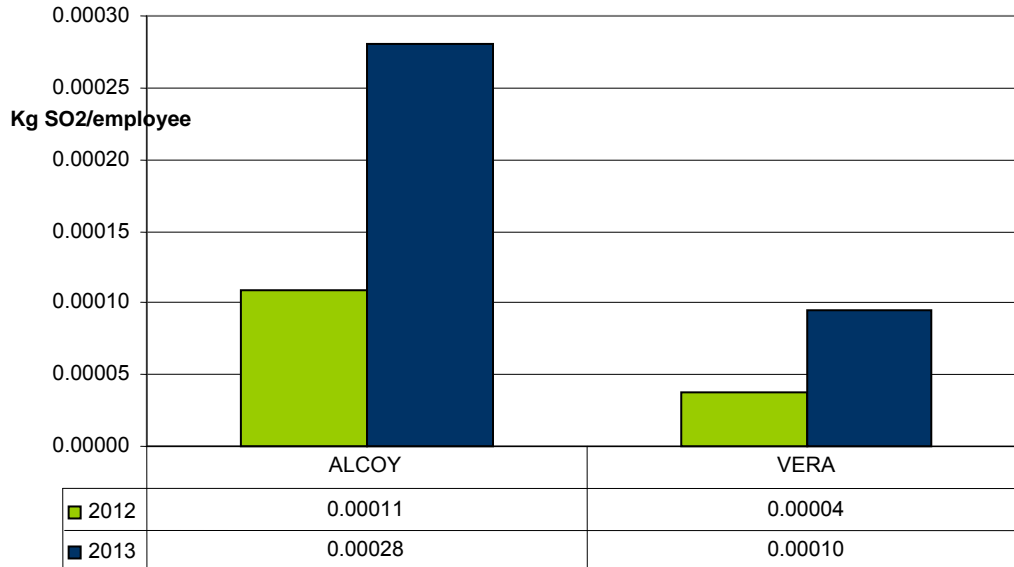


Figure 22. Generation of SO<sup>2</sup> emissions per employee in each campus (2012-2013)

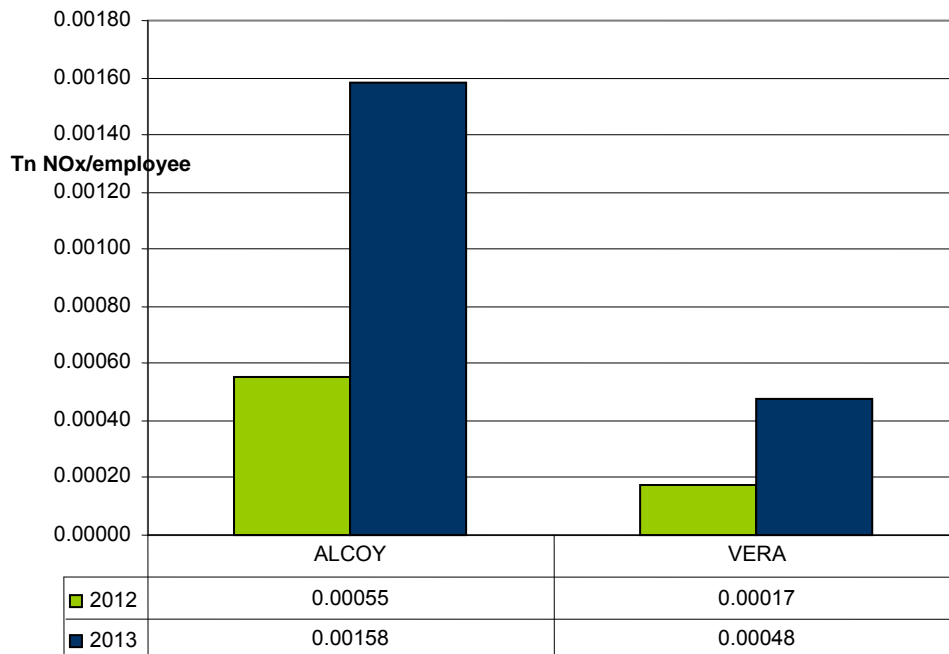


Figure 23. Generation of NO<sub>x</sub> emissions per employee in each campus (2012-2013)





Firstly, it must be noted that all internal combustion engines emit pollution at levels below the legal limit and reference value.

### **Alcoy**

The amount of CO per employee fell by 41.92% as a result of a mismatch point in the combustion process in a boiler. The flow of fumes under normal conditions in 2013 increased significantly, so the amount of emissions of SO<sub>2</sub> and NO<sub>x</sub> per employee increased by 186.82% and 158.05%, respectively. Increased smoke levels measured under normal conditions is associated with an increased energy demand.

### **Gandia**

Not applicable.

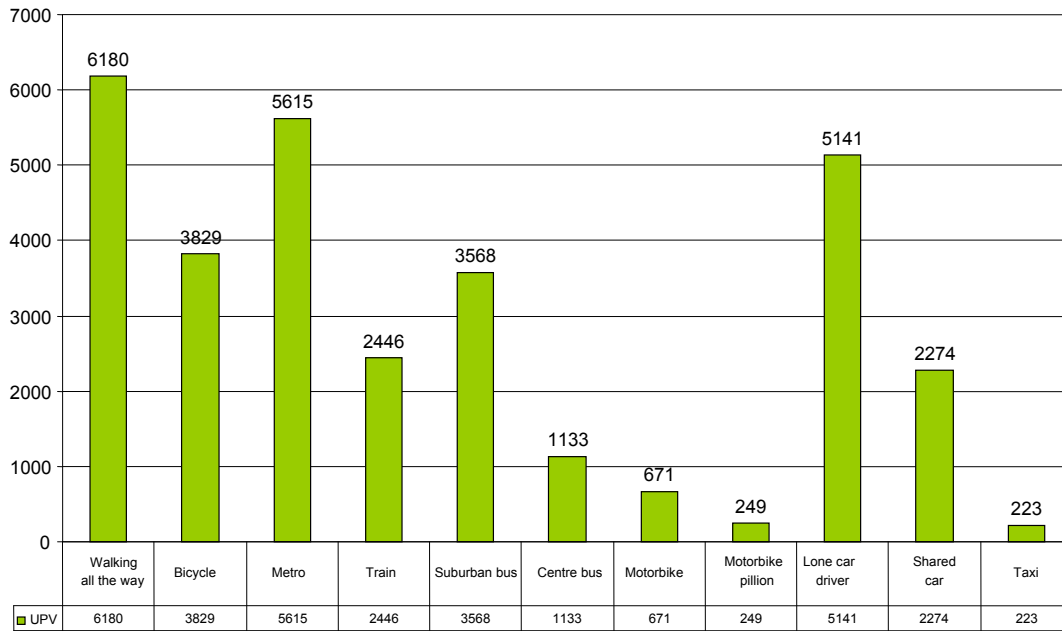
### **Vera**

The amount of CO per employee increased by 110.22%. This increase is primarily associated with a rate of emissions measured under normal conditions for 2013 that was much higher than the previous year. Moreover, in some installations a significant increase in average levels of CO was also detected. As for the amount of NO<sub>x</sub> and SO<sub>2</sub> emitted per employee, it should be noted that despite the concentration of these pollutants, the levels have changed little in comparison with the previous year. Nevertheless, the volumes of emissions increased by 175.99% and 150.07% respectively.

## **5.2.12. Mobility**



UNITAT DE MEDI AMBIENT



**Figure 24: Modal split (weighted) of the UPV students that 'sometimes' use a given mode of transportation**

**UPV**

There is no data from previous years to enable a comparison in the evolution of the environmental performance for this aspect. The most used means of transport are 'walking all the way' 'metro' and 'lone car driver' in that order. The grouping of these three modes of transport accounts for 54% of the total.

UPV		
Year	2013	
Transport mode (Year: 2013)	Number of students	%
Sometimes use private motorised transport	13,954	44.54%
Never use private motorised transport	17,375	55.46%

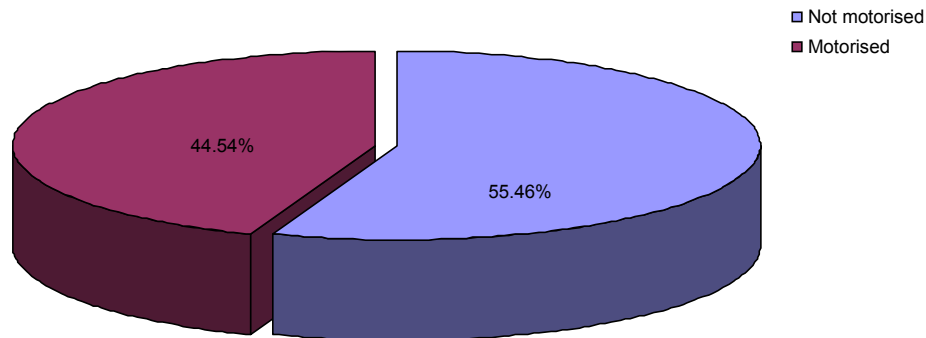


Figure 25: Students who sometimes use private motorised transport in comparison with students who never use such transport

## UPV

There is no data from previous years to enable a comparison of the evolution of this indicator. About 55% of UPV students say they **never use private motorised transport** to travel to university.



### 5.2.13. Training and participation actions

#### 5.2.13.1. Employee training actions

In 2013 some 32 training activities for 182 UPV staff took place (PAS 128 administrative staff, 45 teachers and researchers, and 8 other researchers). This implies that 3.35% of the current workforce of the UPV have been trained.

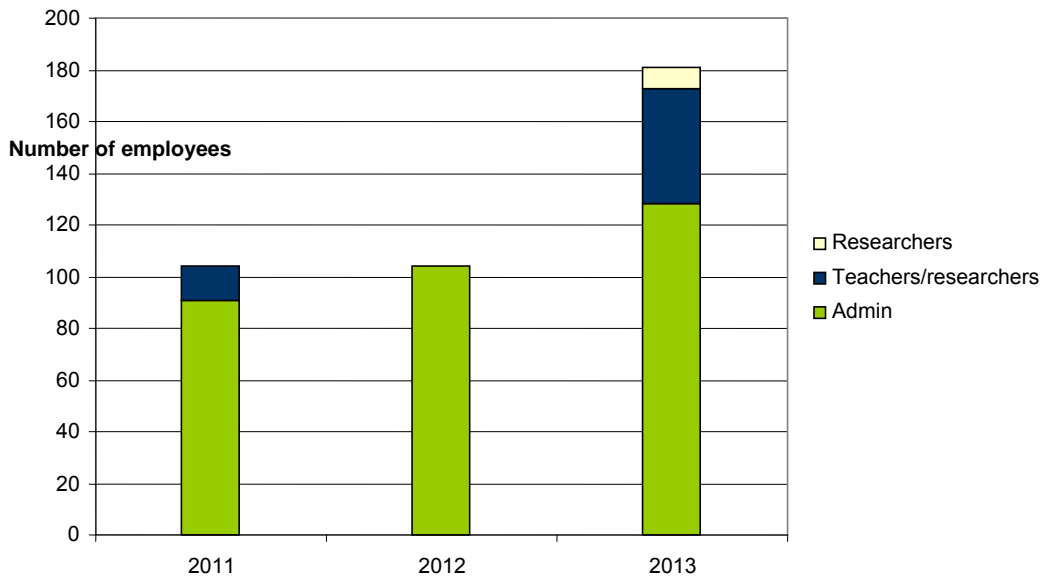


Figure 26: Staff trained annually at the UPV (2011-2013)

In 2013, 78 more employees were trained than in the previous year. This is mainly because talks have been held on energy efficiency in various buildings of the UPV. Most of the teachers and researchers who were trained received their training in these talks.

When the indicator of trained staff is analysed (considered as the total number of employees trained since 2009) the total number of trained staff at the end of 2013 equals 8.62% of the total staff of the university.



### 5.2.13.2. Training activities for the entire university community

Some 35 environmental training courses were organised in 2012 – including conferences and lectures for the whole university community. Thirteen of these courses were related to energy consumption, renewable energy, and energy certification. The remaining subjects dealt with water purification, waste, climate change, sport and environment, etc.

### 5.2.13.3. Participative actions

The data below summarises the involvement of employees in the environmental management system:

- Participation in **audits and environmental reviews**: 154 staff.
- Participation of **managers with environmental responsibility** (environmental commission members, etc.): 247 members.
- Participation using **resources** such as the suggestion box, environment unit blog, application management tool: 1,344 members.
- Participation in **surveys and environmental suggestion competitions**: 1,525 members.

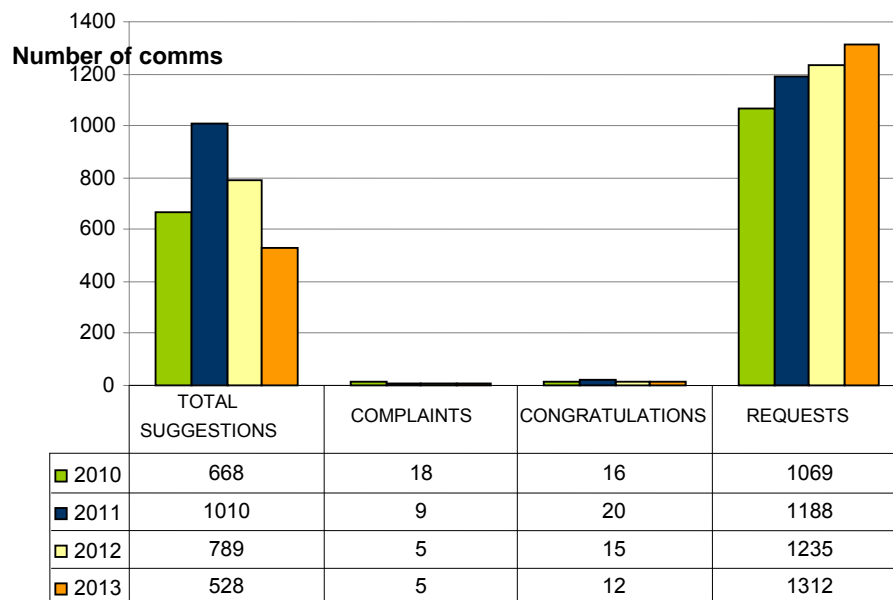
**More than 3,200 people** directly participated in the environmental management system at the UPV during 2013.



### 5.2.14. Communication

During 2013 some 1,859 environmental communications were received (both from internal and external sources), representing a decrease of 10% on communications handled in 2012.

The evolution of the communications (showing type) can be seen in the graph below.



**Figure 27: Environmental communications (2010-2013)**



## 6. Environmental legal requirements

At the end of 2013, the UPV database on environmental legislation contained 127 legal provisions applicable to the environment – with over 580 application requirements.

During 2013 four new legal provisions were made and these have created nine new environmental requirements:

Scope	Legal provision	Application requirement	Environmental aspect
NACIONAL	1. Royal Decree 239/2013 of 5 April, laying down rules for the implementation of Regulation (EC) 1221/2009 of the European Parliament and Council of 25 November 2009 and relative to the voluntary participation by organisations in community eco-management and audit scheme (EMAS), and amending Regulation (EC) 761/2001 and Decisions 2001/681/EC and 2006/193/EC of the Commission.	Article 6. Integration of EMAS on environmental legislation. Article 8. Presentation in Spain of the application for registration.	
	2. Royal Decree 235/2013 of 5 April, approving the basic procedure for certification of energy efficiency in buildings.	Establishes criteria for the energy certification of buildings.	Power consumption
	3. Royal Decree 238/2013 of 5 April amending articles and technical instructions of Thermal Building Installation Regulations approved by Royal Decree 1027/2007 of 20 July.	Includes modifications to the Thermal Installations in Building Regulations	Power consumption
LOCAL	4. Gandia city council edict on final regulatory approval for management and communication regarding urban planning and environmental licences.	Establishes procedure for licensing and environmental communications.	



## 6.1. Major environmental requirements

As for operating licenses or environmental permits, the situation is diverse and reflects the municipalities in which the UPV is located. In the case of Alcoy, the local council issues an environmental license for the entire campus, while in the case of Vera (Valencia) and Gandia, licenses are issued as buildings are constructed.

The other permits, licenses, and major authorisations that demonstrate compliance with legislation and ensure proper environmental management are:

<b>Authorisations and permits</b>	
<b>Registration of small producers of hazardous waste</b>	
<i>Alcoy campus:</i> Registration: RP:03-12.713	Royal Decree 833/1988 amending the regulation regarding toxic and hazardous waste as amended by Royal Decree 952/1997.
<i>Gandia campus:</i> Registration: RP: 46-12.714	
<i>Vera campus:</i> Registration: RP:46-12.856	
<b>Discharge authorisations <sup>9</sup></b>	
<i>Alcoy campus:</i> Authorisation to discharge wastewater into the sewerage system.	Ordinance regulating discharges to the sewer in Alcoy.
<i>Vera campus:</i> Permit to discharge into sewer.	Ordinances regulating sewer system
<b>Groundwater licenses</b>	
<i>Vera campus:</i> - License to extract water from 'San Esteban' well for industrial use. - License to extract water from 'UPV-Zona Este Manzana B-5' for irrigating gardens. - License to extract water from 'Camino de Vera', for domestic use, as well as in gardens and fire fighting.	Royal decree 1/2001 and revised Water Act.
<i>Gandia campus:</i> - Registration in Section B for extracting less than 7000m <sup>3</sup> /per year. - License to extract water from 'Sequia del Rei' for domestic and recreational use.	
<b>Atmospheric emissions</b>	
<i>Vera campus:</i> Notification was made of Group C	Royal Decree 100/2011 of 28 January lists potentially polluting activities and updates basic provisions for implementation.

<sup>9</sup> In Gandia permits are only required for industrial waste.





emissions. Activity: Non-industrial boilers with Ptn $\leq$ 20Mwt and $\geq$ .3 Mwt.	
<b>Periodical analysis</b>	
<i>Atmospheric emissions</i>	Subject to stricter measurements than the legal requirements. If any deviation is detected the necessary measures are taken.
<i>Noise</i>	During 2012 an acoustic audit of the Alcoy, Gandia, and Vera campuses was performed as established in Decree 266/2004 of 3 December of the regional government with respect to noise pollution.
<i>Wastewater discharge analysis</i>	The UPV has a 'dumping control plan' that ensures legal compliance for discharges made to the sewage system of the corresponding city, and provides for an analysis of residual water within the campus to detect deviations and take corrective actions. The university annually submits a report to each of the city councils with the results of the analyses made – as well any corrective actions taken.

## 7. Other factors

### 7.1. Postgraduate studies

The increasing awareness of society regarding environmental degradation and the need to reduce impact on the environment has led the UPV to offer many graduate study courses on environmental issues, with the objective of developing a sustainable development perspective and respect for the environment. These studies include (without counting specialist university titles):

#### **Master's degree in environmental assessment and monitoring of marine and coastal ecosystems**

Objectives include ensuring that students are able to analyse the structure and operation of ecosystems in order to define status indicators, pressure, and impact. In addition to the most advanced techniques, appropriate approaches to track indicators for environmental monitoring are also taught. The course covers rehabilitation, restoration of ecosystems, and measures to prevent impacts, rehabilitation, and restoration of ecosystems.

#### **Master's degree in sustainable chemistry**

This master examines the principles of sustainable chemistry such as: use of renewable starting materials; atom economy; cleaner use of solvents; alternative reaction conditions (microwave, electro-chemical); catalysis; biocatalysis; photochemistry and photocatalysis; polymers and biodegradable materials and their use in chemical processes; alternative energy sources; waste recovery.



### **Master's degree in food economics and the environment**

This course aims to train specialists in food economics and the environment by providing students with the necessary skills in business management, marketing, structure of the food industry, as well as agricultural and environmental policies.

### **Master's degree in environmental engineering**

An environmental engineer aims to analyse, prevent environmental damage, protect the environment and improve environmental quality, as well as tackle issues such as unsustainable resource consumption, waste generation, water pollution, air and soil, and preventing human activities (including production processes) from affecting environmental quality.

### **Master's degree in hydraulic engineering and the environment**

With increasing social pressure on water resources it is vital to train experts in hydraulic engineering and the environment from a standpoint of both practitioner and researcher. Furthermore, European legislation (Water Framework Directive, 2000) implies the need for professional training from a multidisciplinary perspective.

### **Master's degree in industrial safety and environment**

These studies teach various technologies for the prevention and elimination of industrial pollution, as well as the reuse of products and optimisation of industrial processes, including simulation techniques and process modelling.

### **Master's degree in acoustical engineering**

Graduates will be able to predict, assess, and minimise the effects of noise pollution in all areas, design projects to improve sound quality in buildings (air conditioning and insulation), develop acoustic projects (operating licences, noise abatement in the industrial field, acoustic handover reports, noise maps, assessment of the effect of partial plans), and devise audio systems (speakers, amplifiers, parametric audio systems, microphones).

### **Master's degree in alternative internal combustion engines**

The objective is to equip students with knowledge, criteria, and methodologies for producing efficient powerplants that are environmentally friendly.

### **Master's degree in energy technology for sustainable development**

The aim is to equip graduates with the knowledge to handle professional activity or research work in the energy sector, according to the needs of sustainable development, that is, improving efficiency and limiting the environmental impact of the processes of generation, transmission, and use of energy.



## 7.2. Improving energy efficiency

The UPV is working on improving energy efficiency through the implementation of a system of demand management and energy resources (DERD). The system has been installed in five buildings during 2012.

Moreover, the UPV published a tender in late 2012 to establish a helpdesk for energy control in order to reduce consumption. The technical requirements set a quantitative target of a 3% decrease in electrical energy demand within a year.

## 7.3. Biodiversity conservation

### 7.3.1. 'Rocalla Cavanilles' micro-reserve on Gandia campus

This space serves as a model of 'ex situ' conservation and dissemination of native flora and fauna that are especially rare, endemic, and endangered. It is used to raise awareness of the uniqueness of these species among students – with a special emphasis on the extraordinary value of plant diversity and the need for its conservation. This project has been partially funded by the European Union through a 'Life' project.



### 7.3.2. Native flora garden at Vera campus

The UPV in collaboration with the Centre for Forestry Research and Experimentation in the Valencian Community (CIEF is managed by the regional government) has created a native flora



garden on the Vera campus. This garden protects a part of the Valencia's botanical richness with significant representation of endemic and/or threatened Valencia flora.



#### **7.4. Membership of a working group of EMAS organisations in Valencia**

The UPV joined a working group of EMAS organisations in Valencia in 2010. It aims to be a driving force and reference for governmental organisations in environmental management.

#### **7.5. Membership of the Use Efficiency Association**

The UPV joined the association in December 2012. This association intends to create a forum for energy efficiency systems in university buildings, and students are the main participants in the project as they learn about energy efficiency.



## 7.6. Environment, society, and university in the media

Press releases.

Date	Content
02/01/2013	<a href="#">Soundproof screens based on olive stones</a>
31/01/2013	<a href="#">Power station technology to reduce the fuel consumption by vehicles</a>
08/02/2013	<a href="#">New system for studying biodiversity, migratory flows, and acoustic pollution of seas and oceans</a>
17/02/2013	<a href="#">Infrared thermographics to improve energy efficiency in buildings</a>
27/02/2013	<a href="#">New acoustic insulation that incorporates prunings from pines, orange trees, and similar waste</a>
14/03/2013	<a href="#">Two UPV professors participate in UNESCO Chair in Earthen Architecture</a>
18/05/2013	<a href="#">New product reduces air pollution when applied to roads</a>
29/05/2013	<a href="#">UPV and Gandia sign an agreement to analyse the environmental impact of oil exploration</a>
18/07/2013	<a href="#">Gandia UPV campus coordinates international project for the management of Mediterranean rivers</a>
19/07/2013	<a href="#">Valencian researchers develop catalyst to produce hydrogen from water using sunlight</a>
19/07/2013	<a href="#">UPV and Aguas de Valencia work together to improve the efficiency of water distribution systems</a>
26/08/2013	<a href="#">UPV opens research laboratory to find new solutions for sustainable energy supply</a>
13/09/2013	<a href="#">Breakthrough in designing more efficient noise screens</a>
29/09/2013	<a href="#">About 200 experts meet at the UPV to discuss the latest developments regarding the risks associated with flooding and drought</a>
01/10/2013	<a href="#">UPV carries out a study to improve efficiency of water supply system in town of Xàbia</a>
04/10/2013	<a href="#">Fishermen, scientists, and politicians debate in Gandia new EU fisheries policy and its application in Spain</a>
06/10/2013	<a href="#">Biomass energy potential of urban trees analysed</a>
08/10/2013	<a href="#">Start for 'LIFE ALBUFERA' project for integrated management of artificial wetlands in L'Albufera near Valencia</a>
11/10/2013	<a href="#">International experts present at UPV recent advances in production of energy, fuel, and new biodegradable materials from biomass</a>
14/10/2013	<a href="#">Tobacco plants that produce up to seven times more starch</a>
15/10/2013	<a href="#">Experts from around the world discuss at the UPV the latest advances to improve quality of weather forecasts and climate change monitoring</a>
14/11/2013	<a href="#">UPV Gandia campus initiates a cooperative venture with the Valencia Association of Environmentalists</a>



22/11/2013	<a href="#">New fishing management strategies and fishing activities to be debated in Gandia port</a>
24/11/2013	<a href="#">Recycled material that reduces vibrations and tram noise in urban areas</a>

## 8. The next environmental declaration

In compliance with Regulation (EC) No 1221/2009, which allows organisations to participate on a voluntary basis in a community eco-management and audit scheme (EMAS), the next environmental declaration will be drafted in the first quarter of 2015 and include the developments of 2014.



## 9. Verification

This environmental statement has been verified by AENOR (tester number ES-V-0001).

DECLARACIÓN MEDIOAMBIENTAL VALIDADA POR

**AENOR** Asociación Española de  
Normalización y Certificación

DE ACUERDO CON EL REGLAMENTO (CE) N° 1221/2009

N° DE ACREDITACIÓN COMO VERIFICADOR MEDIOAMBIENTAL  
ES-V-0001

Con fecha:

Firma y sello:

Avelino BRITO MARQUINA  
Director General de AENOR