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Abstract: Green public procurement has been considered an important policy instrument on the path toward realizing sustainable consumption and production. Additionally, universities are important to the promotion of sustainable consumption through their positive effects on students and other stakeholders. This paper analyses the contribution of universities to sustainable consumption through Green Public Procurement initiatives, from both external and internal perspectives. From an external perspective, how universities express their "green" image outwardly has been analysed. The results show that 21.5% universities have put into practice different initiatives related to green procurement (having a public procurement manual), and 72.5% of them have a department in charge of environmental subjects. From an internal perspective, how universities currently position themselves in terms of green procurement policies has been analysed. The results reveal that universities generally include environmental criteria in the public procurement contract specifications and that they regularly organise awareness and media campaigns. The results reflect the perceptions of people in charge of promoting green initiatives inside the universities; however, they may or may not be involved in their institution's mission. The value of this paper lies in its contribution to the knowledge of how initiatives implemented at higher-education institutions can contribute to sustainable consumption using theoretical and practical approaches. The biggest obstacle was the difficulty in locating the different initiatives at universities' websites and also in the lack of uniformity for the comparison, dissemination and communication of environment-related activities. The conclusions show that green public procurement is a relatively new activity in Spain, especially in relation to sustainable consumption; however, it needs to be studied thoroughly because it can prompt policymakers to increase green practices through the adoption of measures that actually contribute to sustainable consumption.

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Green public procurement has been considered an important policy instrument on the path toward realizing sustainable consumption and production. Additionally, universities are important to the promotion of sustainable consumption through their positive effects on students and other stakeholders. This paper analyses the contribution of universities to sustainable consumption through Green Public Procurement initiatives, from both external and internal perspectives. From an external perspective, how universities express their “green” image outwardly has been analysed. The results show that 21.5% universities have put into practice different initiatives related to green procurement (having a public procurement manual), and 72.5% of them have a department in charge of environmental subjects. From an internal perspective, how universities currently position themselves in terms of green procurement policies has been analysed. The results reveal that universities generally include environmental criteria in the public procurement contract specifications and that they regularly organise awareness and media campaigns. The results reflect the perceptions of people in charge of promoting green initiatives inside the universities; however, they may or may not be involved in their institution’s mission. The value of this paper lies in its contribution to the knowledge of how initiatives implemented at higher-education institutions can contribute to sustainable consumption using theoretical and practical approaches. The biggest obstacle was the difficulty in locating the different initiatives at universities’ websites and also in the lack of uniformity for the comparison, dissemination and communication of environment-related activities. The conclusions show that green public procurement is a relatively new activity in Spain, especially in relation to sustainable consumption; however, it needs to be studied thoroughly because it can prompt policymakers to increase green practices through the adoption of measures that actually contribute to sustainable consumption.

1. Introduction

Public procurement refers to the purchasing of goods and services made by public institutions, and it represents 19% of the Gross Domestic Product of the European Union (EC, 2015). Consequently, public institutions are considered one of the most influential groups in the manufacturing and production of environmentally friendly products (Michelsen and de Boer, 2009). The introduction of environmental criteria into public procurement has steadily gained importance among sustainable consumption (SC) initiatives as they focus on formulating equitable strategies that promote a high quality of life, the efficient use of natural resources, and an effective system for satisfying human needs, while simultaneously fostering equitable social development, economic competitiveness and technological innovation (Oslo Declaration on Sustainable Consumption, 2005). Integrated product policy also states that, “public authorities must act as leaders in green management and in changes of consumption towards greener products” (Bala et al, 2008). However, some contradictions remain unresolved; e.g., eco-efficiency and sufficiency aspects, greening of markets or raising awareness, and servicing or promoting the ownership of goods through branding (Mont and Plepys, 2008). Fischer et al. (2012) indicated that SC refers to consumption that

1 helps create or sustain external conditions to allow all human beings today and in the
2 future to meet their objective needs. Barth et al. (2014) criticised the lack of limits
3 between production and consumption. Nonetheless, the necessity of initiatives to
4 promote sustainable practices is evident, and accordingly, public institutions should set
5 a positive example. However, the success of implementation depends on the
6 knowledge and experience acquired from marketing sustainable products (Tarantini et
7 al., 2011).
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9 For the purpose of this paper, the term “Green Public Procurement”, represented by its
10 acronym GPP, refers to procurement by public institutions, which includes
11 environmentally friendly criteria, which can be considered to be included in the
12 Sustainable Public Procurement concept; other authors have named it differently (Li
13 and Geiser, 2005; DEFRA, 2006; EC, 2004; Bolton, 2008; Michelsen and de Boer,
14 2009).
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17 In Spain, the Aalborg Commitments (ESCP, 2004) were established together with the
18 final declaration of the Fourth European Sustainable Cities and Towns Conference
19 (Aalborg+10). The challenges that European municipalities face on a path towards
20 sustainability were outlined, along with the undertaking of sustainable procurement and
21 the active promotion of sustainable production and consumption, particularly, eco-
22 labelled, organic, ethical and fair-trade products. The Green Public Procurement Plan
23 for the Spanish Civil Service and its Public Bodies and Social Security Management
24 Bodies in 2008 met one of the objectives that the European Union set in its first
25 Communication on Integrated Product Policy in 2003, stating: “It therefore encourages
26 Member States to draw up publicly available action plans for greening their public
27 procurement” (CEC, 2003:12). Subsequently, the 2008-2015 Integrated National Waste
28 Plan in Spain encouraged green procurement by Public Authorities (BOE, 2009).
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33 Universities play an important role in the category of public institutions. Activities
34 implemented within the university framework contribute to sustainable development
35 (SD) through education, research and daily operations (Wright and Horst, 2013). Many
36 Spanish universities have expressed their intentions to participate in SD on several
37 occasions. This has been stated in the Green Procurement Guide produced by the
38 University of Valladolid (UVa, 2007). The working group on Environmental Quality and
39 SD from the Conference of Rectors of Spanish Universities (CRUE) has been working
40 on introducing sustainable criteria into university management at all levels, including
41 purchasing decisions. One of the main results was the “Declaration of Universities
42 about Green Procurement”, in which universities are committed to gradually developing
43 a Green Procurement Policy and including it in their product supply contracts by
44 prioritising whenever possible (CRUE, 2005).
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49 A gap was found between monitoring the GPP initiatives carried out by universities and
50 the role that these initiatives play in SC. This study poses the following research
51 questions in its goal to analyse the GPP situation in Spanish universities and also to
52 determine if GPP is a suitable method for promoting SC: 1) Are GPP initiatives in public
53 universities visible? 2) What degree of environmental commitment do the universities
54 show according to the responsible persons in the Environmental Offices? 3) What
55 weaknesses and barriers are identified in universities for GPP? This paper studies the
56 commitment of universities for the promotion of SC through GPP from both internal and
57 external perspectives (with the consideration that “commitment” is expressed in terms
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of the visibility and implementation of GPP initiatives). Following this objective, Section 2 provides a literature review about GPP, focusing the analysis on studies into the role that universities play in promoting SD. Section 3 provides details of the research method applied to a case study, which analyses: a) the visibility of the GPP initiatives undertaken by universities; b) the knowledge and initiatives of promotion presented by responsible persons in Environmental Offices. Section 4 presents the obtained results, whereas Section 5 discuss the results of the case study. Section 6 offers the main conclusions and, finally, Section 7 presents the implications of this study for future research.

2. Sustainable Consumption of Universities through Green Procurement

Green Public Procurement has been considered an important policy instrument in the context of sustainable consumption and production (Nissinen et al., 2009; Zhu et al., 2013). The GPP concept originated in Chapter III of the Plan of Implementation of the Johannesburg Summit, which encouraged the relevant authorities at all levels “to take sustainable development considerations into account in decision making, including national and local development planning, investments in infrastructure, business development and public procurement. This would include actions at all levels to promote public procurement policies that encourage the development and diffusion of environmentally sound goods and services” (UN, 2002: 15). In this sense, universities play a crucial role in the SD context because many significantly influence the way in which future generations will address their challenges (Lozano, 2006; Barth et al., 2014). This fact has been recognised since the United Nations implemented Agenda 21. In Agenda 21, a number of commitments were established to introduce and improve the relationship between them and the environment through the adoption of SD policies and plans (Lee et al., 2013).

GPP was studied at Chinese governmental institutions to demonstrate the influence of stimuli in the implementation of GPP practices in situations where knowledge of the benefits of these measures was lacking, i.e., the adoption of measures due to legal pressure in cases where there was minimal understanding of the profits they would produce (Zhu et al., 2013). In addition, a review by Ho et al. (2010) shows that GPP activities from the public bodies of five Asian countries have led to a change in the behaviour of private institutions in Hong Kong.

For universities to take the lead in SD, their faculty, staff and students must be engaged in cross-disciplinary efforts at all societal system levels (Lozano et al., 2013). Lozano (2006) identified the main barriers that hindering the institutionalisation of SD and provided ideas of how to remove them. Those barriers depend on each university’s requirements and the need for leader who actively promotes the initiatives to gain approval for them. Some authors, such as Lee et al. (2013), have studied the degree of commitment from universities for implementing SD by searching for keywords indicating the inclusion of sustainable goals in the universities’ visions and missions. The results reveal that many studied universities publicly show sustainability-relating goals and values, but commitment is not reflected in the vision (in the terms studied). These results reveal inconsistencies between university and faculty/school directives that need to be addressed in order to facilitate sustainability in higher education.

The Organization for Economic Co-operation and Development considers education to be “one of the most powerful tools for providing individuals with the appropriate skills

1 and competences to become sustainable consumers” (OECD, 2008: 25). It
2 corresponds to the “soft side” of universities, or the persuasive measures that aim to
3 change social norms and the willingness of people to adopt new attitudes and
4 behavioural patterns (Jackson and Michaelis, 2003). Future influential people (leaders,
5 decision makers and intellectuals) are trained in higher education institutions (Lozano,
6 2006).

7
8 The main goal of Higher Education on Sustainable Development (HESD) is to enable
9 individuals to reflect on their responsibility for the next complex effects of decision-
10 making and behaviour through multicultural, global and future-oriented perspectives
11 (Adomßent et al., 2014). In HESD, social learning can be defined as learning in and
12 with social groups through interaction, which aims to create new and shared
13 knowledge. Therefore, public universities are important for bridging the gap between
14 government and society because they can implement policies and tools to bolster
15 initiatives that lead to sustainable practices. The impact of GPP-related activities helps
16 boost the supply and demand of sustainable products and services, simultaneously
17 influencing and strengthening the identity of the university community. The social
18 learning environment promoted at universities is a good example of how universities
19 reinforce SD objectives because they can generate scientific knowledge together with
20 societal and political actors (Sedlaceck, 2013).

21
22 However, the implementation of SD objectives set out in this declaration must
23 overcome a legislative hurdle to produce truly effective results. Spanish legislation,
24 specifically Royal Decree 3/2011 of 14 November, which approved the revised text of
25 the Public Sector Contracts Act (BOE, 2011), stipulates that the contracts that Public
26 Authorities enter into must be carried out by an open or restricted process or, in some
27 cases, by a negotiated or competitive dialogue process. However, this does not apply
28 to contracts that are considered “minor”, which are worth less than €50,000 (for
29 construction contracts) or €18,000 (for other contracts, such as supply agreements).
30 Minor contracts can be awarded directly to any eligible business. This
31 “decentralisation” of procurement for contracts worth less than €18,000 makes it very
32 difficult to achieve “greening of public procurement”, as proposed in the IPP, especially
33 in the university context, where there are very few budget items worth more than
34 €18,000 when compared to the overall expenditure on supplies. The expenditures on
35 goods and services (MECD, 2014) by universities in Spain in 2012 came to
36 €1,339,313.10, which is 15% of the total public expenditures (€9,206,010.20) for public
37 university education in Spain.

38
39 The expenditures on administrative contracting in 2013 of the Universitat Politècnica de
40 València (UPV), for example, amounted to €5,842,874.31. However, the “Supplies”,
41 “Transport and communications”, “Work performed by other companies” and “Office
42 material” headings totalled €29,308,759.93. Just 20% of the total expenditure under
43 these headings was spent on the administrative contracting form (UPV, 2014).

44
45 Very few studies have been conducted (Bala et al., 2008) in the context of educational
46 institutions (the drivers and stimuli for GPP implementation). The potential of promoting
47 GPP in the market and its impact on consumers and/or future purchasers/users is not
48 known.

1 This study considers public universities to be an example of public bodies because
2 they are subject to the same control mechanisms for contracts as given in the Public
3 Procurement Act (BOE, 2011).

4 However, the self-governance and decentralised procurement occurring within
5 universities has not proven beneficial to improving the relationships connecting costs,
6 benefits and the environment.
7

8 In previous studies, Walker and Brammer (2012) found that 32 researchers focused
9 attention on the tools that help purchasers incorporate environmental criteria into
10 contracts. A vast majority of the studies have been carried out in the private sector, and
11 very few studies have focused on environmental issues. Several studies have focused
12 on social, economic and environmental problems.
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15 Bratt et al. (2013) outlined some weaknesses in the GPP criteria process. Their work
16 focused on the cause and effect relationship in order to justify a lack in development of
17 environmental criteria; that is, processes focused on products and services instead of
18 on satisfying a need, resulting in a lack of stakeholders' representation.
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21 Research results from a study of the degree of implementation for different public
22 bodies in EU-27 (Renda et al, 2012) show an increase in GPP practices in the different
23 EU countries, differences in the criteria and product groups per country, a lack of
24 complementary tools, and difficulties including GPP requirements in public contracts.
25 For the private sector, Ho et al. (2010) showed that public leadership in green
26 procurement encourages green procurement in the private sector. This conclusion was
27 obtained after analysing 735 survey responses from a case study in Hong Kong. The
28 study revealed that in order to promote the use of environmentally friendly products,
29 governments must show a greater commitment to GPP, create a public access
30 database with these products, and show wide dissemination of the initiatives/products
31 of companies committed to GPP.
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36 At the purchase strategy level, Michelsen and de Boer (2009) found a clear correlation
37 between the size of municipalities and the focal point in their study on GPP. They also
38 confirmed the importance of both a purchase strategy and a purchasing department to
39 be able to take advantage of purchasing power. Similarly, the study of "procurement"
40 conducted by Schotanus and Telgen (2007) highlighted some advantages (lower
41 purchasing prices, higher quality, lower transaction costs, lighter workloads, reduced
42 (supply) risks, and learning from each other) and some disadvantages (set-up costs,
43 coordination costs, loss of flexibility, loss of control, supplier resistance, and possible
44 interference by anti-trust legislation). Schotanus et al. (2010) identified the key factors
45 that were applied to manage purchasing groups from a large-scale survey, including
46 the voluntary decision to participate in cooperative purchasing. Both studies provided
47 results allowing for the identification of different procurement groups and for the
48 visibility of the advantages and disadvantages of partnerships among public university
49 procurement groups, at least in the initial phases of green procurement policy
50 implementation.
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57 **3. Materials and method**

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1 This section outlines the method used in this research. It begins with a brief justification
2 of the approach used to answer the research questions. Then, the procedure is
3 explained step by step.

4 Because information is lacking regarding the current degree of university involvement
5 in GPP, the analyses herein are performed with an exploratory study. An exploratory
6 approach can be seen as a guide to establish a data collection framework, and it is
7 particularly suited for research areas having little prior theoretical literature or in cases
8 when empirical research is not available (Creswell, 2002).
9

10 The empirical material presented in this study highlights Spanish public universities that
11 participate in the activities performed by groups working on Environmental Quality and
12 Sustainable Development of the Conference of Rectors of Spanish Universities
13 (CRUE), which published the “Declaration of Universities about Green Procurement” in
14 2005. They are committed to including environmental criteria in the procurement of
15 products and services and are eager to be GPP role models for other public
16 administrations, and for society in general, to follow (CRUE, 2005).
17

18 Given this commitment and the paramount importance attached to universities for their
19 promotion of SC (OECD, 2008; Barth et al., 2014; Sedlaceck, 2013; Adomßent et al.,
20 2014), the objective was to generate knowledge on how the implementation and
21 publicity of GPP initiatives could act as a driving force for SC because SC was lacking.
22

23 In line with previous literature, the method was based on case studies with interviews,
24 interviews and purchase document analyses (Walker and Brammer, 2012), interviews
25 alone (Schotanus and Telgen, 2007), or on case studies and surveys (Michelsen and
26 de Boer, 2009). Mosgaard et al. (2013) conducted semi-structured interviews along
27 with a review of procurement procedures, a review of supplier assessment systems
28 and a review of 17 Danish companies.
29

30 To answer the research questions posed at the beginning of the paper, this study was
31 carried out from two perspectives:
32

33 1. External perspective: analysing the visibility of public universities related to the
34 level of greening through the information they publish on their websites. To do this, the
35 information was collected by a user familiar with web navigation. This analysis was
36 divided into the following sub-stages:
37

- 38 a) Identifying the official websites of each university included in the study.
- 39 b) Finding the services they offer by identifying whether there is a department that
40 handles environmental management (named Green Offices, or Sustainability
41 Offices, or EcoCampus, and so on). If it existed, the contact details were
42 collected.
- 43 c) Finding information on GPP-related initiatives undertaken by each university.
- 44 d) Pinpointing green budget headings and the corresponding bidding conditions.
45

46 The results of this analysis allowed us to answer the first research question about the
47 visibility of green initiatives.
48

49 2. Internal perspective: analysing, with the use of surveys, universities’
50 environmental knowledge and the level of implementation expressed by
51 managers or people in charge of these processes. The survey design permits
52

1 an exploratory study of all Spanish Public Universities. In other words, a survey
2 allows us to explore the level of involvement as well as the adequacy of
3 questions, and it is a good first approach to solving the problem at a local level.

4 The sections in this analysis were:

- 5 a) Producing the survey (Annexe).
- 6 b) Sending a document to the contacts identified in the initial review.
- 7 c) Analysing the survey results.

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10 The results of the survey analysis allowed us to answer the second and third research
11 questions regarding the commitment of universities and the weaknesses and barriers
12 identified by responsible parties in the Environmental Offices (as experts of each
13 university).

14
15 To send out surveys, the contact details of the Green Offices or Environmental
16 Departments of Spanish Public Universities were collected from their websites.

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18 The survey was divided into three blocks of questions (Appendix 2). At the end, there
19 was a fourth block for contact details.

20
21 To process the data, an analysis of the frequency of answers was used, except for
22 personal perceptions, for which open answers were allowed. These were quantified
23 from the frequency with which the key concepts relating to the subject of each question
24 was mentioned.

25
26 The survey was sent by e-mail to 37 (from a total of 51) of the universities that
27 displayed a contact e-mail address on their website. Two and a half weeks after
28 sending the first e-mail, a second e-mail was sent as a reminder to increase the
29 number of responses. One week after the second e-mail was sent, the universities that
30 had not yet answered the survey were contacted by telephone and the survey was sent
31 again to those that requested it. This process took 4 days. After waiting one more
32 week, the survey was considered completed. Finally, the number of responses out of all
33 public universities contacted was 18, which constitutes a response rate of 48.6 % (18
34 of 37).

41 **4. Results**

42
43 The following sections present the research results from both the external and internal
44 perspectives.

45
46 4.1 External perspective: Analysis of the visibility of public universities in relation to
47 the level of greening through information they publish on their websites

48
49 The analysis then focused on the aspects that related specifically to GPP. First, the
50 number of universities having a Public Procurement Manual was identified. The result
51 showed that only 11 of 51 (21.5%) Spanish public universities had a Public
52 Procurement Manual and only for certain budgetary headings (or at least they stated
53 they do). Second, the number of universities having a specific environmental
54 department with its own space on a website was determined. The results showed that
55 37 of them (72.5%) had an environmental department (Green Office, EcoCampus
56 Office, Environmental Department, or similar). After performing a search, 18 different
57 names for the department or area in charge of managing environmental aspects were
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found, such as Social Responsibility Area, Environmental Office, Sustainable Development Observatory, Environmental Quality Unit Solidarity and Environment Unit, among others.

These results are likely lacking in the general criteria for the dissemination or comparison of GPP-related activities. The appropriate documents can be difficult for web users to locate and access. Furthermore, the universities' communication strategy does not include the sustainable approach that they are committed to accomplishing.

After following the procedure explained in Section 3, no clear results were found regarding GPP-related initiatives undertaken by each university or the budget headings including environmental criteria and corresponding bidding conditions.

4.2 Internal perspective: Analysis of the survey results and their implications for GPP

The survey responses showed that most of the respondent universities are aware of the CRUE declaration on public procurement at universities, and they are involved in CRUE GPP commitments having generally adopted the declaration's principles (Q1 and Q2; 17 of the 18 surveyed, 94%). The most widely implemented GPP measures found at universities were (Q3): the inclusion of environmental criteria (16 responses); dispersion of information and raising awareness (15 responses); the promotion of ethical and fair-trade products (12 responses); procurement prioritisation (10 responses); and the incorporation of techniques and technologies (9), among others (Figure 1).

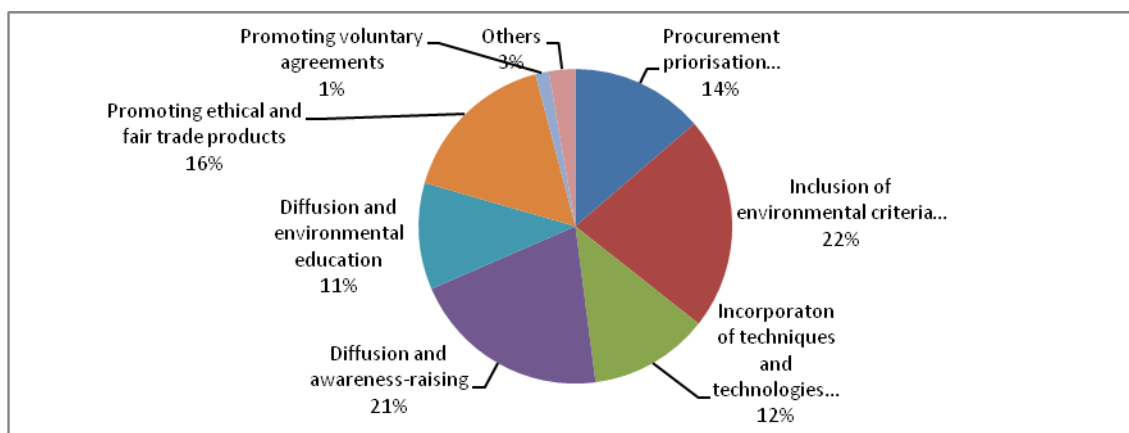


Figure 1. Measures adopted by universities to implement GPP (Q3)

The groups mentioned in the European Union's Environment Directorate-General on its "EU GPP criteria" website (GPP Criteria, 2014) were listed to determine to which groups or categories of products the surveyed universities applied environmental criteria (Block II, Q4). The results show that the three most frequently mentioned product groups were: "cleaning products and services" (14 responses), "food and catering services" (12 responses), and "gardening products and services" (11 responses) (Figure 2).

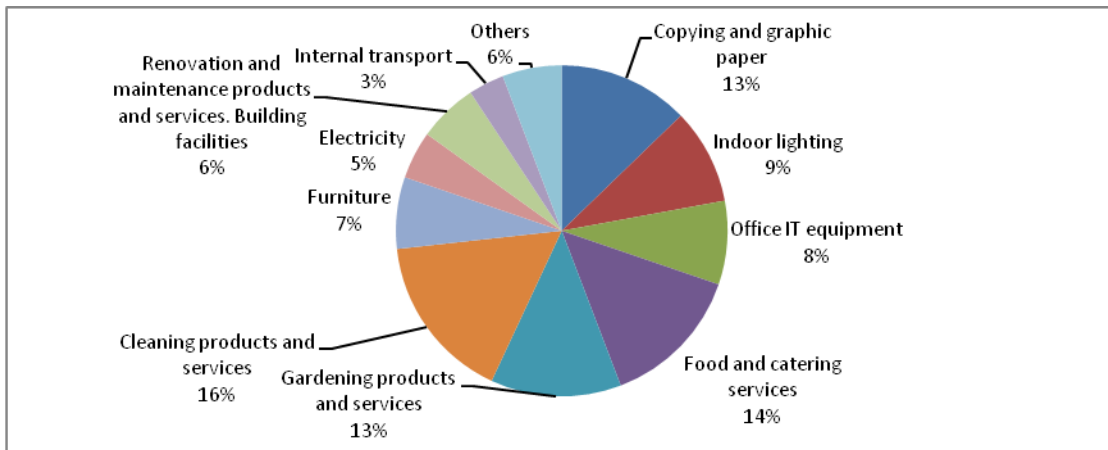


Figure 2. Product groups for which tenders have incorporated environmental criteria (Q4)

The responses to questions regarding the specific knowledge of public procurement at the university (Block III) showed that most of those surveyed (17 responses) did not know the percentage of bids awarded at their universities that included environmental criteria (Q5).

When asked how effective the implemented initiatives are (Q6), most seemed to agree that they are effective (13 responses, 72%). The reasons given to justify the effectiveness of the implemented action were summarised according to how often the different responses were given (Q7):

- 1) Awareness and knowledge (6 mentions) were closely related to the belief that the example set by the university can have a positive impact on the university community;
- 2) Savings, from an economic point of view (2 mentions);
- 3) Reduced environmental impact (2 mentions) related to recycling.

When they did not feel that the initiatives were effective (3 responses, 17%), they elaborated that it was because GPP had only recently been initiated at their university (Q8).

When asked how to introduce GPP practices, the surveyed universities suggested measures grouped as follows (Q9):

- 1) Increasing information through raising awareness or publicising the initiatives taken.
- 2) Increasing specialisation in GPP, which may take the form of training or centralising information for the university community.

Results show that GPP initiatives are only part of the strategy for GPP success at universities with follow-through necessary in terms of the expression of good performances and apparent savings.

5. Discussion

1 This section presents the analysis of the results of the case study of the commitment of
2 universities with SC through GPP visibility and implementation, which was compared to
3 the main literature review contributions.

4 Although the importance of GPP for sustainable consumption is well known (Nissinen
5 et al., 2009; Zhu et al., 2013), understanding its development through public bodies is
6 relevant as they act as a pressure group to acquire more sustainable products and
7 services (Michelsen and de Boer, 2009), or to lead the process to greener products
8 (Bala et al., 2008). Success in the implementation of GPP depends on knowledge and
9 experience (Tarantini, 2011). For Spanish public universities (as an example of public
10 bodies with regard to their mechanisms for bidding), two research questions have been
11 posed: Are the initiatives adopted by the universities visible? And can the people in
12 charge of environmental subjects at universities be considered committed to GPP. The
13 objective was also to identify existing barriers in GPP implementation. From the results,
14 a real starting point can be established, which helps to put into practice actions with
15 greater influence and higher paybacks for the current community and future
16 generations (Lozano, 2006; Barth et al., 2014).

17 First, the websites of Spanish public universities were analysed. Second, the 18
18 responses obtained from the responsible persons in the Environmental Offices of
19 public universities were analysed.

20 The analysis of visibility clarified how the studied universities highlighted GPP
21 initiatives. The review of the websites of Spanish public universities showed entity
22 responsible for environmental management was different at each university. For some,
23 the environmental aspects were managed by a body set up specifically for that
24 purpose, which may be a “Green Office”, “EcoCampus Office”, “Sustainability Office”,
25 “Environmental Department” or “Environmental Quality Unit”. In other cases, these
26 aspects were managed jointly with the Health and Safety Department; one such case
27 was found in which environmental management was limited to managing the waste
28 generated on the campus and did not include green procurement matters. This
29 heterogeneity may cause some confusion when users or interested parties seek
30 information, and may hinder access to specific environmental matters. As a result, the
31 analysis showed that specialised university GPP departments are lacking, which, as
32 suggested by Michelsen and de Boer (2009), are a key implementation factor to reach
33 SC goals.

34 The results also allowed us to reflect on the outcomes of green procurement at
35 universities, which are comparable to the barriers detected for the implementation of
36 GPP in small municipalities (Michelsen and de Boer, 2009). The requirement of
37 including green criteria only would apply to contracts worth more than €18,000 for
38 supplies (BOE, 2011) since these are the only subjects to public bidding, which does
39 not reflect the vast majority of purchases made by universities. Independent
40 management of different university departments hinders the centralisation and
41 greening of procurement. Therefore, establishing economic criteria to help GPP
42 programs is recommended.

43 In line with Zhu et al. (2013), our survey results suggest that training along with the
44 implementation of databases can increase the amount of information accessible about
45 available green products and the processes required to implement contracts.
46 Additionally, Schotanus and Telgen (2007) and Schotanus et al. (2010) put forward an

1 extensive theory about cooperative purchasing, which should be studied in this area to
2 promote collaboration between purchasers at public universities. The typology of the
3 purchasing groups and tasks identified by those authors that contribute to the
4 development of procurement processes can be applied to GPP. The same authors
5 suggested that plans and programmes could improve purchasing processes,
6 regardless of whether they share the same objectives and similar tools, in order to
7 prepare contracts and to evaluate their performances.
8

9 After analysing the results of this case study, it has been found a poor correlation
10 between the inclusion of sustainable goals in universities' vision and the
11 implementation of these goals because they identified very few Green Procurement
12 Initiatives or Sustainable Initiatives. These results are similar to those obtained by Lee
13 et al. (2013).
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16 Furthermore, universities face the same initial problems as other public authorities
17 (e.g., councils) in regard to GPP, according to the findings of this research. An analysis
18 of the experiences of public authorities (Renda et al., 2012) may help accelerate the
19 implementation process and the success of GPP initiatives in public universities.
20 Adopting policies that link universities to public procurement initiatives (ICLEI) would
21 enable the acquisition, *inter alia*, of more knowledge and make more information
22 available to those responsible for Environmental Offices at universities. At the same
23 time, universities can act as role models in implementing GPP by have positive effects
24 on the market, as indicated by Ho et al. (2010).
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28 The originality of this paper lies in its contribution to the understanding of how GPP
29 initiatives at higher education institutions can contribute to SC through theoretical and
30 practical approaches. The theoretical approach involves using the emphasis on GPP
31 initiatives at universities as a tool to achieve SC; whereas, the practical approach
32 consists of analysing a case study and establishing some considerations to apply the
33 method to new studies. Teaching, provided through various methods, can help
34 prospective customers assume the importance of sustainability. The visibility of the
35 sustainable purchase actions performed on a campus reflects the degree of coherence
36 between discourse and practice. Thus, more universities than those included herein
37 are expected to access general sustainability-related commitments, GPP practices in
38 particular, and to use them as an additional tool.
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43 Naturally, some limitations in the present study must be considered. First, the case
44 study presented here is representative only for Spanish public universities. Therefore, a
45 broader study is needed, including public universities from other EU countries; second,
46 regarding the method employed, the use of new technologies presents both
47 advantages and disadvantages. Access to websites in addition to using checklists
48 allows the required information to be identified and the procedure to be replicated.
49 Nevertheless, using this procedure to obtain information may take a long time
50 depending on the website structure and design, and users cannot always find
51 information easily; finally, in future studies, interviewing managers of Green Offices
52 personally (face-to-face) is recommended because this would allow more open
53 questions to obtain more details and may result in more specific responses detailing
54 what these managers are specifically doing about GPP practices.
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6. Conclusions and implications for further study

1 This study is based on empirical observations. As such, it provides further insight into
2 the importance of the GPP initiatives taken by universities for promoting SC and for
3 subsequently contributing to SD.
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6 To obtain responses it was not until the contact person included on the website was
7 contacted that 48.6% of universities (18 of 37) answered the survey. This increases the
8 reliability of the survey. Although these responses were made by the people
9 responsible for Environmental Offices or similar specialised departments, they may
10 reflect the perceptions of people who may, or may not, be involved in their institution's
11 mission.
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13
14 The main survey results generally reveal that those responsible for GPP at universities
15 are aware of the university's commitment to the environment. However, they were
16 unable to provide specific data on how effective GPP was at their university
17 (percentage of the GPP cost of the total procurement cost). The questions on the
18 measures adopted highlighted the inclusion of environmental criteria that focus on food
19 and catering services, gardening products and services, and copying and graphics
20 paper. The perception of the effectiveness of the initiatives taken was also positive,
21 especially with regard to the awareness and knowledge in the university community
22 and the impact of GPP on the market.
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26 The results also show that those responsible for the environment at universities are
27 willing to implement the measures required for green procurement to succeed because
28 they have knowledge and access to the tools that facilitate their implementation in
29 various product categories.
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32 GPP at universities is a relatively new activity in Spain, which has not been previously
33 been widely implemented (only in a few universities). However, the responses received
34 outlining suggestions to improve GPP practices expressed the same advantages and
35 disadvantages as responses given in various GPP studies, reflecting a possible lack of
36 experience in GPP practices at universities.
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39 It is clear from the results of the visibility of GPP initiatives at universities that there is
40 no relationship between GPP and SC; or, if there is, Spanish universities do not make
41 this relationship very clear on their websites. This problem can be solved by developing
42 a communication plan according to the initiatives taken by universities and the SC
43 objectives set at universities. It would be worth simplifying public access to information
44 about the environment and GPP on the websites of each institution.
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47 GPP practices help improve the implementation of SC into society. This can be
48 monitored by direct indicators (e.g., a direct indicator could be the percentage of public
49 spending in competitive bidding, including "green" specifications in administrative
50 clauses). They can also be monitored by indirect indicators derived from teaching and
51 dissemination practices. The level of commitment expressed by responsible members
52 or managers of GPP initiatives indicates that there is still a lot of room for improvement
53 and that it is necessary to increase the level of GPP knowledge among managers so
54 they can implement green purchase objectives as part of their commitment to
55 sustainability. Accordingly, more studies are necessary to promote knowledge,
56 implementation and dissemination.
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1 In conclusion, the weaknesses detected at universities, as determined by the survey
2 and the literature review, are similar to those raised by any purchasing department of a
3 public institution. Nevertheless, it is necessary to consider the visible of GPP practices
4 at universities and the placement of GPP practices within an educational framework for
5 future market actors.

6 Some implications for future research were obtained, which could help enhance the
7 visibility and implementation of GPP into universities.

8 On the one hand, a questionnaire was used as a tool to obtain information for this
9 study, which was subjected to the requirement of knowing the real GPP situation as a
10 first approach in a limited area. The results encourage improving knowledge through
11 face-to-face interviews with managers of Green Offices to distinguish among the
12 strengths, weaknesses and barriers that emerge to order to implement different GPP
13 initiatives into various stages.

14 On the other hand, the visibility of GPP initiatives was reviewed through university
15 websites, which revealed that diffusion measures are lacking. Web users find it difficult
16 to find information on GPP or SC initiatives, which highlights that the available tools to
17 inform society of these initiatives are being wasted. Future usability studies to improve
18 access to information will help diffuse good practices and will consequently enhance
19 the “green image” of public institutions.

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Annexe. Survey form

Q1 Do you know the CRUE Declaration about Green Public Procurement at universities? Yes/No

Q2 Has your university adopted any of the commitments of CRUE Declaration? Yes, Which/No

Q3 If the response to Q2 was YES, please choose the following measures that have been implemented in your university:

Prioritisation of buying a product with ecolabels or those produced locally, or are reused, recycled or energy-efficient

Add environmental criteria to technical and administrative contract requirements

Incorporation of energy-efficient techniques and technologies into the rehabilitation, renovation and maintenance of buildings

Dissemination and awareness among the University Community

Promotion of fair trade and responsible consumption by incorporating ethical and social criteria into public procurement and contracting

Q4 Which of the following group or groups does your university environmental apply criteria to generate administrative and/or technical specifications to adopt a GPP policy?

Paper

Indoor lighting

Office IT equipment

Food and catering services

Gardening product and services

Cleaning products and services

Others (please specify): Supply of printing paper; publishing, printing services, Disinfection-insect and rat removal

Q5 What percentage of the total amount of money spent by your university last year through competitive bidding was tendered by including environmental criteria in contract documents?

Q6 In your opinion, are you aware that GPP policies are effective at your university? Yes/No

Q7 If the last answer was YES, please provide your reasons

Q8 If you answered NO to question 6, please provide your reasons

Q9 What measures do you suggest could improve GPP at your university?

Q10 Contact details

Appendix 1

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52 Appendix 2

53 Table 2. List of the objectives of the survey sent to public universities

Block	Objective	Question	
I	Awareness of and involvement in the CRUE Green Public	1	Do you know the CRUE Declaration about Green Public Procurement at universities? Yes/No
		2	Has your university adopted any of the commitments of CRUE Declaration? Yes, Which/No

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	Procurement commitments at universities	3	<p>If the response to Q2 was YES, please choose the following measures that have been implemented in your university:</p> <ul style="list-style-type: none"> • Prioritisation of buying a product with ecolabels or those produced locally, or are reused, recycled or energy-efficient • Add environmental criteria to technical and administrative contract requirements • Incorporation of energy-efficient techniques and technologies into the rehabilitation, renovation and maintenance of buildings • Dissemination and awareness among the University Community • Promotion of fair trade and responsible consumption by incorporating ethical and social criteria into public procurement and contracting
II	Product groups to which environmental criteria have been applied	4	<p>Which of the following group or groups does your university environmental apply criteria to generate administrative and/or technical specifications to adopt a GPP policy?</p> <ul style="list-style-type: none"> • Copying and graphic Paper • Indoor lighting • Office IT equipment • Food and catering services • Gardening product and services • Cleaning products and services • Furniture • Electric supply • Renovation and maintenance products and services. Building Facilities • Internal transport • Others (please specify)
III	Awareness of public procurement at the university	5	What percentage of the total amount of money spent by your university last year through competitive bidding was tendered by including environmental criteria in contract documents?
		6	In your opinion, are you aware that GPP policies are effective at your university? Yes/No
		7	If the last answer was YES, please provide your reasons
		8	If you answered NO to question 6, please provide your reasons
		9	What measures do you suggest could improve GPP at your university?

Highlights

- The importance of Green Procurement in Sustainable Consumption at universities is analysed
- There is willingness to implement GPP at universities
- 11 out of 51 Spanish Public Universities have a visible Public Procurement Manual at their websites
- Information and Training are suggested to improve Green Procurement at universities

Data File

[Click here to download Data File: Certificate_traduccin.pdf](#)