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WAGENINGEN  
UR

## ENHANCE THE SUSTAINABILITY OF WAGENINGEN UNIVERSITY

Research to the attitude of Wageningen UR students towards sustainability and the recognition of Green Office Wageningen



# Enhance the sustainability of Wageningen University

*Research to the attitude of Wageningen UR students towards sustainability and the recognition of Green Office Wageningen*

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This report is the result of our project for the course “Academic Consultancy Training”, scheduled from November 18<sup>th</sup> till December 12<sup>th</sup> 2013. The theme of this ACT project is to carry out a research project based on a knowledge gap, about attitudes and recognition of sustainability and sustainable activities among Wageningen UR students. The knowledge gap has both scientific and business relevance for Green Office Wageningen (GOW).

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## Executive Summary

Wageningen UR is one of the universities in Netherlands which always concern about sustainability. Green Office Wageningen is an organization which contributes to the “sustainable” policy of Wageningen University. GOW arranges events for students, in order to trigger them to be more sustainable and to educate them about the importance of sustainability. The wish of Wageningen UR is to become one of the most sustainable universities in the Netherlands. The contribution of GOW can be valuable in this effort.

The following main research question is drafted: “What is the attitude of Wageningen UR students towards sustainability and what is the recognition of Wageningen UR students towards GOW and their activities?”

The main research question is answered by the use of a survey. This survey is statistically analysed in SPSS with the use of factor analyses, independent T-tests, ANOVA and cross tabulations. Besides the statistical analysis, a short literature study has been performed. Finally, the open-ended questions of the survey have been qualitatively analysed.

Overall, respondents mention waste management, energy related issues and recycling as most important and relevant factors. Qualitative analyses show that important and relevant food-related sustainability aspects are mainly the reduction of production and consumption of meat. Also the reduction of CO<sub>2</sub> emission by using alternative ways of traveling than by car, the usage of sustainable materials, and recycling turn out to be very important and relevant for students of Wageningen UR according to the qualitative analysis.

Regardless of origin or study type, students think that governmental sustainability issues are highly related with sustainability. Students also mention that waste and energy related topics have the highest priority for them. Female students give a significantly higher score on the priority of the usage of waste and production and prevention of energy.

Another remarkable conclusion is that African and South American students are significantly willing to pay more for sustainability than European students. Students with an environmental background seem to care more about sustainability, since they are significantly more willing to pay more for sustainability and give sustainability a higher priority than students with other backgrounds.

For Green Office Wageningen it can be recommended to create events or activities based on the reduction of waste, reduction of energy, saving water and sustainable packaging. Another recommendation is to make sure that an event is linked to Green Office Wageningen, so that students get familiar with them. This research does not contain which marketing strategies are most suitable for the promotion of events or activities of Green Office Wageningen in the Wageningen UR and is thus a suggestion for further research.

## 1. Introduction

Sustainability has become a very important issue in the last couple of years. However, we continuously fail to exactly understand what it means and what it entails. Green Office Wageningen (in the rest of the report referred to as GOW) is an organization which contributes to the sustainability policy of Wageningen UR. Wageningen UR focuses on research and education in relation to sustainability and has the ambition to become (one of) the most sustainable universities of the Netherlands. Wageningen UR complies with the (inter)national environmental legislation and regulation, but aspires to be a pioneer and an example for other (Dutch) universities and organisations when it comes to operational sustainability management. In line with their ambitions, Wageningen UR has already undertaken several steps in achieving this goal, ranging from purchasing to waste management and integrating this operational approach with communication and decision-making approaches (Safety&Environment 2013).

### 1.1. Background

One of the key players in this issue are the students and it is their attitude which is not fully examined yet. This knowledge gap makes it difficult for the policy makers to apply and practice suitable policy. By refreshing its own policy, GOW is now taking the lead in closing this knowledge gap and examining students' attitude in order to make certain profiles. Based on these profiles, policy can be applied which serves the students' knowledge in the recognition of GOW's sustainability actions. This will be explained further in section 1.5.

The research focuses on the attitudes of students towards sustainability. Since this is such a broad topic, it is decided to narrow down and limit the focus of the research. In this way, specific boundaries are set to enable a good problem analysis. This provides concrete data which contributes to a better understanding of the students' attitude and thus for better policy making of GOW.

This research attempts to set up different student profiles based on relations between different types of students, according to their study type, origin, gender, etc. and their attitudes towards sustainability. The profiles will include a detailed analysis, especially of their attitude towards sustainability, to find the link between the attitude and interpretation of sustainability. Displaying of actual sustainable behaviour is very complex, although very essential (Kollmuss and Agyeman, 2002). The project focuses on attitudes rather than on behaviour because there are so many facets of sustainability that it would be difficult to choose which behaviour would be representative for the profile.

In the light of the aim of the project, it is needed to understand the students' attitude on sustainability to provide GOW with knowledge based on what kind of activities they should perform. What has triggered students to come to their events and made them engage in the past? As soon as GOW understands what the attitude of Wageningen UR students is, GOW can focus on strategies on how to grasp their attention. Consequently, GOW hopes to find a way to actively involve the Wageningen UR students in their goal to achieve sustainability on the campus.

By finding the answers to the attitude related research questions, it is intended to create profiles of the students, including their opinions. This research aims to provide the tools for improving the marketing strategy of the GOW activities. GOW may use the data about students' attitude to get to know particular profiles of students and their attitudes towards sustainability better. Thus, GOW can be well-prepared and more specific in addressing the activities and events for students and trigger their attention. In the long term, the project should set the basis for a fruitful future of the sustainability of the Wageningen UR.

## 1.2. Sustainability concept

The first globally accepted and applied explanation of sustainability was formulated in 1987 by Brundtland et al. in the report of the UN World Commission on Environment and Development (Kuhlman and Farrington 2010): “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

In this sense, meeting the needs of the present can be understood as ‘welfare’, whereas the ability of future generations to meet their own needs can truly be understood as ‘sustainability’ (Kuhlman and Farrington 2010). The difficulty remains, however, in the implementation of sustainable management, since it requires the involvement of many people at many levels of decision making and a shift in setting their priorities. The first and most fundamental requirement in achieving this goal is changing the attitude of people (Brundtland 1987). The main difficulty is that sustainability refers to quality of life of current and future generations. Quality of life is a very broad concept and therefore would require a lot of indicators to measure (Bell and Morse 2008).

## 1.3. Sustainability concept application

Since the concept of sustainability is open for personal interpretation, the attitude of Wageningen UR students will most likely be very divergent. This makes difficult to define the target group for policy making and the organisation of GOW activities and several questions arise. What do students of Wageningen UR consider sustainable activity? What activities are relevant from a Wageningen UR students’ perspective? What makes it interesting for Wageningen UR students to attend certain activities?

Sustainability can be regarded as a so-called ‘container concept’. It refers to a plurality of meanings in different contexts and is therefore open for personal interpretation. This results in difficulties in finding the best solution (e.g. a policy implementation) to recognize a sustainable practice. However, each interpretation is of key importance, because all interpretations – even if they differ significantly – contribute to the overall understanding of the concept and determines the strategy used to reach these people.

However, this research is not focused on changing attitudes, but on monitoring attitudes and finding ways to anticipate them. Not much information is available about the understanding of students of sustainability. What do students think of when they are confronted with the term ‘sustainability’? Do they refer to economic contribution, environmental performance, institutional aspects and/or to societal dimensions (Krajnc and Glavič 2005 and Bell and Morse 2008)? And how do students perceive their responsibility in the global sustainability issue, is it their personal responsibility or of society as a whole (Kagawa 2007)? But not just the Wageningen UR students’ understanding of sustainability is important; the most fundamental issue is their attitude towards sustainability activities which accompanies their understanding.

## 1.4. Attitude concept

### Attitude

Attitude is a “learned global evaluation of an object (person, place, or issue) that influences thought and action” or “a predisposition, a tendency, a state of readiness that guides and steers behaviour in a certain predictable, though not always rational, ways” (Perloff 2010). Attitude is an intriguing concept and its composition is created by various items or elements arranged differently. There are three elements which contribute to forming of the attitude (thoughts, feelings and behaviour); whereas the person might often even have the antagonistic attitude towards the same object. (Perloff 2010).

Hence, the attitude is formed by experience at a young age – they are not innate – and based on personal cognition and affect. Attitude is relatively long-lasting. The expectancy – value model can be used as a clarification of attitude composition, assuming that attitude comprises of what one thinks and feels to a certain person/ place/ issue, what expectations a person has to a certain person/ place/ issue, and how he evaluates these expectations, either positively or negatively (Ajzen and Fishbein 2000; Perloff 2010).

Attitude is an intriguing concept and its composition is created by various items or elements which are arranged differently. There are three elements which contribute to the forming of attitude: thoughts, feelings and behaviour

### Relationship between attitude and behaviour

Attitude is presupposed to influence behaviour. However, the effect of attitude on behaviour could be partially influenced by numerous other influences; for example situational behaviour where, likewise, behaviour might be affected by social norms, roles (across cultures), emotions, self-identity, media, etc. Characteristics of persons in terms of attitude seem important as well, because people will not always show consistency between attitude and behaviour in different times and contexts. Last but not least, the aspect of ‘attitude strengths’ plays a relevant role: strong attitude is more prone to instigate behaviour. Moreover, behaviour can be affected by many attitudes (Perloff 2010).

Theory of planned behaviour and theory of reasoned action differ in several aspects. There is a logical difference between these two concepts, which spring from additions to the theory of planned behaviour such as perception of behavioural control, which actually contributes (with attitude and subjective norm) to what the students intend and what brings them to their behaviour. However, both of them still highlight that the attitude can predetermine behaviour under particular conditions (Ajzen 1991).

The attitude–behaviour relation is complex; it could be depicted as an effort to respond to an object (place, person, or issue) with some level of like or dislike, favour or disfavour. In so far that attitude should carry out the role of human behaviour predictor and -explainer where positive attitude leads to approach to and negative attitude to avoidance of the attitude object. There is a conception of behaviour: specific attitude which is embodied in prediction and definition of specific behaviour activities. Thus, this so called ‘principle of compatibility’ does not only facilitate predicting behaviour from attitude, but is also part of theory of reasoned action and the later form of theory of planned behaviour (Ajzen and Fishbein 2000).



In general, there can be some barriers between behavioural intention and actual behaviour (figure 1.1). For instance, the external conditions might play a role. Different weather conditions might be a barrier for behavioural action (e.g. a person might not be willing to cycle for several miles to recycle the waste, whereas in nice weather, the person might not mind cycling that far).

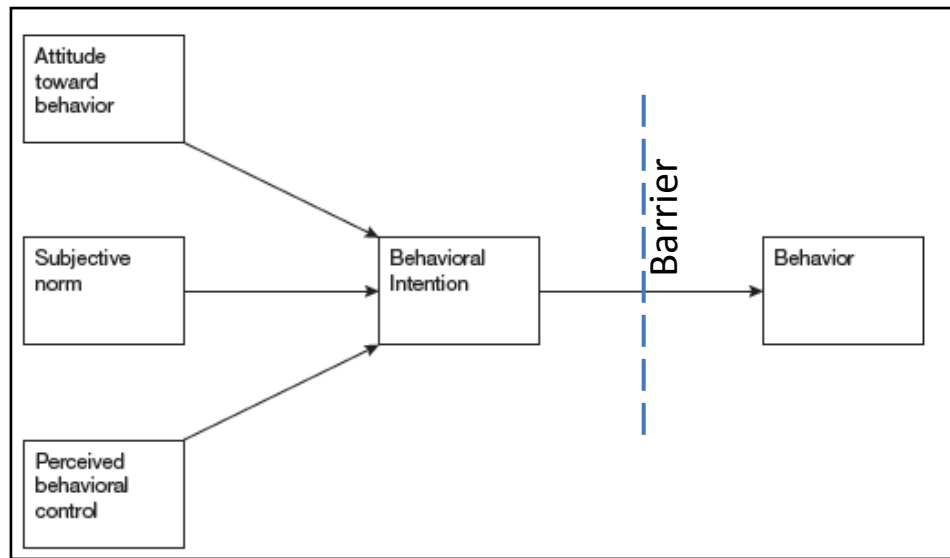


Figure 1.1: Model of planned behaviour (based on Ajzen 1991)

## 1.5. Profiles

Profiling of respondents can be done according to personal characteristics and background. Examples of this are age, gender, origin, education level, and field of study. Based on these characteristics, the respondents can be aggregated into different groups sharing the same characteristic or background. This results in groups of for instance female bachelor students which can be compared to male bachelor students or female master students. Furthermore, it can be specified what interest or conviction certain profile groups have in common. In this way, creating general profiles of students can specify the target groups for e.g. marketing purposes.

## 1.6. Research Questions

### Main research question:

What is the attitude of the students of Wageningen UR towards sustainability and what is the recognition of Wageningen UR students towards GOW and their activities?

### Sub research questions:

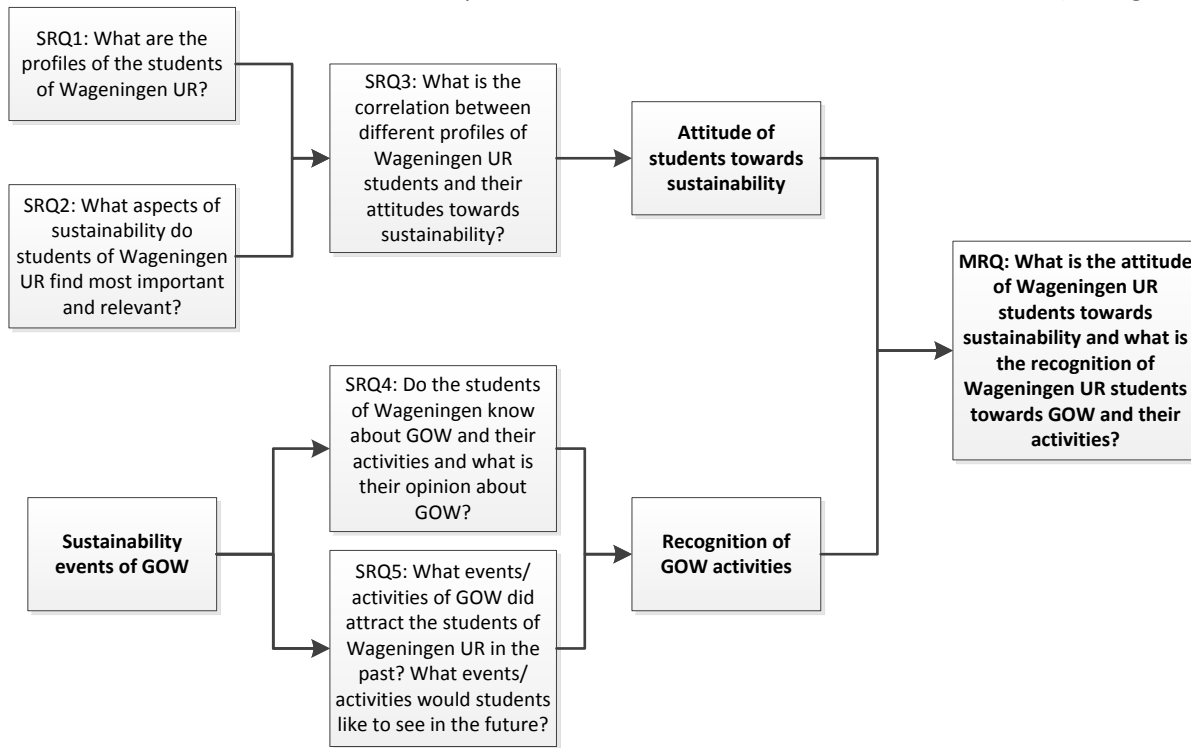
1. What are the profiles of the students of Wageningen UR?
2. What aspects of sustainability do students of Wageningen UR find most important and relevant?
3. What is the correlation between different profiles of Wageningen UR students and their attitudes towards sustainability?
4. Do the students of Wageningen know about GOW and their activities and what is their opinion about GOW?

5. What events/activities of GOW did attract the students of Wageningen UR in the past? What events/activities would students like to see in the future?

## 2. Methodology

### 2.1. Research approach

In order to answer the main research question, a theoretical framework has been made (see figure 2.1).



**Figure 2.1:** Research approach framework of the research questions

This research approach shows the relation of the sub research questions (SRQ) and how this will result in finding answers to the main research question (MRQ). A description of methods used to answer each sub research question can be found in the rest of this chapter.

### 2.2. Literature review

In order to answer sub research questions 2 (“What aspects of sustainability do students of Wageningen UR find most important and relevant?”) and 3 (“What is the relationship between students of Wageningen UR and their attitudes towards sustainability?”), a literature review is carried out. For both sub research questions, the used keywords are ‘sustainability’, ‘attitude’, ‘students’ and ‘survey’.

To ensure that the articles are up to date, only articles which were written or peer-reviewed after 2000 have been used.

### 2.3. Data collection

The aim of this research is to only focus on attitudes of Wageningen UR students by carrying out a survey, and not to involve observing behaviour of students of Wageningen UR. In general, observing people requires a lot of time and behaviour cannot be measured by surveys. The attitude of students towards sustainability is measured through a survey. The given survey and how the survey questions relate to the sub research questions can be found in appendix 1.

The mean of data collection was of preference because many respondents can be approached through this channel in a very little while, by contrast to other data collection methods (i.e. observing or interviewing), which take much more time to gather information when a large sample population is needed to be accomplished.

The survey is divided into three sub sections. The first section was focused on determining the respondents' attitude towards sustainability. The second section was focused on recognition and the opinion of the respondents in relation to the sustainability activities provided by GOW. The third and final section was focused on profiling the respondents in general terms, such as age, gender, origin, education level and field of study. Reason for profiling students at the end of the survey is that if respondents are profiled at the beginning of the survey, they might get the feeling that they are being judged on their personal characteristics.

## **2.4. Sampling**

This study is only focused on the students of Wageningen UR, since it is their attitude in which the commissioners are interested. To reduce costs and expenses, a sample of the total population will be taken. The sampling has been done semi-randomly. Random samples have the advantage to be unbiased; the expected value of the sample mean will be equal to the population mean. By doing this, the sampling error is measurable and can be expressed as the confidence interval (Kumar 2011).

Random persons who were positioned behind a computer at Forum, Orion and Leeuwenborch have been approached and asked to fill in the survey. These buildings are chosen, because this are the main lecture buildings for Wageningen UR and most PC and project rooms are situated here.

Sampling has occurred on Thursday November 21<sup>st</sup>, Friday November 22<sup>nd</sup> and Monday November 25<sup>th</sup> at approximately 10AM and 2PM. The link to the survey has also been posted on several group members' personal Facebook pages and on the Facebook page of student associations KSV Franciscus (one of the four big student associations in Wageningen) and Ipso Facto (study association for International Development studies) (source: Wageningen UR website). Besides, study association Mercurius (Management, Economics and Consumer studies) has been contacted, but they were not willing to cooperate and put the link on their Facebook page. The link to the survey has been also put on the Facebook page of GOW on Wednesday November 27<sup>th</sup>

## **2.5. Validity and reliability**

In this paragraph the internal validity, external validity and the reliability of the research project will be discussed.

### **2.5.1. Internal validity**

According to De Vaus (2001), internal validity is concerned with the extent to which the research design can sustain the causal conclusions. To test for internal validity, firstly, a P-P plot has been conducted. Finally, a factor analysis has been carried out.

### **2.5.2. External validity**

External validity is concerned with the extent to which the results can be generalized beyond the particular study (De Vaus, 2001). External validity ensures that the taken sample is representative for the total population. This could, according to Kumar (2011), be done by comparing the percentages of (for instance) females to the sample and the total population (Kumar 2011).

Wageningen UR has around 8.000 students (source: Wageningen UR website). This would mean that, for a confidence level of 95%, the sample size needs to be 370 (source: Raosoft website). For this research, a sample size of 406 has been reached. Thus, according to Raosoft, the external validity is ensured.

### **2.5.3. Reliability**

According to De Vaus (2001), a reliable research project is a project that gives the same results when repeated by other researchers. The data is collected by the researchers themselves, from a semi-random sample of the total population. Besides, the survey is fully anonymous, ensuring that no socially desirable answers are given. The flyers distributed did not mention the words GOW or sustainability, in order to prevent attracting only students with a biased attitude towards sustainability.

This all ensures that the reliability is high, because another researcher will most likely get the same results when performing this survey.

## **2.6. Data analysis**

The data has been coded in order to be able to analyse it. The way that the data is coded and how the survey questions are linked to the different sub research questions is shown in appendix 2.

The collected data is analysed by using SPSS, a statistical software program in which statistical justified relationships between data can be found (Field 2009).

For answering sub research questions 2, 3, 4 and 5, some statistical analyses have been carried out.

First of all, data have been reduced by the use of a factor analysis. By means of this, SPSS analyses which components are similar and can thus be reduced into a common factor. This helps for further analysis in easy steps.

To determine what students think is important, the means have been calculated with a 95% confidence interval. In order to see if differences in the means are significant, an independent T-test has been performed to see if the found differences are significant or not.

An ANOVA analysis (univariate analysis of variance) has been performed in order to see if the aspects together or individually have significant differences among the student characteristics.

Finally, cross tabulations have been used to see if there is any interrelation between various variables. This shows clearly the combinations of variables towards each other.

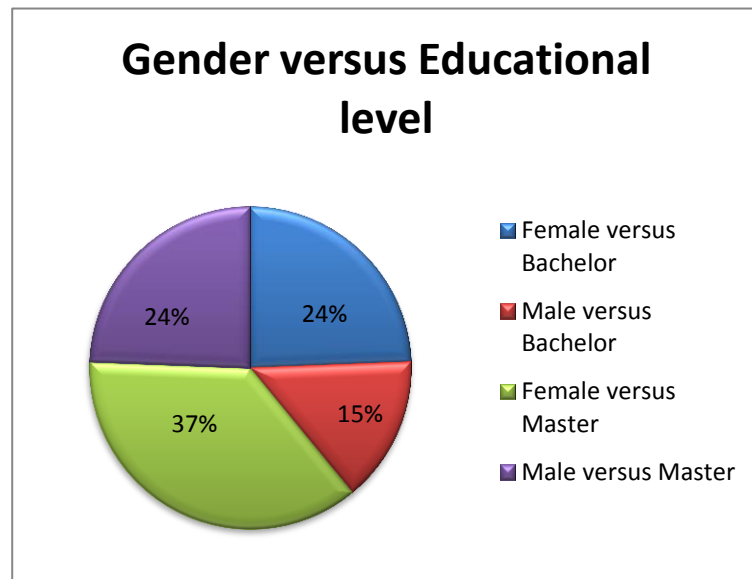
### 3. Results

Since the results are focused on the respondents of our survey, in this chapter Wageningen UR students are referred to as respondents. The used sampling method resulted in a total sample size of  $n=406$  respondents who have been reached for this research. Thus, the following sub research questions have been answered based on this sample size. The outcome of the factor analysis is similar to what was expected, meaning the internal validity is ensured. The P-P plots regarding the internal validity of this research can be found in appendix 3.

#### 3.1. Profiles of Wageningen UR students

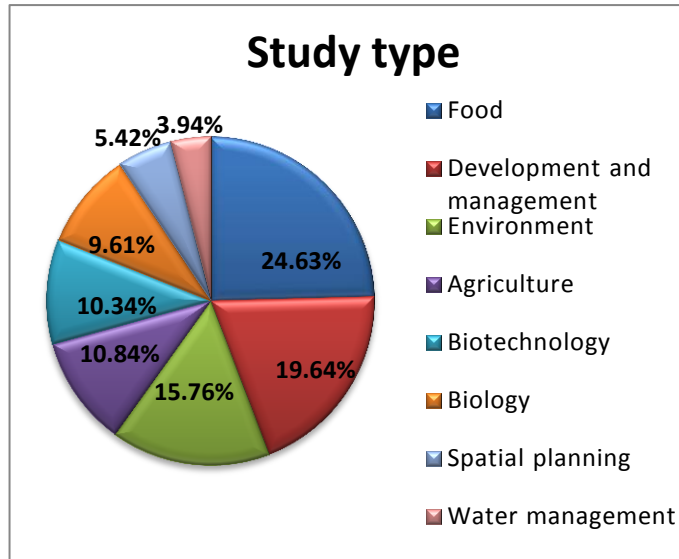
This chapter presents the results to sub-research question **“What are the profiles of the students of Wageningen UR?”**

During the survey we asked questions about gender, educational background, origin, age frequency and study background. With those questions, students in profiles can identify and eventually relate them to certain sustainable attitude.



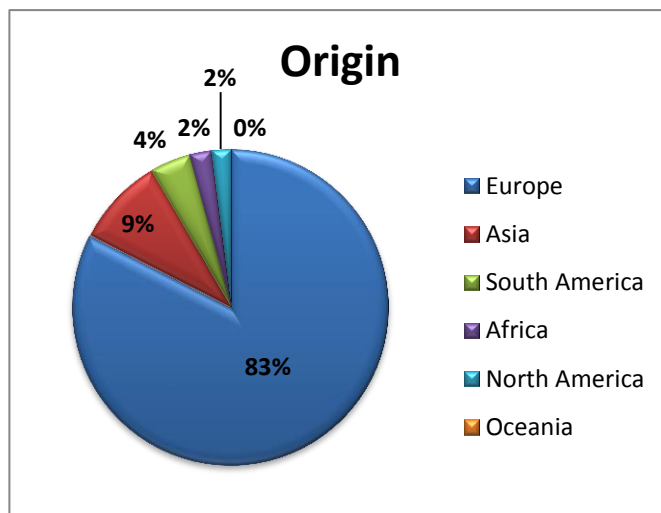
**Figure 3.1:** Gender versus educational level

An analysis of the gender versus educational level as can be seen in figure 3.1. the most respondents are female and master students. We have no information from the University how many female and male students are on the University of Wageningen. Even though it is interesting that both on bachelor and master educational level the female is the most present. Furthermore, the master educational level is more represented than the bachelor educational level. In general there are more students on the bachelor educational level than on the Master educational level.



**Figure 3.2:** Represented study types among respondents

While analysing the study type, the most respondents that filled in the survey are from Food studies and Development and Management studies, which can be seen in figure 3.2. An explanation could be that those studies are mostly represented in one of the buildings where we distributed the flyers. The same counts for Environment studies which are less represented than the two studies mentioned before. Water management studies have the lowest percentage of respondents.



**Figure 3.3:** Origin of respondents

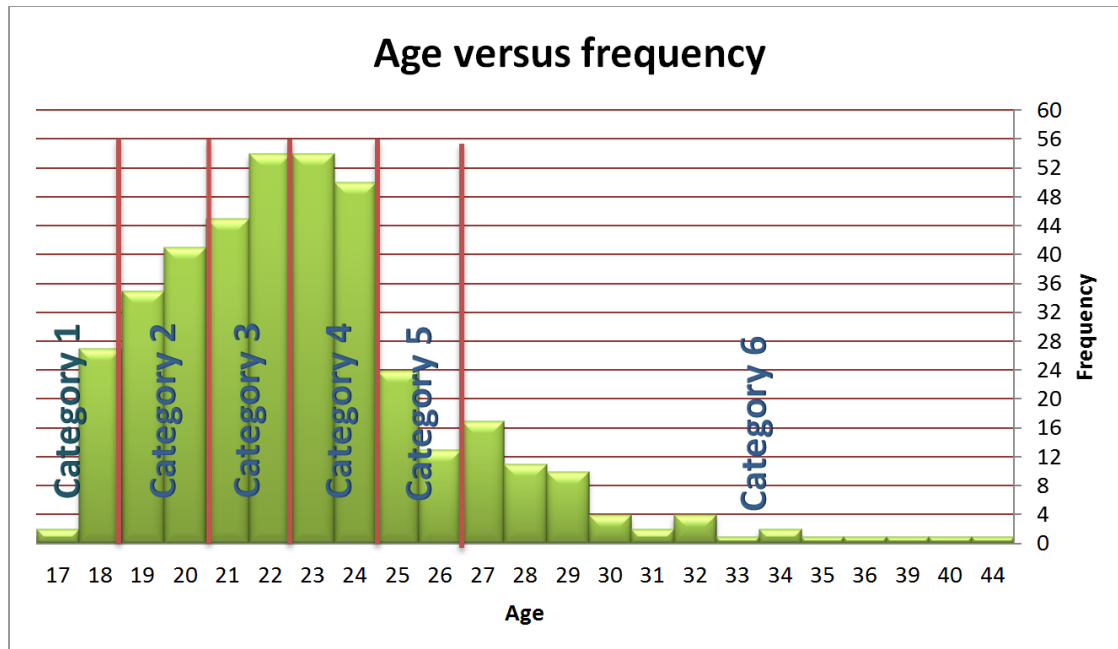
Figure 3.3 shows that Europe is the most represented among respondents. Compare these results with the facts and figures of the Wageningen UR it is not strange that so many Europeans participated in this survey because in general, this is also the biggest group of students at WUR in general (namely 88%).

The only difference with the facts and figures of Wageningen UR and our results is that South America and Africa are reversed. Generally, the percentage should also be bigger between those origins. Even though, it is a realistic picture of the general study population based on origin, The numbers of the WUR you can find below (table 3.1), the same as for the amount of respondents of the survey.

	Europe	Asia	South America	Africa	North America	Oceania
Amount of students WUR in general (sample size around 8.000 students)	6.948 <b>88%</b>	611 <b>8%</b>	84 <b>1%</b>	211 <b>3%</b>	27 <b>0,6%</b>	3 <b>0,4%</b>
Amount of Survey respondents WUR (sample size 406 respondents)	337 <b>83%</b>	37 <b>9%</b>	16 <b>4%</b>	8 <b>2%</b>	8 <b>2%</b>	0 <b>0%</b>

**Table 3.1:** Overview of the amount of students/ respondents.

Based on the age of respondents, three groups have been defined (figure 3.4). The categories are based on the frequency, but also exactly match with their attitude towards sustainability. In paragraph 3.3.3, this will be explained further. The first category has the lowest amount of respondents whose age is 17. The second category has an age between 18 and 20. The third and fourth category have the highest amount of respondents per age. The fifth category has an age of 25 and 26. In the last group category the frequency of age of the respondents is also very low. The age of this category is from 27 until 44.



**Figure 3.4:** Age categories according to frequency



### 3.2. Importance and relevance of sustainability aspects

This chapter presents the results to the sub-research question “**What aspects of sustainability do students of Wageningen UR find most important and relevant?**”. In order to describe the importance and relevance, a differentiation between quantitative and qualitative analyses has been made. In the quantitative part, all numeral data from the closed survey questions is analysed. The qualitative part is based on the given answers of the open-ended questions of the survey.

#### 3.2.1. Importance

##### Quantitative

When identifying the *important* elements of sustainability (figure 3.5), the two highest scoring issues both concern waste management: recycling and reduction of waste. Besides waste management, the reduction of energy usage and production of green energy are also seen as important issues.

To see a better contrast between the scores of the issues shown in figure 3.5, the Y-axis starts at a value of 3.5. The lowest scoring issue (consumption of seasonal products) scores 3.51, meaning that all issues are included in the figure.

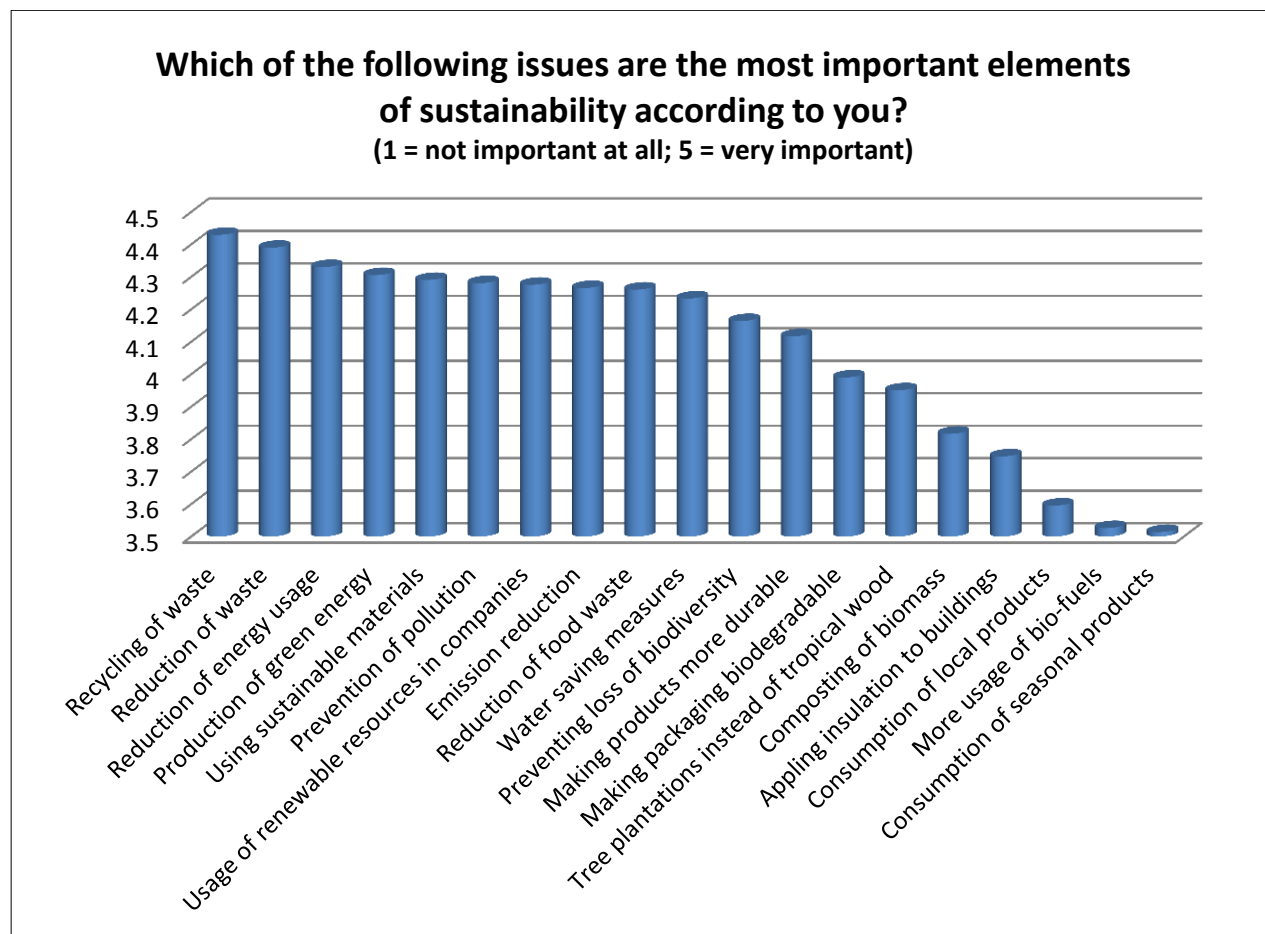
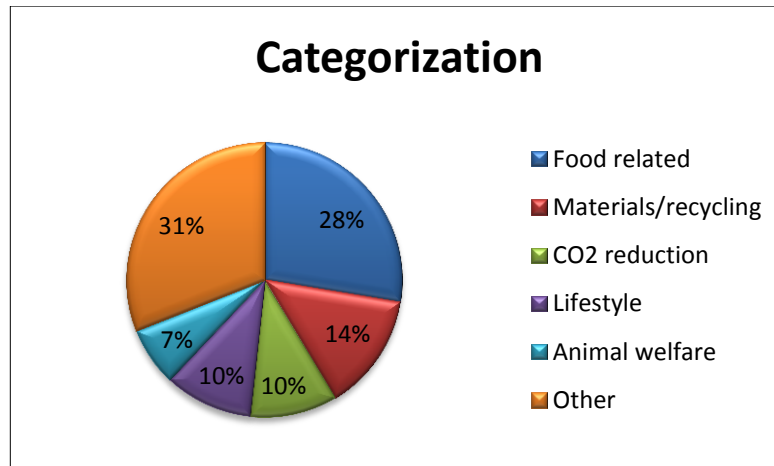


Figure 3.5: Important sustainability issues according to Wageningen UR students

For this question, 12 out of 19 issues scored above 4. Lowest scoring issues (below 3.7 out of 5) are the consumption of local or seasonal products and the usage of bio-fuels.

### Qualitative

The answers (29 in total) which are given to an open question: “*What other sustainability topic do you think is important?*” are categorized as well. The categories and its percentages of the total can be found below in figure 3.6.



**Figure 3.6:** Categorization of given answers on open-ended question: “What other sustainability topics do you think are important?”

Food related answers represent the majority of given answers (28%). Compared to the quantitative analysis, this is remarkable, since the categories regarding food score lowest. However, as will be discussed later in more detail, the open questions were mainly directed at eating less meat. The second category is materials/recycling, with 14%. Examples of given answers are *renewable energies* and *reduction of plastic usage*. On the third shared place are CO<sub>2</sub> reduction and lifestyle, both with 10%. Animal welfare takes the fifth place with 7%. The categories ‘politics’ and ‘knowledge’ had no answers. Other answers (31%) were not suitable to categorize in the existing categories and no new categories can be made based upon these answers. They include issues such as:

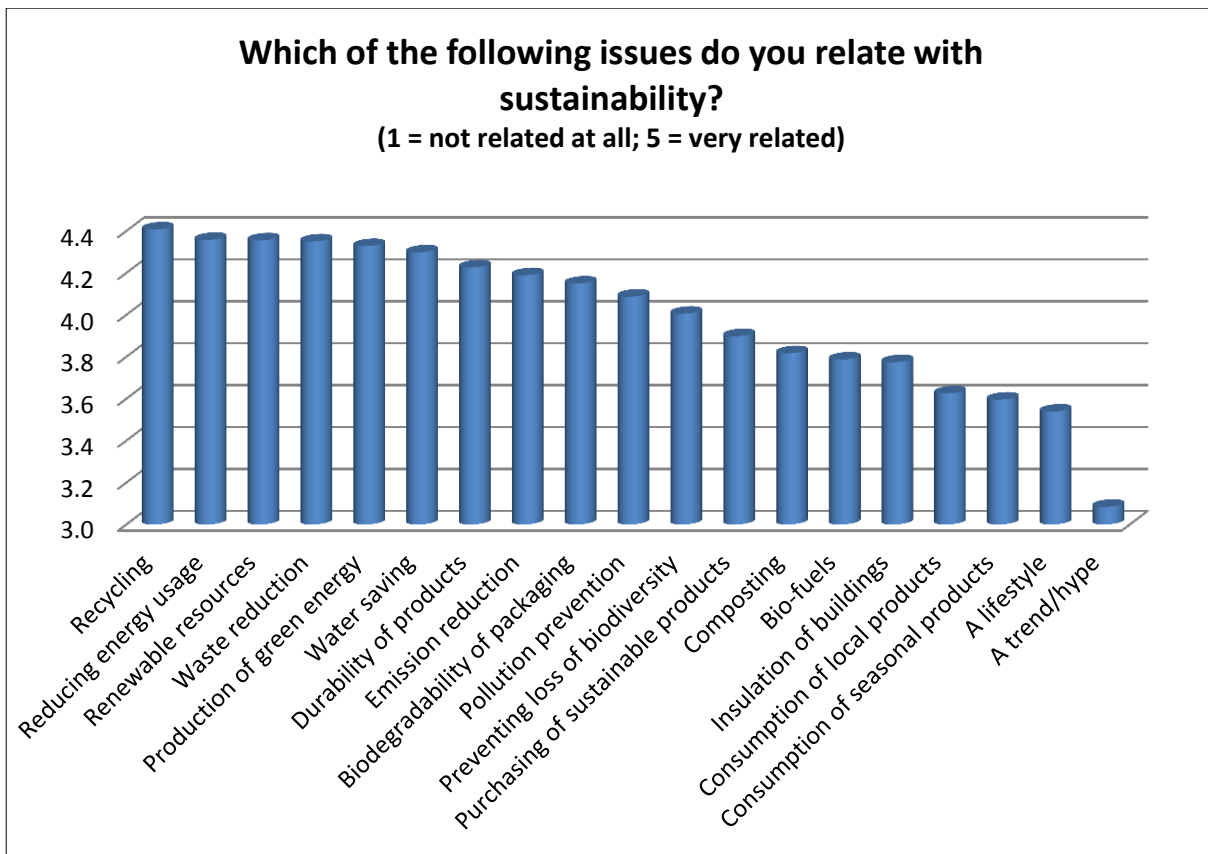
- Local and national initiatives on sustainability should be supported;
- Fair trade;
- Saving on expenses;
- Nature;
- People, planet, profit;
- Socio-ecological initiatives;
- Population growth;
- Liveability;
- PES (payments for ecosystem services);
- Eco shopping;
- Manure treatment;
- Etc.

The exact answers on all categories can be found in appendix 4.

### 3.2.2. Relevance

#### Quantitative

When focusing on the most *relevant* sustainability issues according to Wageningen UR students, the highest scoring issues from the quantitative part are almost all focused on not wasting materials and/or products (i.e. recycling, reducing energy usage, renewable resources, waste reduction). This can be seen in figure 3.7.

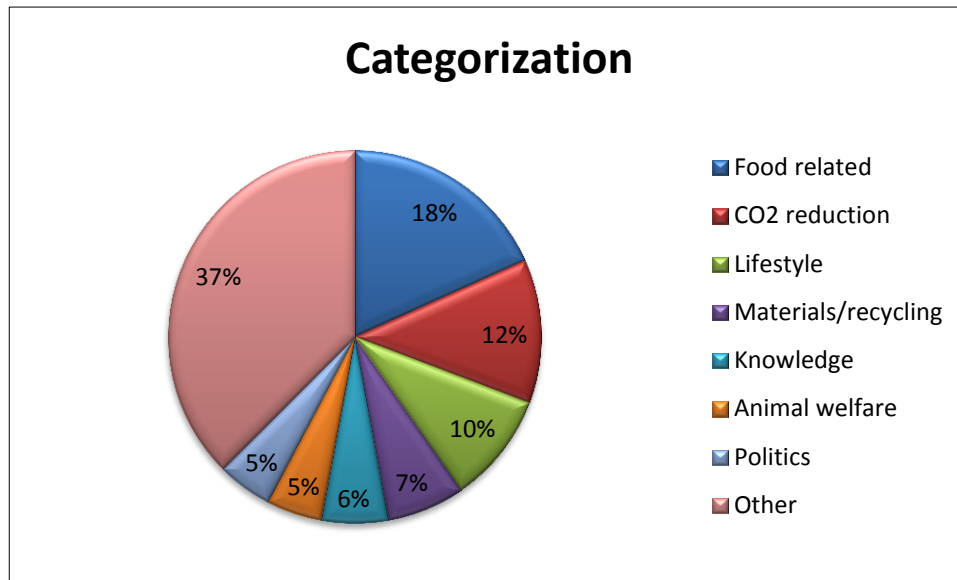


**Figure 3.7:** Relevant sustainability issues according to Wageningen UR students

Another remarkable aspect was that 11 out of 19 issues scored above 4. Apparently, Wageningen UR students do not think that sustainability is a trend or hype, since this issue scored only 3.08 out of 5 and is thereby the lowest scoring issue.

#### Qualitative

To get a better insight of what the students think is relevant in terms of sustainability, an open-ended question is asked: “*What topics do you relate with sustainability*”. In order to create an overview of the given answers for this question, all 104 answers have been categorized. Figure 3.8 shows the different categories.



**Figure 3.8:** Categorization of given answers on open-ended question:  
“What other topics do you relate with sustainability?”

Nearly one fifth of all the answers (18%) are food related. Most of these answers are focused on the reduction of meat production and consumption. Meat should be replaced by organic, sustainable products or insects. Another 12% of the answers are concerned with CO<sub>2</sub> reduction. Alternatives for traveling by car, such as public transport and biking, are often given answers. Also lowering the speed limit for cars or using electric cars is mentioned by respondents.

Ten per cent of the given answers are lifestyle related. These answers are mainly focused on social aspects of sustainability, cultural habits and other lifestyle related aspects such as the separation of garbage.

Answers related to the usage of materials and recycling contain 7% of all answers. Most frequently mentioned answer in this category is ‘*cradle to cradle*’. Also the type of materials used for products (e.g. paper coffee cups) is addressed. The three smallest categories are knowledge (better education/awareness), animal welfare and politics (6%, 5% and 5% respectively).

A group of 9 out of 29 given answers cannot be categorized in the existing categories and are too diverse to create a category on its own. Besides, the given answers in the ‘other’ category seem to be less important for our research. The category ‘other’ contain the following answers:

- Water purification;
- Less production, less consumption of luxury products, equal distribution of wealth;
- Nuclear energy;
- Reduction of people;
- Don’t produce if not able to reproduce;
- Capital investments;
- Eutrophication;
- Demand side of the economy, try to limit consumption;
- Payments for Ecosystem Services, tradable emission permits.

A complete overview of all given answers can be found in appendix 4.

### 3.3. Attitudes of student profiles towards sustainability

This chapter presents the results to sub-research question **“What is the relationship between students of Wageningen UR and their attitudes towards sustainability?”**. In order to answer this question, first a factor analysis has been done to narrow the data in components. Afterwards, the mean of these components are calculated with a 95% confident interval per question. The components are calculated versus origin and study type. The most important components are further analysed by an independent T-test and ANOVA. Paragraph 3.3.1 describes what respondents relate to sustainability. Paragraph 3.3.2 describes what sustainability topics have the highest priority among respondents. In paragraph 3.3.3 the components which are extracted from the statements can be found.

#### 3.3.1. What students relate to sustainability

Table 3.2 shows the correlation between the topics of the survey question **“Which of the following topics do you relate with sustainability?”**

This survey question consists of three components (see columns, table 3.1) with Eigenvalues above 1 (>1). These three components are therefore relevant. Furthermore, they explain the cumulated 58% of the variance (shown in appendix 5).

The topics which are present in the first component are very diverse and concern waste, energy, and pollution related topics. This finding matches the theory which says that sustainability is a “container” concept. Therefore this component is called ‘general sustainability topics’.

Component two consists of topics which are related to lifestyle. This determines that students relate sustainability with choices you can make yourself, such as: buying sustainable (fair-trade, seasonal or local) products, applying insulation, composting and so on. For that reason, this component is called ‘household sustainability topics’.

The third component involves only one sustainability topic, which is: a trend/ hype. Although this component only consists of one topic, the Eigenvalue is still above 1 (see appendix 5). For that reason it is taken up as component on itself, which is called ‘hype’. The term hype cannot be compared with the other components within this chapter and will therefore be analysed separately.

Rotated Component Matrix <sup>a</sup>			
	Component		
	1	2	3
A trend/ hype			,924
Waste reduction	,745		
Durability of products	,639		
Biodegradability of packaging	,674		
Production of green energy	,818		
Composting	,554	,429	
Water saving	,669		
Reduction of energy usage	,759		
Bio-fuels	,549		
Consumption of seasonal products		,833	
Insulation of buildings	,447	,457	
Recycling	,824		
Purchasing of sustainable products (e. g. buying fair-trade clothes, biological food, products made of recycled materials)	,426	,457	
Pollution prevention	,628	,411	
A lifestyle		,546	
Preventing further loss of biodiversity and natural habitat	,562	,445	
Renewable resources	,766		
Emission reduction	,776		
Consumption of local products		,854	
Extraction Method: Principal Component Analysis.			
Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 4 iterations.			

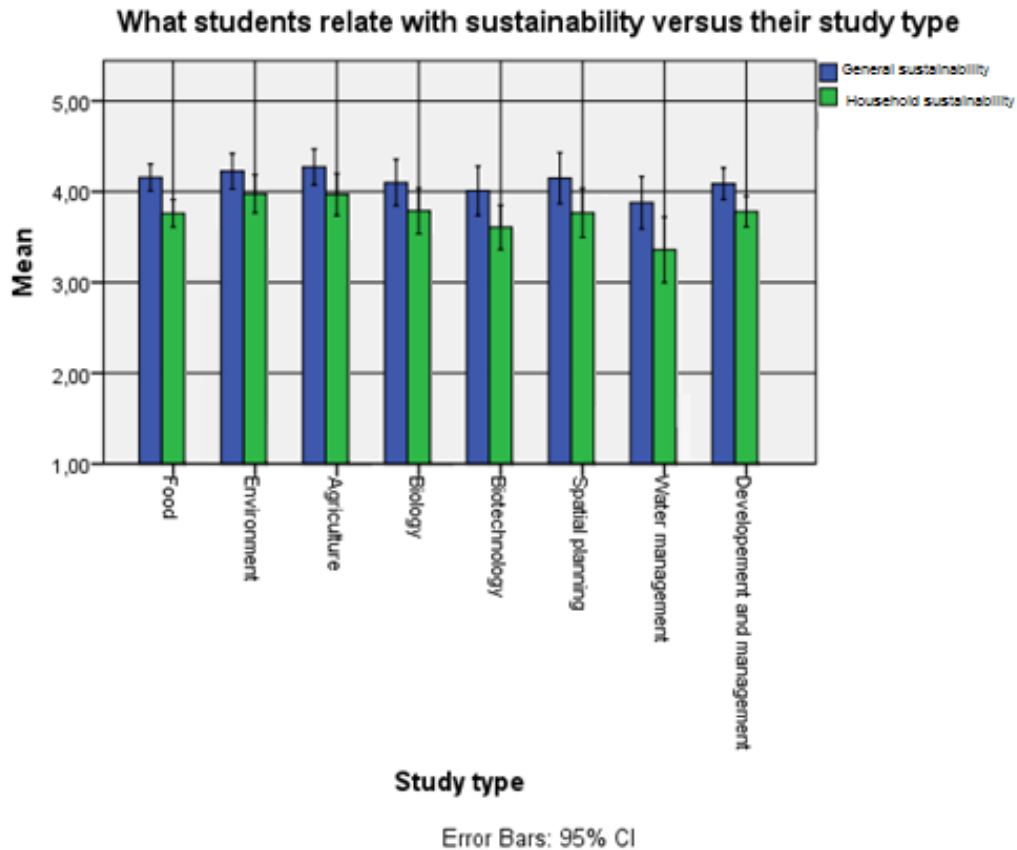
**Table 3.2:** Factor analysis of the topics from survey question: “what topics do you relate with sustainability?”, in which can be seen what topics have correlation.

1<sup>st</sup> component title: General sustainability

2<sup>nd</sup> component title: Household sustainability

3<sup>rd</sup> component title: Sustainability is hype

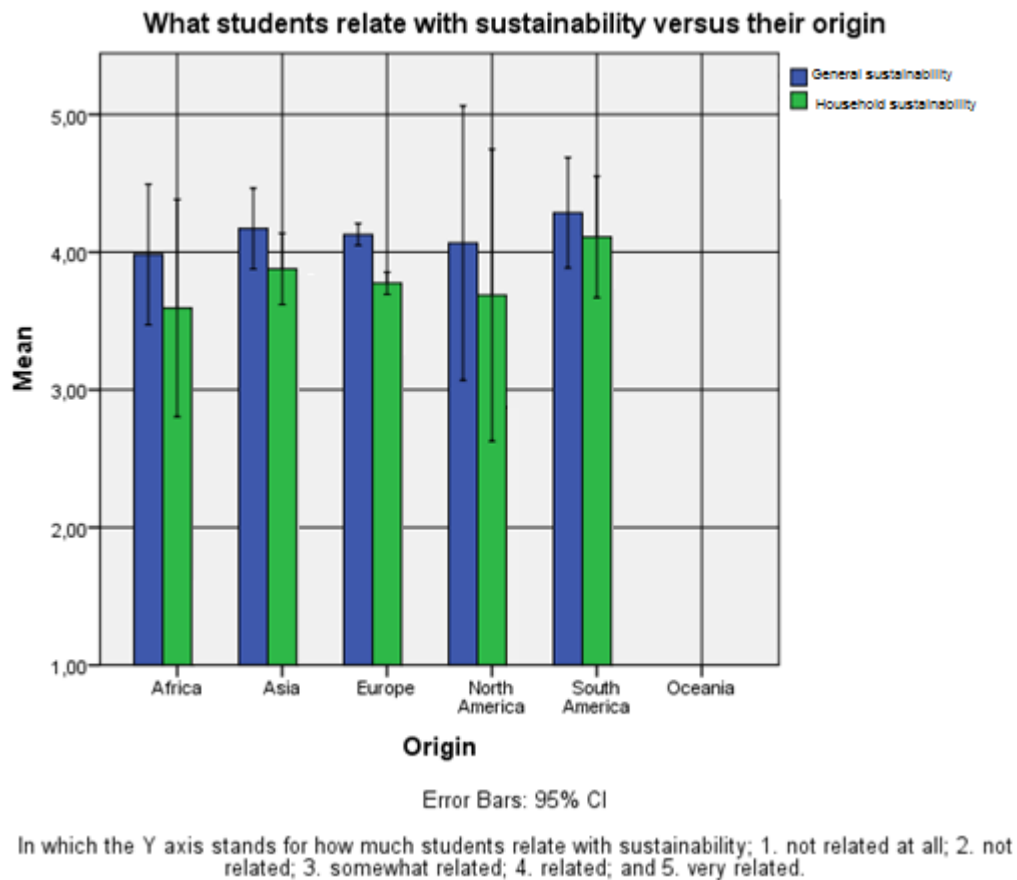
In figure 3.9 can be seen that respondents from all different study types relate to all the topics which are listed in component 'General sustainability topics' most with sustainability. Respondents of all different study types seem to correspond with the component 'Household sustainability topics' but significantly less.



In which the Y axis stands for how much students relate with sustainability; 1. not related at all; 2. not related; 3. somewhat related; 4. related; and 5. very related.

**Figure 3.9:** What students relate to sustainability compared to their study type

In figure 3.10 can be seen that students of different origin cohere with the components to the same degree. The most related topic to sustainability is component 'General sustainability', then 'Household sustainability'. The bars show that students' opinions, especially from Africa, North and South America, vary in broad range, or that the amount of respondents is not representative.



**Figure 3.10:** What students relate to sustainability compared to origin

The components 'General sustainability' and 'Household sustainability' both seem to be related by students to sustainability. For that reason, an Analysis of Variance (ANOVA) is conducted. In this ANOVA analysis can be seen that the other aspects of respondents, such as age, education level and gender, have a relation with the topic. In table 3.3 can be seen that females relate 'General sustainability' more to sustainability than males do. A visual overview is shown in figure 3.11. In the 'Household sustainability' component, there are no significant differences.



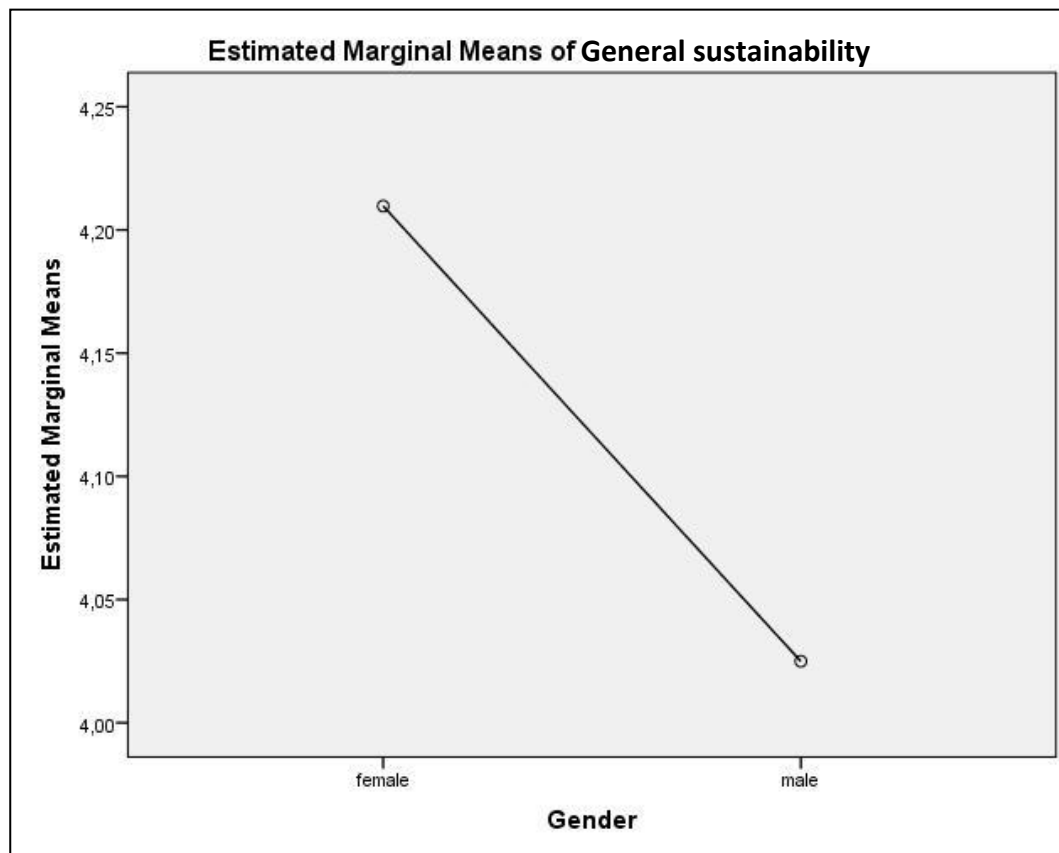
### Tests of Between-Subjects Effects

Dependent Variable: General sustainability

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3,314 <sup>a</sup>	1	3,314	5,966	,015
Intercept	6582,431	1	6582,431	11849,069	,000
QPG1	3,314	1	3,314	5,966	,015
Error	222,765	401	,556		
Total	7116,622	403			
Corrected Total	226,079	402			

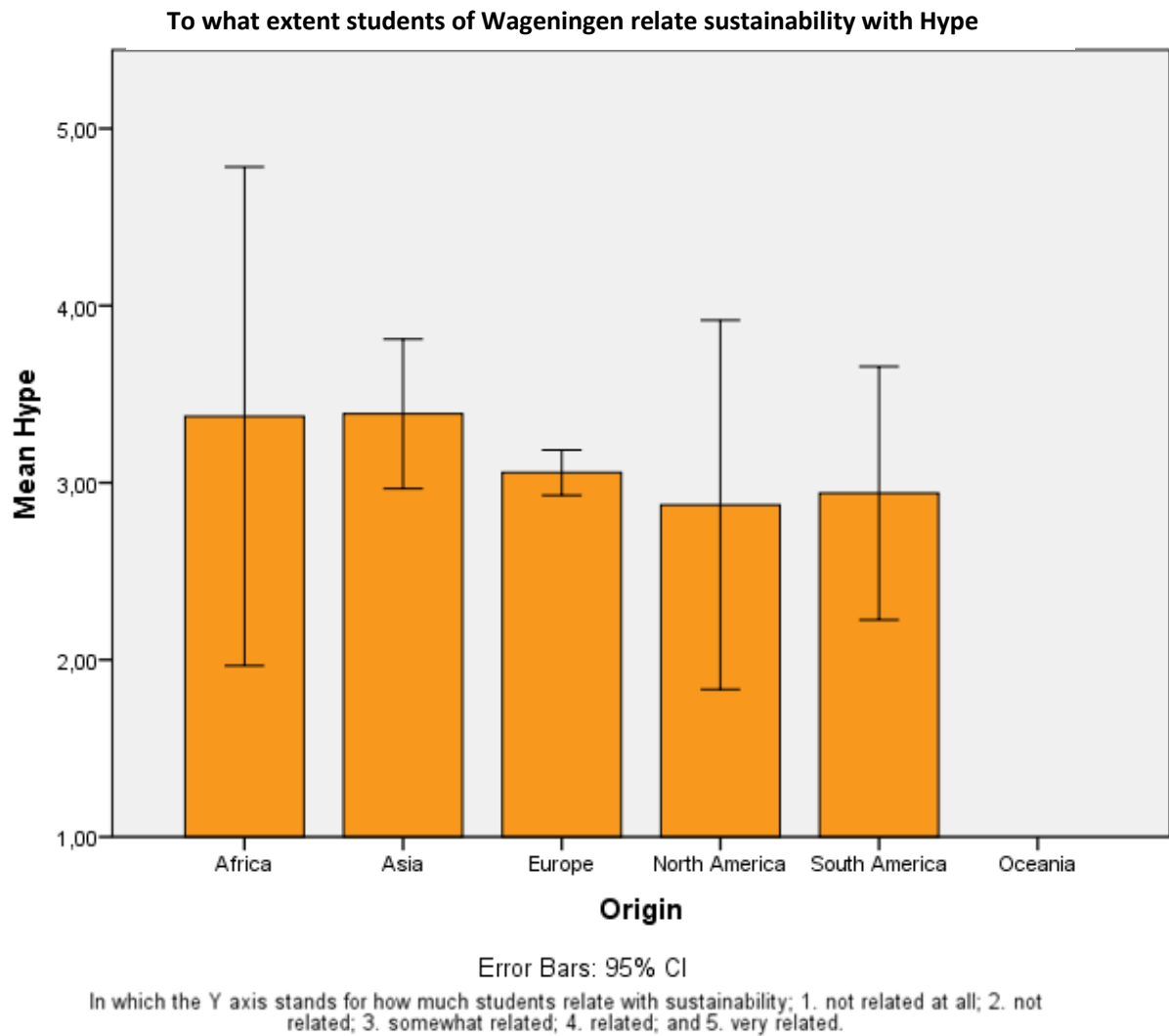
a. R Squared = ,015 (Adjusted R Squared = ,012)

**Table 3.3:** ANOVA table for General sustainability



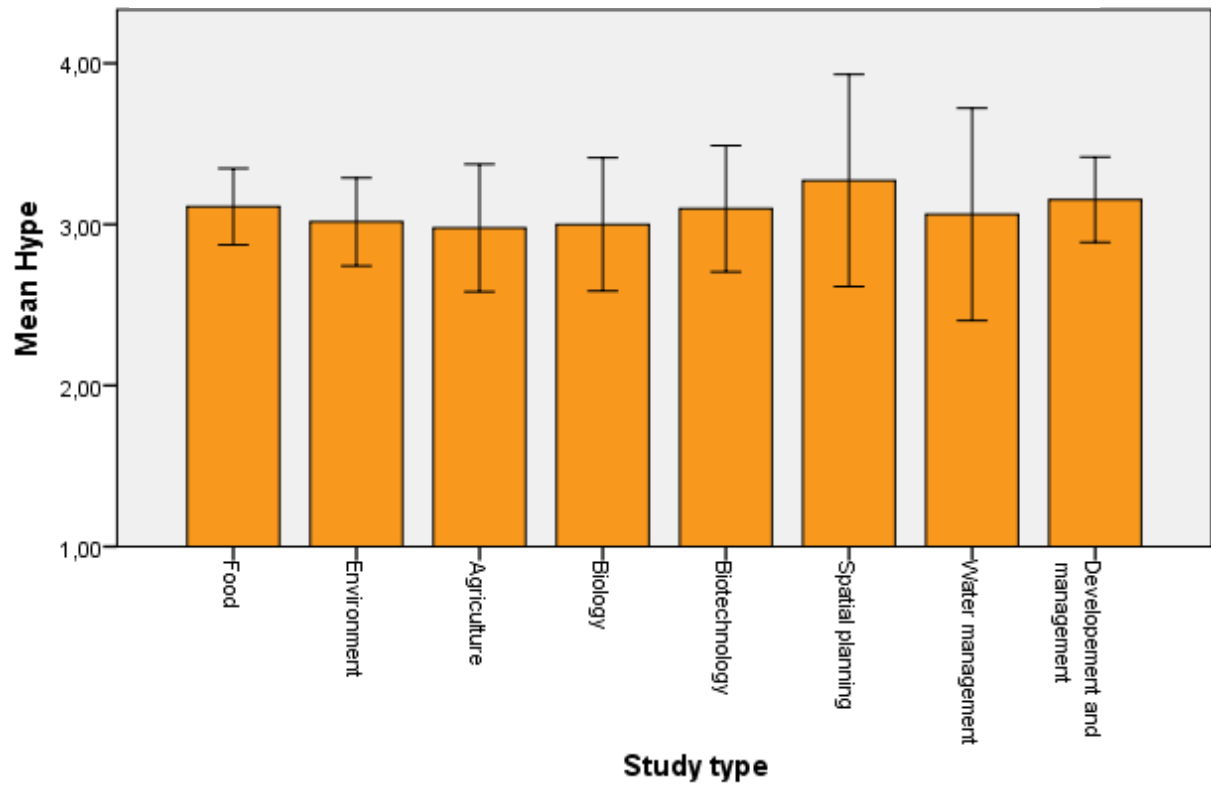
**Figure 3.11:** Relation between General sustainability and sustainability according to gender

In table 3.4 and table 3.5 can be seen that students independent of study type or origin think that sustainability is somewhat related to a hype. Which means that they do consider sustainability somewhat as a hype. There are no significant differences found in between study types or origin with the independent T-test. The analysis of variance does not give significant differences regarding age, gender and/ or education level.



**Table 3.4:** Relationship different origins and hype

**To what extent students of Wageningen from different study types relate sustainability with Hype**



Error Bars: 95% CI

In which the Y axis stands for how much students relate with sustainability; 1. not related at all; 2. not related; 3. somewhat related; 4. related; and 5. very related.

**Table 3.5:** Relationship different studies and hype

### 3.3.2. Priority of sustainability measures

Table 3.6 shows the correlation between the topics of survey question **“How important do you think the following sustainability measures are?”**.

This survey question consists of four components with an Eigenvalue above 1 ( $>1$ ), which explains 58% of the information (shown in appendix 5).

The topics listed under the first component are issues concerning waste reduction, sustainable packaging and renewable resources. All these topics have to do with the usage of materials and how to treat waste. For this reason this component is called ‘waste measures’.

The second component mostly consists of topics related to energy production and the reduction of energy usage. Other topics which are listed under this component are about recycling, durability of products and even loss of rainforest. Indirectly these topics correspond with the production of energy or the prevention of energy loss. Component 2 will be grouped and called ‘energy measures’.

The third component is linked to component ‘household sustainability’ of the other survey question in chapter 3.3.1. The topics have something in common regarding sustainability items which can be implemented on household scale. In combination with the survey question, these topics reflect how people think and act individually in a sustainable approach. This component determines how important students think household sustainability is. Component 3 will be grouped as ‘household measures’.

The fourth component coheres with the bio-based component. It can be seen here that bio-based measures could consist of topics like biodegradable packaging, compost of biomass and bio-fuels. This component determines if students think that bio-based measures are important. So, component 4 will be called ‘bio-based measures’.

Rotated Component Matrix <sup>a</sup>				
	Component			
	1	2	3	4
Reduction of waste	,656			
Making products more durable		,680		
Making packaging biodegradable	,424			,464
Production of green energy	,490	,435		
Composting of biomass	,486		,405	,414
Water saving measures	,723			
Reduction of energy usage	,719			
More usage of bio-fuels				,875
Consumption of seasonal products			,881	
Applying insulation to buildings		,484	,432	
Recycling of waste	,658	,462		
Using sustainable materials (food/ packaging)	,528	,482		
Prevention of pollution	,673			
Using tree plantations instead of tropical wood		,674		
Usage of renewable resources in companies	,486	,591		
Emission reduction	,637			
Consumption of local products			,835	
Reduction of food waste	,548		,430	
Preventing further loss of biodiversity and natural habitat		,465		
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 7 iterations.				

**Table 3.6:** Factor analysis of the topics from survey question: “Which of the following issues are the most important elements of sustainability according to you?”, in which can be seen what topics have correlation.

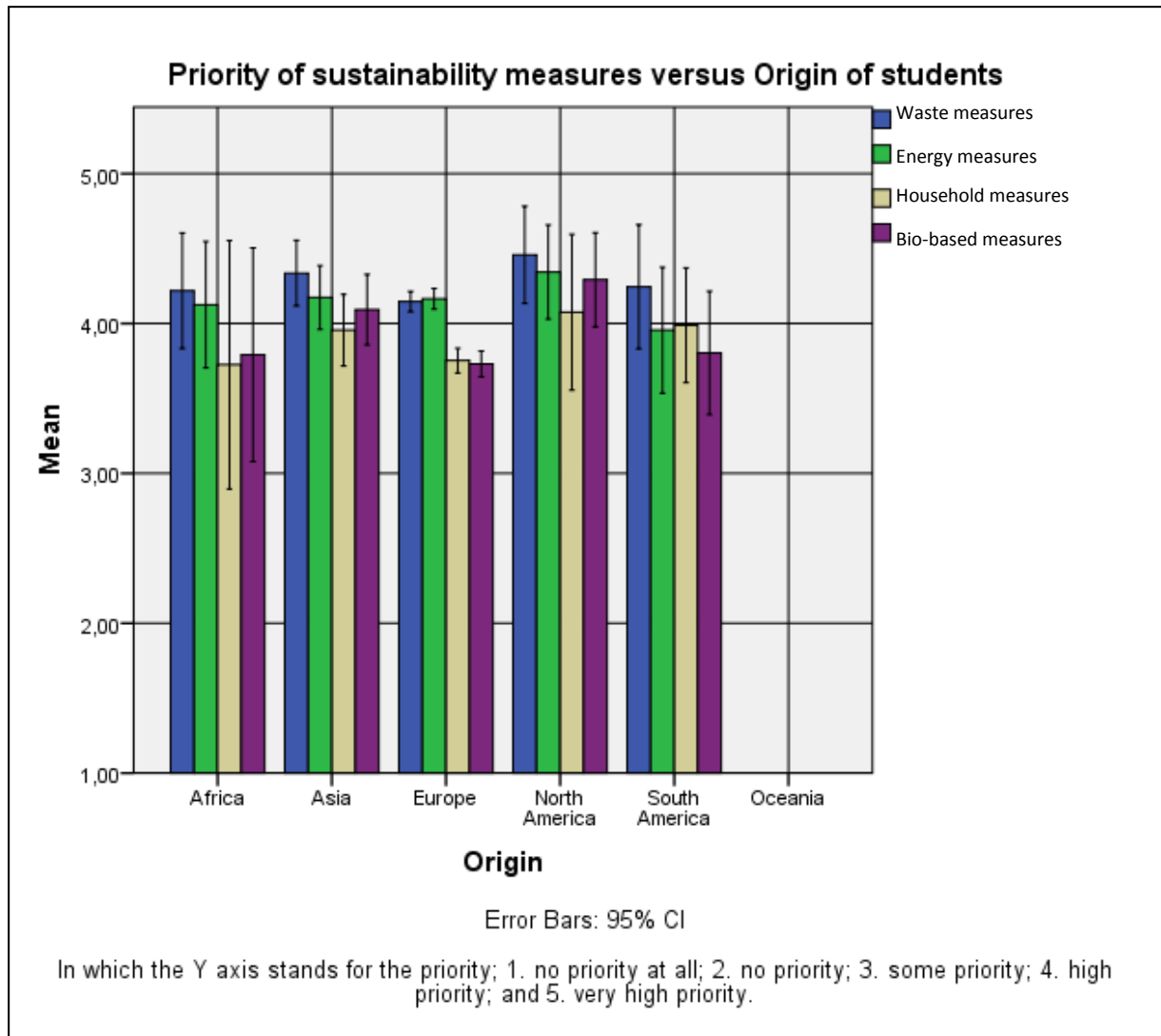
1<sup>st</sup> component title: Waste measures

2<sup>nd</sup> component title: Energy measures

3<sup>rd</sup> component title: Household measures

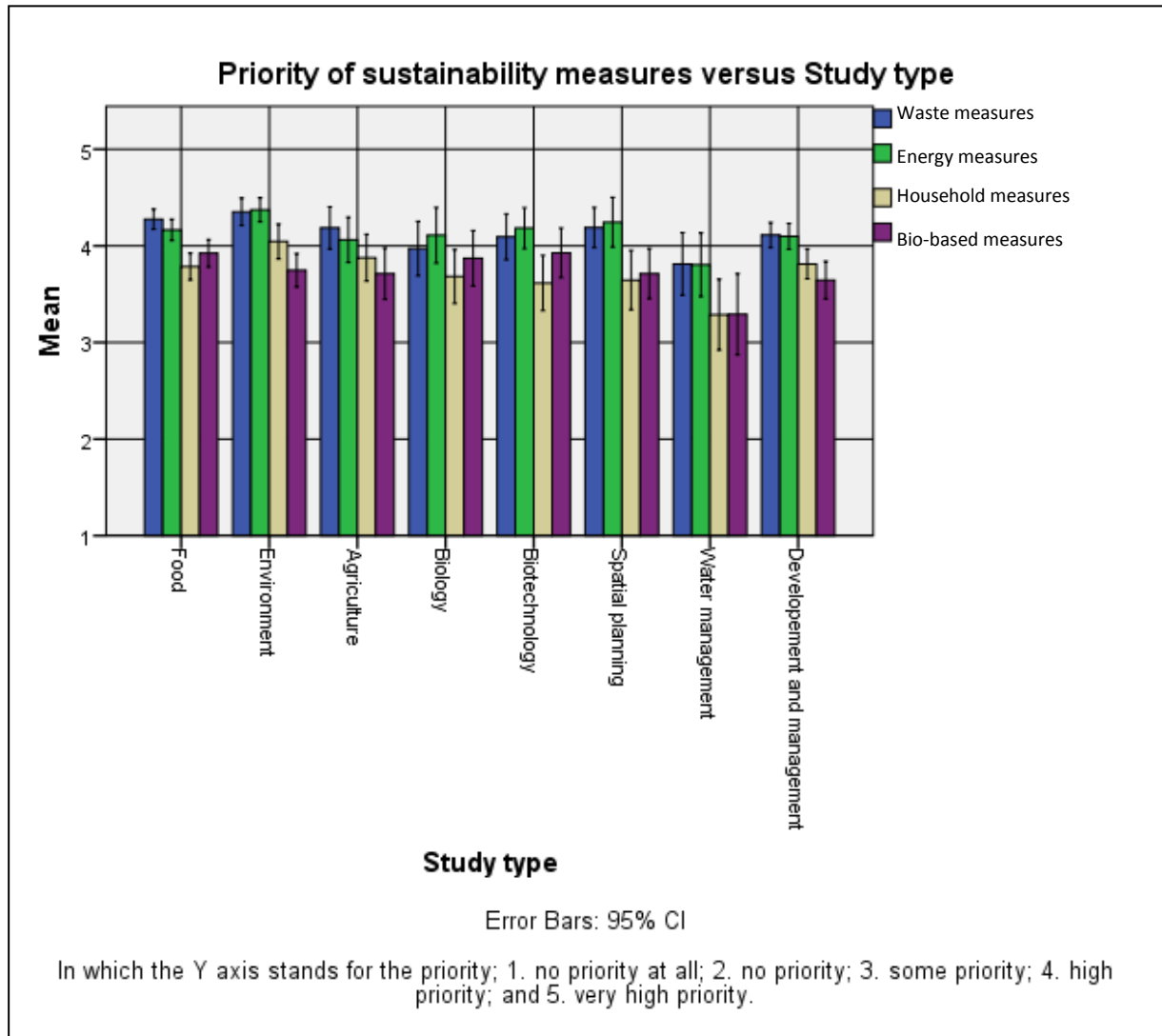
4<sup>th</sup> component title: Bio-based measures

Figure 3.12 shows what topic respondents with a different origin give the highest priority. The Y-axis shows the mean of all the respondents within the same area. Respondents from all continents beside Europe give the highest priority to waste measures. In Europe energy production and prevention measures are most important, which is second most important in the other continents.



**Figure 3.12:** Priority of sustainability measures compared to origin

Figure 3.13 shows what topics respondents from different study types give the highest priority. The Y-axis shows the mean of all the respondents within the same area. The results of this bar chart are comparable with origin; waste and energy measures seem to have the highest priority. In this case, respondents from food and agricultural studies give waste the highest priority, while respondents which study biology, biotechnology and spatial planning give energy measures the highest priority. There is no big difference between the other study types.



**Figure 3.13:** Priority of sustainability compared to study type

Since waste and energy measures are mentioned as most important sustainability topics, an ANOVA is performed focused on these topics.

Table 3.7 shows how many respondents per aspect of the respondents are present.

Between-Subjects Factors			
		Value Label	N
Education level	,00	Master	240
	1,00	Bachelor	163
Gender	,00	female	240
	1,00	male	163

**Table 3.7:** Between-Subjects Factors, which shows the number of bachelor, master, male and female respondents

Table 3.8 shows the sum of squares of all the answers given. The last column gives the significance, when this number is below 0.05 it determines with a 95% confidence that this aspect does make a difference within choice. QPE1 stands for the education level, QPG1 represents the gender and QPE1\*QPG1 determines both aspects together.

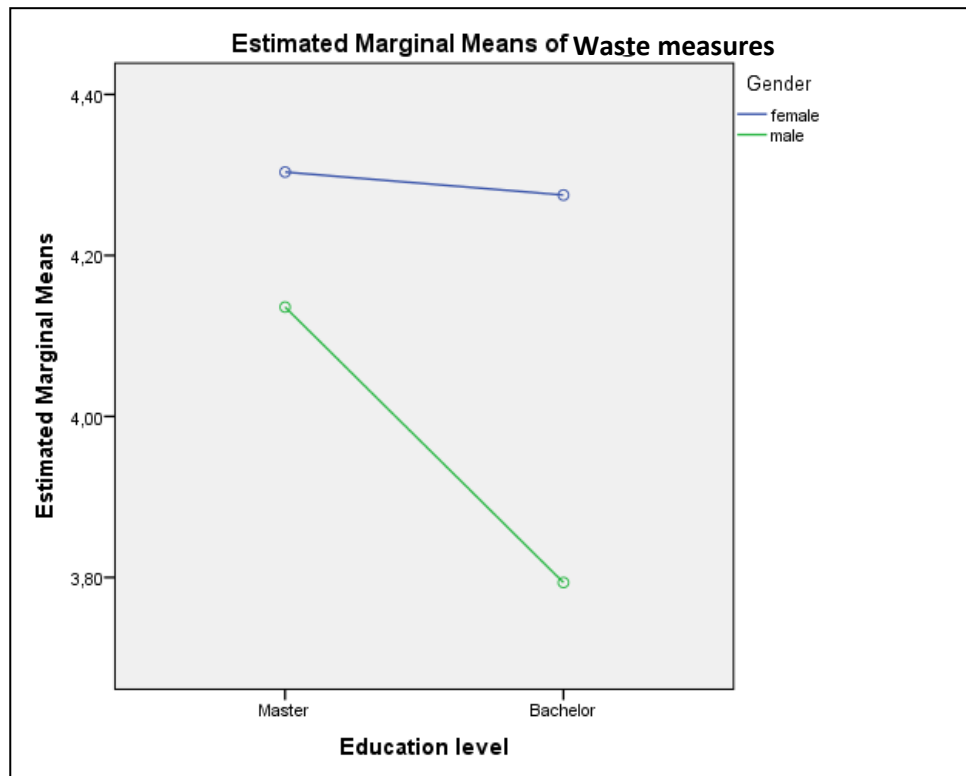
Tests of Between-Subjects Effects					
Dependent Variable: Waste measures					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	12,630 <sup>a</sup>	3	4,210	11,194	,000
Intercept	6335,240	1	6335,240	16845,370	,000
QPE1	3,196	1	3,196	8,497	,004
QPG1	9,794	1	9,794	26,043	,000
QPE1 * QPG1	2,286	1	2,286	6,080	,014
Error	150,057	399	,376		
Total	7187,715	403			
Corrected Total	162,686	402			

a. R Squared = ,078 (Adjusted R Squared = ,071)

**Table 3.8:** Tests of Between-Subjects Factors, which shows the significant difference between age and gender about the Waste measures



Figure 3.14 shows the mean of answered results per aspect. It can be seen that female students which study bachelor or master do not have a different opinion towards the priority of waste measures. Male master students seem to think that the priority of waste measures is higher than male bachelor students.



**Figure 3.14:** Estimated Marginal Means of Waste measures

Table 3.9 and figure 3.15 show that female master and bachelor studies both give high priority to energy measures. Male students think the priority is less, especially the bachelor male students.

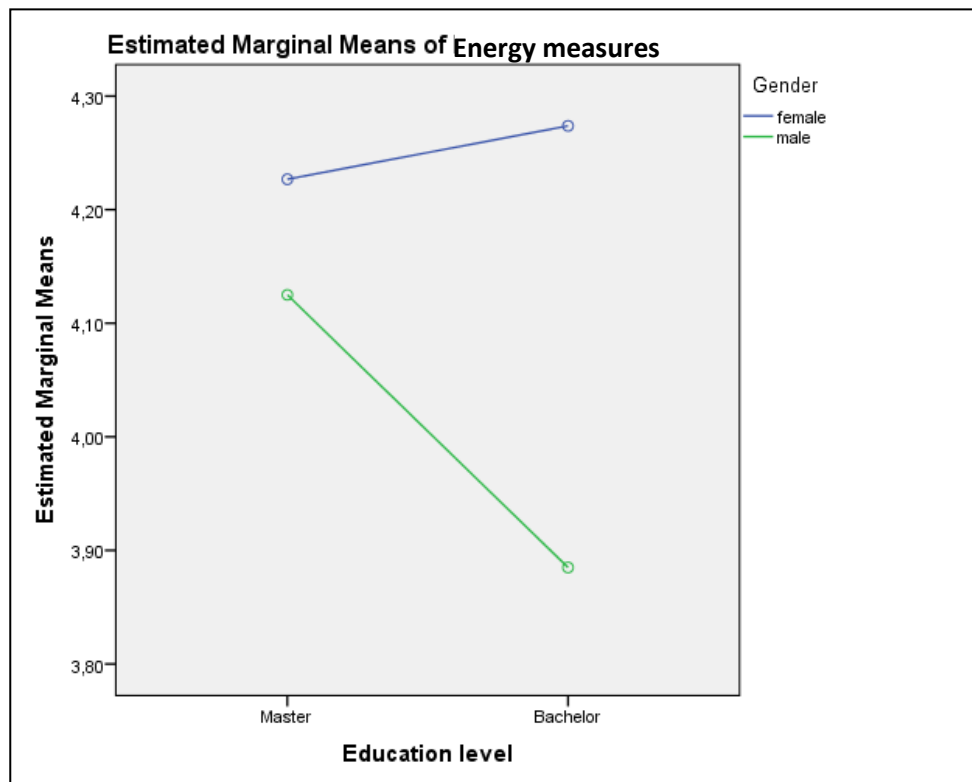
#### Tests of Between-Subjects Effects

Dependent Variable: Production and prevention of Energy measures

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6,808 <sup>a</sup>	3	2,269	5,741	,001
Intercept	6337,083	1	6337,083	16033,005	,000
QPG1	5,596	1	5,596	14,157	,000
QPE1	,867	1	,867	2,193	,139
QPG1 * QPE1	1,915	1	1,915	4,846	,028
Error	157,706	399	,395		
Total	7137,797	403			
Corrected Total	164,514	402			

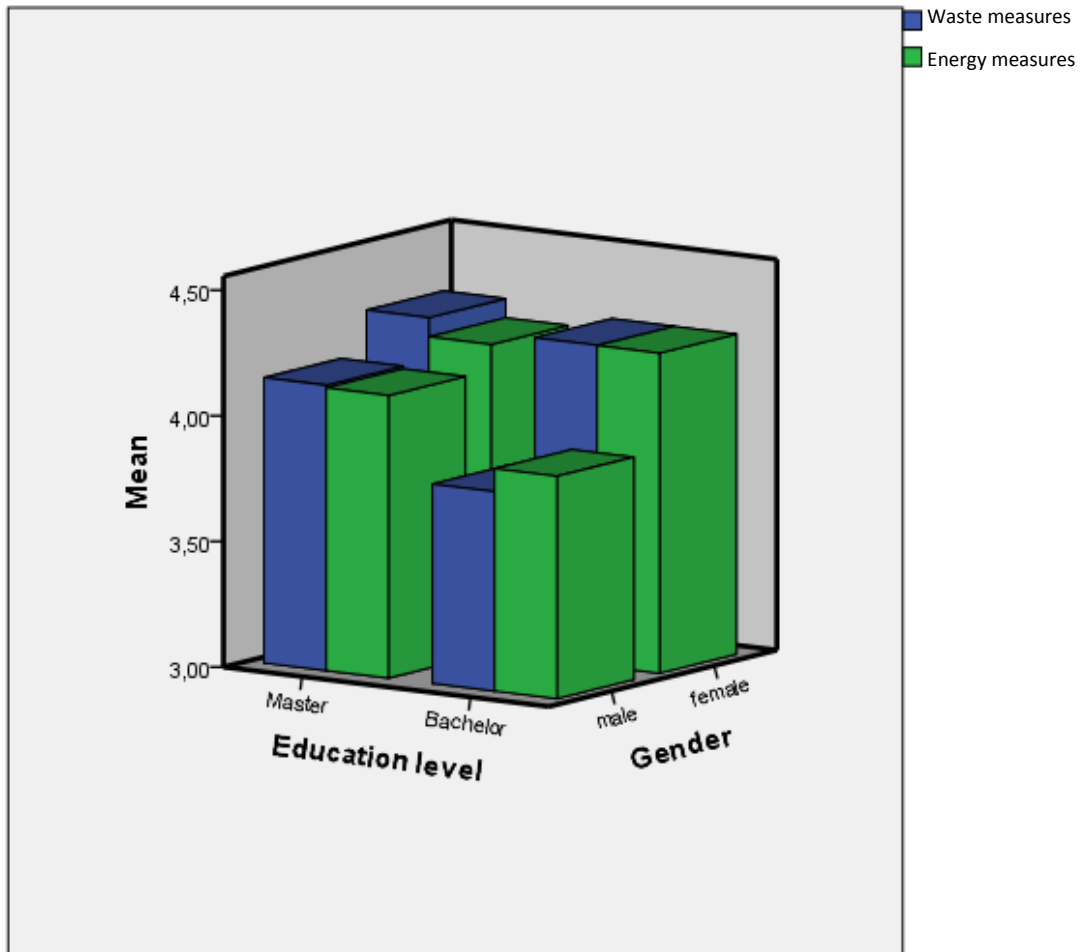
a. R Squared = ,041 (Adjusted R Squared = ,034)

**Table 3.9:** Tests of Between-Subjects Effects



**Figure 3.15:** Estimated Marginal Means of Energy measures

Figure 3.16 gives an overview of the significantly different statements about the priority of waste measures and the energy measures.



**Figure 3.16:** “Waste measures” and “Energy measures” priority compared to education level and gender

### 3.3.3. Statements

This section shows the opinion of students of Wageningen UR concerning sustainability.

This survey question comprises of three components with Eigenvalues above 1(>1) and respectively 62% of the gained information is explained (see appendix 5).

The topics which are listed in the first component show items which are regarded most relevant in relation to sustainability. So, there could be an interest to choose studies or even companies to work for in the future. For this reason, the first component will be called 'sustainability as first priority'. Component 2 has to do with willingness to pay for sustainable measures, willingness to pay more tax and choosing a company based on their sustainability, therefore this component is called 'willingness to pay for sustainability'. Component 3 combines two statements, first is "Wageningen UR is a sustainable university" and second, "Wageningen UR offers sustainable oriented education". Therefore this component is called 'sustainability of Wageningen UR'.

Rotated Component Matrix <sup>a</sup>			
	Component		
	1	2	3
I think that more environmental friendly products (e.g. recyclable, biodegradable) should be available on the market.	,638		
I think that Wageningen UR is a sustainable university			,846
I choose companies that are sustainable		,790	
Sustainability was an important criteria when choosing my studies		,825	
I do not mind to pay more if I know that a product is sustainable	,406	,706	
I think that Wageningen UR offers sustainability-oriented education			,751
I think green energy is the future	,609		
I think that sustainability should have high priority for governments	,842		
I am willing to pay more taxes when this money will be used for sustainability	,548	,498	
Sustainability should be an important part of national policies	,828		
I am willing to invest in green energy (such as solar panels) when I can afford it	,751		
Extraction Method: Principal Component Analysis.			
Rotation Method: Varimax with Kaiser Normalization.			
a. Rotation converged in 6 iterations.			

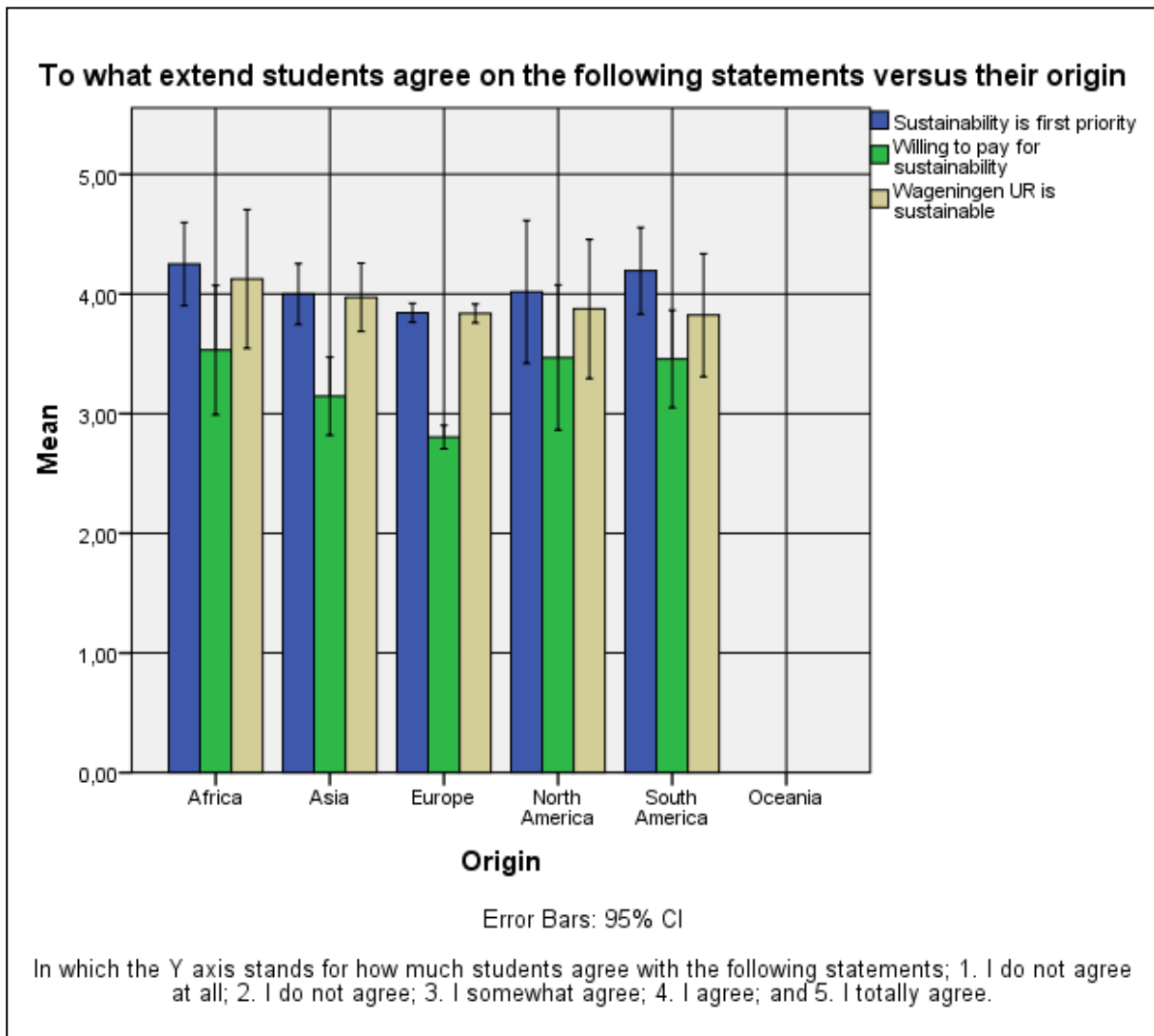
**Table 3.10:** Factor analysis of the topics from survey question: “To which extent do you agree with the following statements”, in which can be seen what topics have correlation.?

1<sup>st</sup> component title: Sustainability as first priority

2<sup>nd</sup> component title: Willingness to pay for sustainability

3<sup>rd</sup> component title: Sustainability of Wageningen UR

Figure 3.17 shows how much students “agree” on three different statements, depending on their origin. Students, independent of origin, think sustainability is the first priority and the University is sustainable.



**Figure 3.17:** The extent of how much student agree on three statements

To test if differences between origins are significantly independent, T-tests are conducted. Table 3.11 compare African and South American students with European students about their willingness to pay for sustainability.

Group Statistics					
	Origin	N	Mean	Std. Deviation	Std. Error Mean
Willing to pay for sustainability	Europe	334	2,8046	,90948	,04976
	Africa & South America	17	3,4559	,79173	,19202

**Table 3.11:** Willing to pay versus origin

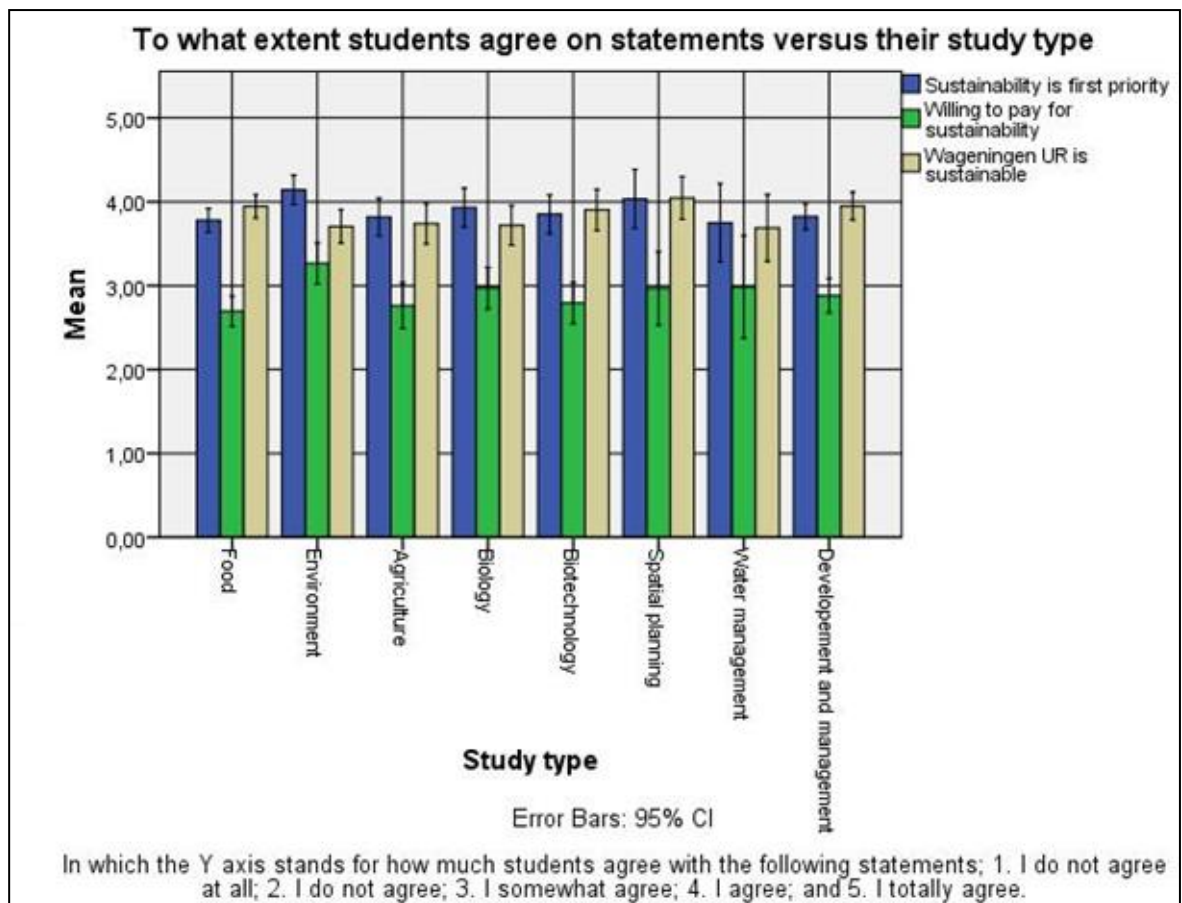
In table 3.12 the significance numbers are greater than 0,050 (Sig. = 0.376) which means that equal variances are assumed.

Independent Samples Test									
Willing to pay for sustainability	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	,785	,376	-2,896	349	,004	-,65124	,22487	-1,09350	-,20898
Equal variances not assumed			-3,283	18,217	,004	-,65124	,19837	-1,06764	-,23485

**Table 3.12:** Willingness to pay independent sample test.

The 2-tailed significance is less than 0.050 (Table 3.10 Sig. 2-tailed= 0.004) which determines that the means of African and South American respondents are significantly willing to pay more for sustainability than European respondents.

Figure 3.18 shows how much respondents “agree” with the statement: “**Wageningen UR is a sustainable University**” depending on their study types. It seems that respondents with studies related to environment agree more with ‘sustainability is first priority’ and ‘willingness to pay for sustainability’ and agree less with: “**Wageningen UR is sustainable**”.



**Figure 3.18:** Overview of how much students agree with three statements.

Table 3.13 and table 3.14 are tested with the independent T-test if there are significant differences between respondents with environmentally related studies with respect to other studies. In all three cases equal variances are assumed. Respondents of environmentally related studies significantly agree more with: 'willing to pay for sustainability' (Sig. 2-tailed = 0.000 < 0.050) and 'sustainability is first priority' (Sig. 2-tailed = 0.003 < 0.050). The statement "**Wageningen UR is sustainable**" is not significantly different (Sig. 2-tailed = 0.082 < 0.050).

Group Statistics					
	Environment	N	Mean	Std. Deviation	Std. Error Mean
Wageningen UR is sustainable	Environment	80	3,7250	,76680	,08573
	Other study	323	3,8870	,73853	,04109
Willing to pay for sustainability	Environment	80	3,2438	,98242	,10984
	Other study	323	2,8026	,88506	,04925
Sustainability is first priority	Environment	80	4,0964	,70565	,07889
	Other study	323	3,8302	,72597	,04039

**Table 3.13:** Group statistics showing the comparison between environmental studies and other studies



Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Wageningen UR is sustainable	Equal variances assumed	,033	,856	-1,743	401	,082	-,16200	,09294	-,34470	,02071
	Equal variances not assumed			-1,704	117,944	,091	-,16200	,09507	-,35026	,02627
Willing to pay for sustainability	Equal variances assumed	3,844	,051	3,903	401	,000	,44112	,11303	,21892	,66332
	Equal variances not assumed			3,665	112,834	,000	,44112	,12037	,20264	,67960
Sustainability is first priority	Equal variances assumed	,061	,805	2,953	401	,003	,26626	,09017	,08900	,44353
	Equal variances not assumed			3,004	123,761	,003	,26626	,08863	,09083	,44170

**Table 3.14:** Independent sample test showing the differences between assuming equal variances and not assuming equal variances

Because there are no significant results on the statement “**Wageningen UR is sustainable**” the tool cross tabulations is used to give an overview to what degree respondents from different study types and origins rank this statement. Table 3.15 shows the study type and table 3.16 shows the origin of respondents. It seems that respondents from Environment and Agriculture study are very different in their opinion. The same counts for respondents from Europe and South America.

Wageningen UR is sustainable * Study type Crosstabulation									
% within Study type									
Wageningen UR is sustainable	Study type								Total
	Food	Environment	Agriculture	Biology	Biotechnology	Spatial planning	Water management	Development and management	
I do not agree at all		1,6%	2,3%						0,5%
I do not agree	1,0%	3,2%	4,5%	2,6%	2,4%		6,3%	1,3%	2,2%
I somewhat agree	17,0%	22,2%	9,1%	23,1%	14,6%	9,1%	18,8%	17,9%	17,1%
I agree	44,0%	52,4%	61,4%	51,3%	43,9%	59,1%	50,0%	44,9%	49,1%
I totally agree	38,0%	20,6%	22,7%	23,1%	39,0%	31,8%	25,0%	35,9%	31,0%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

**Table 3.15:** Ranking of agreement according to study type

Wageningen UR is sustainable * Origin Crosstabulation							
% within Origin							
		Origin					Total
		Africa	Asia	Europe	North America	South America	
Wageningen UR is sustainable	I do not agree at all			0,3%		5,9%	0,5%
	I do not agree		2,8%	2,4%			2,2%
	I somewhat agree	12,5%	16,7%	17,1%	25,0%	17,6%	17,1%
	I agree	50,0%	44,4%	50,0%	50,0%	41,2%	49,1%
	I totally agree	37,5%	36,1%	30,2%	25,0%	35,3%	31,0%
Total		100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

**Table 3.16:** Ranking of agreement according to origin

The Analysis of Variance is conducted on assertion “**Wageningen UR is sustainable**” using SPSS to see if there are significant differences between age, gender or education level. Table 3.17 shows there is a

significant difference amongst students with different ages. The significance level of Sig. at Agerange2 is 0.010 which is less than 0.050.

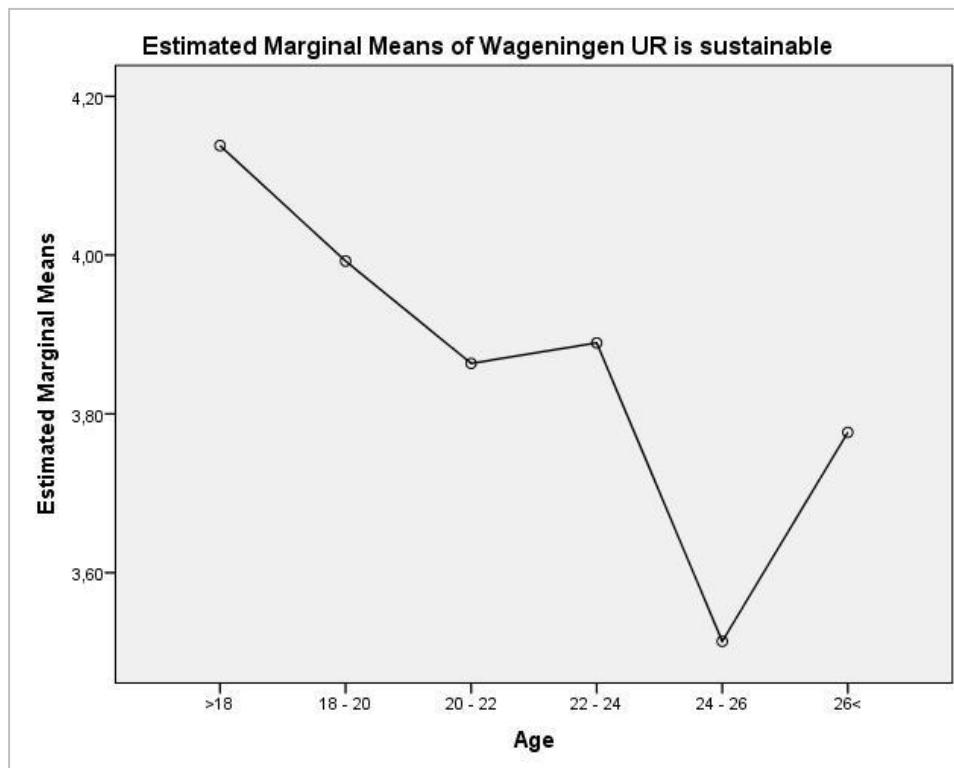
#### Tests of Between-Subjects Effects

Dependent Variable: Wageningen UR is sustainable

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8,299 <sup>a</sup>	5	1,660	3,076	,010
Intercept	4701,027	1	4701,027	8710,423	,000
Agerange2	8,299	5	1,660	3,076	,010
Error	207,785	385	,540		
Total	6063,000	391			
Corrected Total	216,084	390			

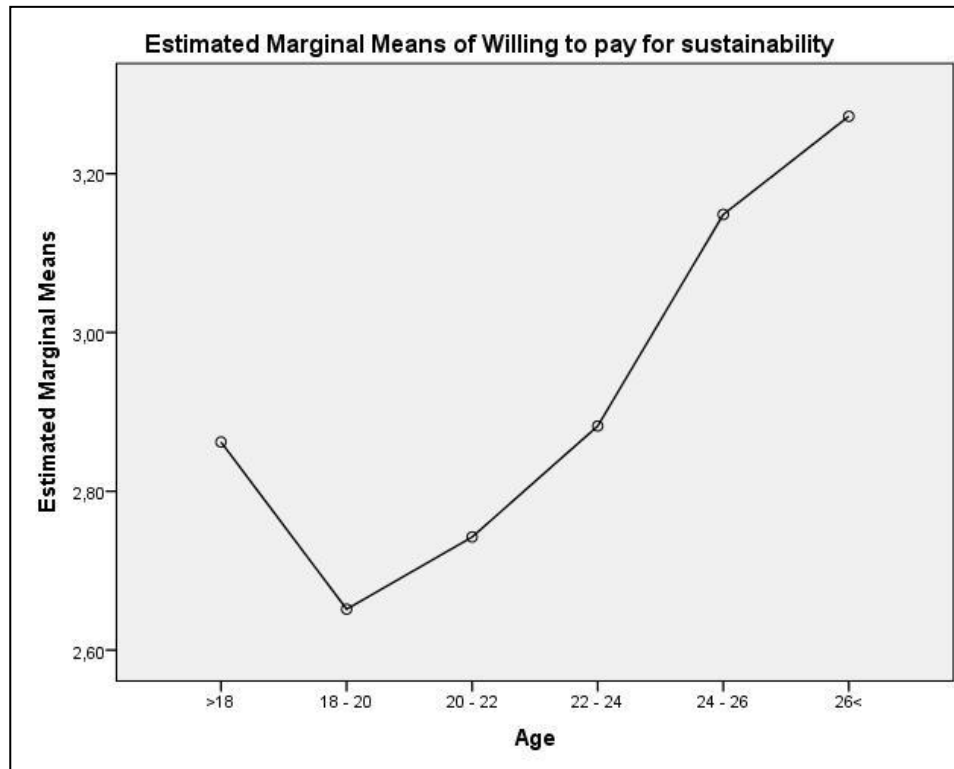
a. R Squared = ,038 (Adjusted R Squared = ,026)

**Table 3.17:** Wageningen UR sustainability according to age



**Figure 3.18:** Level of agreement according to age

The ANOVA analysis is conducted on 'willingness to pay for sustainability' using SPSS to see if there are significant differences amongst age, gender or education level. Table 3.18 shows there is a significant difference of respondents with different ages. The significance level of Sig. at Agerange2 is 0.001 which is smaller than 0.050. Older respondents are significantly more willing to pay for sustainability then younger respondents, a visible view of this result can be seen in figure 3.19



**Figure 3.19:** Willingness to pay for sustainability according to age

#### Tests of Between-Subjects Effects

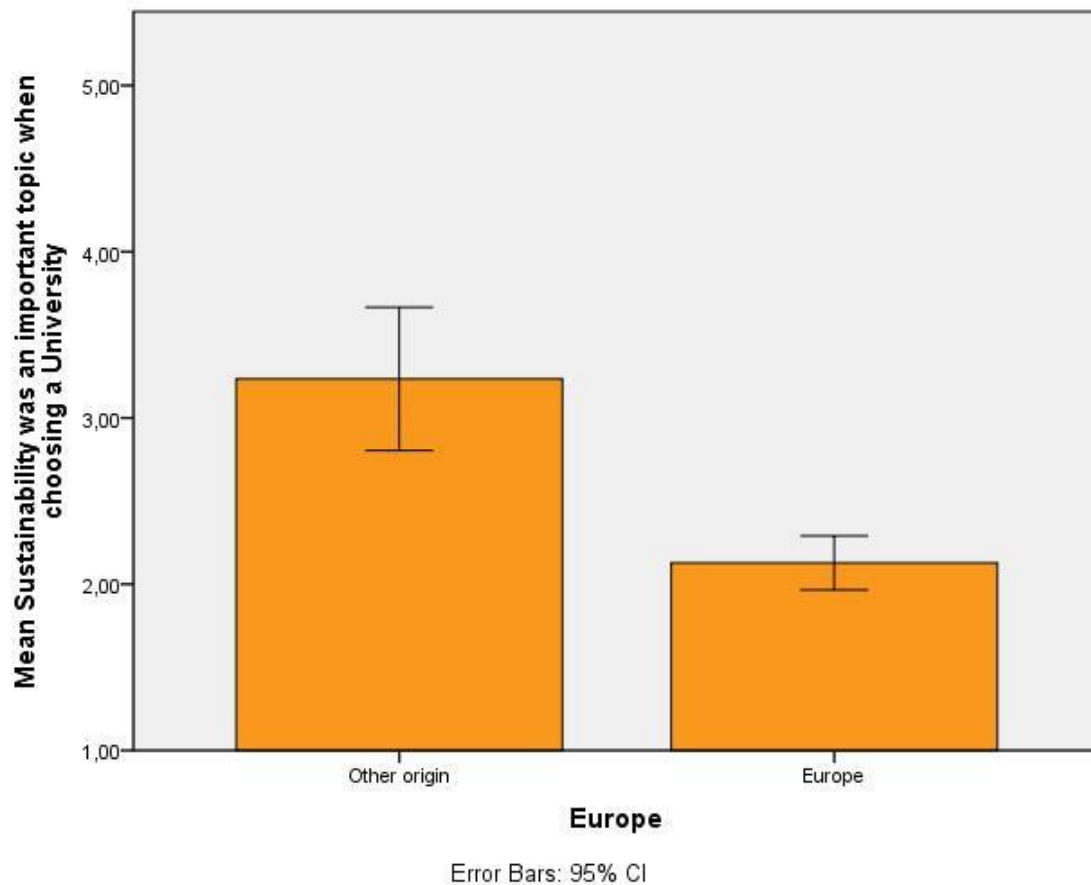
Dependent Variable: Willing to pay for sustainability

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	16,597 <sup>a</sup>	5	3,319	4,116	,001
Intercept	2699,047	1	2699,047	3347,166	,000
Agerange2	16,597	5	3,319	4,116	,001
Error	310,452	385	,806		
Total	3587,000	391			
Corrected Total	327,049	390			

a. R Squared = ,051 (Adjusted R Squared = ,038)

**Table 3.18:** Willingness to pay for sustainability according to age

Figure 3.20 shows if students take sustainability into account when choosing a university. It is shown that students from Europe do not really take sustainability into account when choosing a university. Students from different origin take sustainability more into account. Table 3.19 and 3.20 show that this difference is significant.



**Figure 3.20:** Relationship between European students versus students with other origins about taking sustainability into account when choosing a university

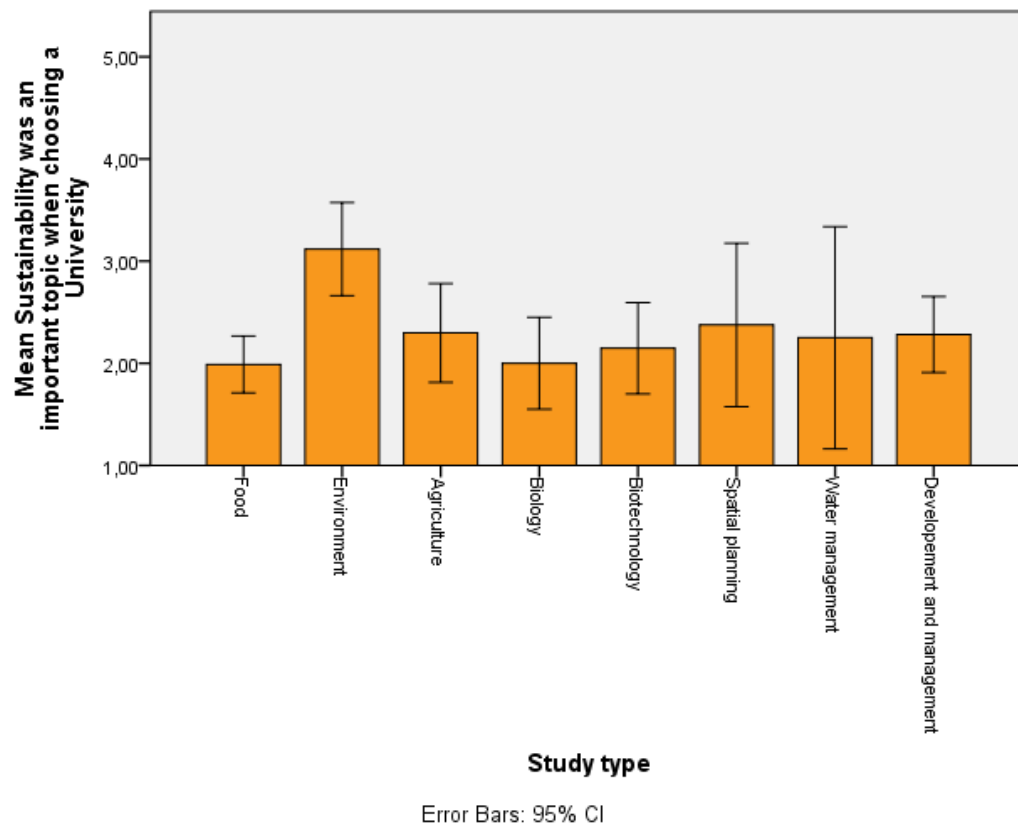
Group Statistics					
	Europe	N	Mean	Std. Deviation	Std. Error Mean
Sustainability was an important criteria when choosing my studies	Europe	336	3,7202	1,32000	,07201
	Other origin	67	2,8209	1,33627	,16325

**Table 3.19:** Group statistics on question 'Sustainability was an important topic when choosing a university'

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Sustainability was an important criteria when choosing my studies	Equal variances assumed	,001	,971	5,082	401	,000	,89934	,17697	,55143	1,24725
	Equal variances not assumed			5,040	93,486	,000	,89934	,17843	,54504	1,25364

**Table 3.20:** Independent t-test on question 'Sustainability was an important criteria when choosing my studies'

Figure 3.21 shows if students from different study type take sustainability into account when choosing a university. It is shown that students whit a environmental related study more take sustainability into account than students from other student types. Table 3.21 and 3.22 shows that this difference is significant.



**Figure 3.21:** Relationships study types on question 'Sustainability was an important topic when choosing a university'

**Group Statistics**

	Environment	N	Mean	Std. Deviation	Std. Error Mean
Sustainability was an important criteria when choosing my studies	Environment	80	2,9500	1,52531	,17054
	Other study	323	3,7245	1,27625	,07101

**Table 3.21:** Group statistics on question 'Sustainability was an important topic when choosing a university'

**Independent Samples Test**

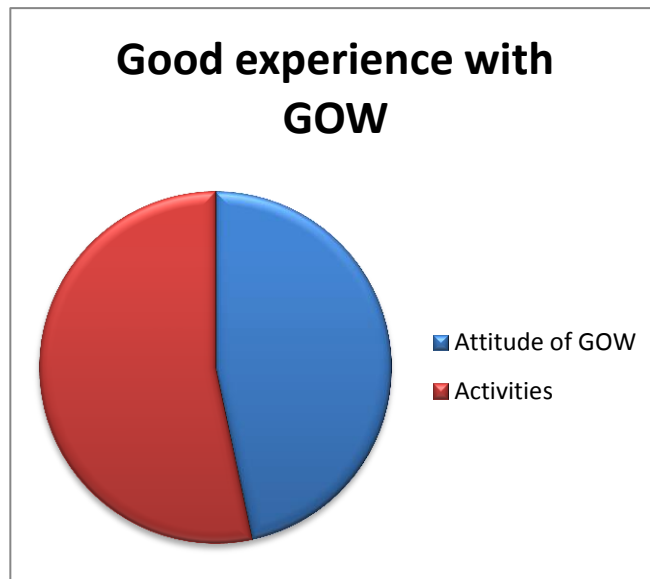
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Sustainability was an important criteria when choosing my studies	Equal variances assumed	6,636	,010	-4,666	401	,000	-,77446	,16597	-1,10074	-,44817
	Equal variances not assumed			-4,192	107,975	,000	-,77446	,18473	-1,14063	-,40829

**Table 3.22:** Independent t-test on question 'Sustainability was an important criteria when choosing my studies'

### 3.4. Experience with GOW and their events

This chapter presents the results to the sub-research question **“Do you have a good experience with Green Office Wageningen and their events? If yes, what do you like most? If not, why?”**

Of all the respondents, some students clarified they have had a good experience with GOW, whereas some had not. It is important to analyse these different groups, since the reasons the respondents provided to explain why they did or did not have a good experience with GOW show some differences. In this section, this issue will be discussed.



**Figure 3.22:** Reasons for having a good experience with GOW

As it is shown in table 3.16, 6.5% of the respondents stated they have a good experience with GOW. It is important to mention that this does not imply that the other 93.5% had a bad experience, but it could very well be that they had no experience at all, and therefore not 'good'. Among these respondents, 15 respondents have clarified what exactly made their experience good. These answers have been subdivided into two categories: attitude of GOW and activities, which is shown in figure 3.22.

First, seven respondents stated that they appreciated the open, supporting, interesting, cooperative and innovative attitude and commitment of GOW. The atmosphere of the (small scale) activities gives the impression that GOW does not treat sustainability as something boring, but makes it interesting. This is aggregated under 'attitude of GOW'. Second, eight respondents stated they appreciated the specific activities that GOW has organized in the past are mentioned as being good activities. Examples given were the sustainability festival, the 'eat from waste' project and the thematic weeks and/or days like the 'eat plant week'. This is aggregated under 'activities'. Among this last group, two respondents stated they like the activities organized by GOW, but they would recommend to improve promotion in order to attract more participants.

According to table 3.23, 93,5% of the respondents stated they have no good experience with GOW or stated 'no answer'. Among these respondents, 15 respondents have clarified what exactly made their experience not good. These answers have been subdivided into two categories: no acquaintance with GOW and no acquaintance with the activities.

Five students responded they had never seen anything about the promotion of GOW and (so) they have never been to any of the activities. Second, 9 respondents replied they have never heard of GOW in the first place, so they completely lack experience with GOW. It needs to be noted, however, that in this context answering 'no' to the question if the respondent has a good experience with GOW does not

necessarily imply that the experience was bad. Based on the results, only one respondent has specified to dislike GOW, but the other respondents lack experience to judge whether GOW is something good or not. A complete overview of the given answers can be found in appendix 6.

In order to recommend a certain way of promotion, it should be more clear which groups of students are somehow reached better than the others. This is where the quantitative analysis comes in handy, analysing the data of all 406 respondents. Disaggregating the data to master and bachelor students shows that a larger percentage of the master students have a good experience with GOW (7.9%) when compared to bachelor students (4.3%). This is shown in table 3.23.

**Education level \* Did you have a good experience with Green Office Wageningen Crosstabulation**

% within Education level

		Did you have a good experience with Green Office Wageningen		Total
		No	Yes	
Education level	Master	92,1%	7,9%	100,0%
	Bachelor	95,7%	4,3%	100,0%
Total		93,5%	6,5%	100,0%

**Table 3.23:** Results experience with GOW according to education level

Furthermore, it is interesting to see which study types are most apparent in having a good experience or good acquaintance with GOW. From the quantitative data analysis it is shown that the students in the field of environment have the best experience (12.1%). For students in the field of food (4%) and biotechnology (2.4%) these percentages are significantly lower. This is shown in table 3.24. This is in coherence with the level of acquaintance with GOW among the study types, shown in table 3.25.

In table 3.26 can be seen that 42.7% of the students who did participate in one of the events had never heard of GOW. In the same figure can be seen that 57.3% at least had heard of GOW and did participate with an event. So it can be said that there is a group of students who did participate and had known GOW but did not get a good experience with GOW. This indicated, expectedly, that some activities lack a clear connection to GOW or fail to make this clear in the promotion of the activities.

**Study type \* Did you have a good experience with Green Office Wageningen Crosstabulation**

% within Study type

		Did you have a good experience with Green Office Wageningen		Total
		No	Yes	
Study type	Food	96,0%	4,0%	100,0%
	Environment	87,3%	12,7%	100,0%
	Agriculture	90,9%	9,1%	100,0%
	Biology	94,9%	5,1%	100,0%
	Biotechnology	97,6%	2,4%	100,0%
	Spatial planning	95,5%	4,5%	100,0%
	Water management	93,8%	6,3%	100,0%
	Development and management	93,6%	6,4%	100,0%
Total		93,5%	6,5%	100,0%

**Table 3.24:** Results experience with GOW according to study type



**Study type \* Do you know GOW Crosstabulation**

% within Study type

		Do you know GOW			Total
		I have never heard of them	I have heard of them	I know exactly what they do	
Study type	Food	60,0%	33,0%	7,0%	100,0%
	Environment	39,7%	52,4%	7,9%	100,0%
	Agriculture	56,8%	36,4%	6,8%	100,0%
	Biology	64,1%	30,8%	5,1%	100,0%
	Biotechnology	63,4%	34,1%	2,4%	100,0%
	Spatial planning	63,6%	27,3%	9,1%	100,0%
	Water management	56,3%	43,8%		100,0%
	Development and management	61,5%	34,6%	3,8%	100,0%
Total		57,6%	36,7%	5,7%	100,0%

**Table 3.25:** Cross tabulation study type and acquaintance GOW

**Did you participate in 1 or more events of Green Office Wageningen \* Do you know GOW Crosstabulation**

% within Did you participate in 1 or more events of Green Office Wageningen

		Do you know GOW			Total
		I have never heard of them	I have heard of them	I know exactly what they do	
Did you participate in 1 or more events of Green Office Wageningen	No	62,2%	33,9%	3,9%	100,0%
	Yes	42,7%	45,8%	11,5%	100,0%
Total		57,6%	36,7%	5,7%	100,0%

**Table 3.26:** Cross tabulation of the participation in GOW activities and acquaintance with GOW

**Did you participate in 1 or more events of Green Office Wageningen \* Do you have a good experience with Green Office Wageningen and their events? Crosstabulation**

% within Did you participate in 1 or more events of Green Office Wageningen

		Do you have a good experience with Green Office Wageningen and their events?		Total
		No, N/a	Yes	
Did you participate in 1 or more events of Green Office Wageningen	No	98,0%	2,0%	100,0%
	Yes	76,0%	24,0%	100,0%
Total		92,8%	7,2%	100,0%

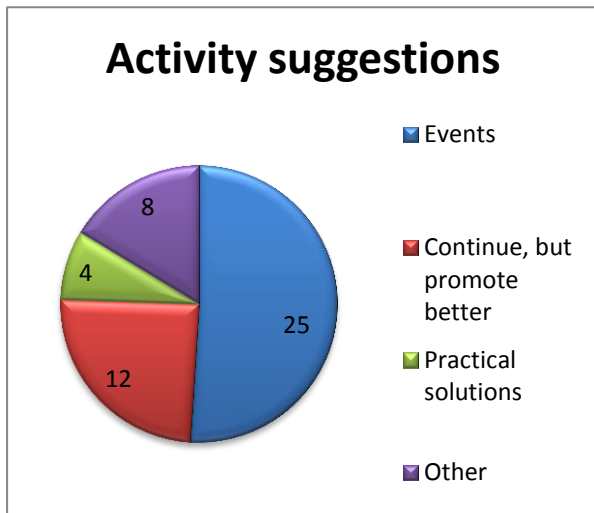
**Table 3.27** Cross tabulation of participation in GOW activities

### 3.5. Students' opinion towards GOW events

This chapter presents the results to the sub-research question **“What (kind of) event or activity would you like Green Office Wageningen to organise? If you have any suggestions, please write them down below.”**

As a result from the survey, 49 suggestions for activities were proposed to be organized by GOW, which is equal to 11.7% or 9% of the respondents, according to the completely filled in survey or the total amount of responses, respectively. Most of the responses can be categorized into four categories: events, continue, but promote better, practical solutions, and other.

The division over these categories by means of the number of suggestions are shown in figure 3.23. The categorization as such remains a bit vague and thus requires further explanation. First of all, for GOW, the suggestions which have been categorized as ‘events’ will be of most value. This is because these suggestions can be used and executed best by GOW. Therefore, this category has been broken down into more specific activities which are shown in figure 3.24: debates, entertainment, fairs, challenges and activities for the WUR.



**Figure 3.23:** Pie chart showing the categorized activities suggested by the respondents



**Figure 3.24:** Pie chart showing the breakdown of events as suggested by the respondents.

Other categories are of less importance for GOW. This is because the category ‘continue, but promote better’ is clear by itself. It is made clear by the respondents that they are willing to join and cooperate if they are informed better. The category of ‘practical solutions’ entails suggestions for structural changes, for example for the WUR to carry out or suggestions to apply practical changes in student housing. This differs from the subcategory ‘activities for the WUR’ under events, first of all because they are different in nature, and second of all because the latter are about activities that have been executed by GOW before. The category ‘other’ includes suggestions which were not entirely clear about what kind of activity was suggested, but only includes topics of interest. The exact suggestions provided by the respondents can be found in appendix 6.

These subcategories of events, as shown in figure 3.24, will now be shortly explained. With ‘debates’ activities are meant which could facilitate a debate and therefore includes the suggestions for an earth forum, seminars and awareness building. ‘Entertainment’ covers the more passive activities in which fun

is an important factor, such as a party, movie night or a concert. The category 'fairs' includes activities that focus on exchange of experiences or products, such as eating insects, book exchange, or gathering of material for creativity use. 'Challenges' include the suggestions which are focused on challenging (groups of) students to compete against each other. Examples are to organize a competition to come up with new and innovative ideas for sustainability or an energy-saving challenge for corridors of student houses. Last, the category 'activities for the WUR' includes activities which should be suggested by GOW to, for example, the Facilities and Services. Examples of this are the 'Warmetruidendag' (which has been organized before) or organizing a day without food packaging.

The 25 suggestions for events have been compared to study type, education level, gender and origin. The exact results can be found in appendix 7. This is done, because conclusions and recommendations can then be formulated in more detail. It has become clear that requests for debates were mainly done by respondents with an environmental study type and are currently master students. However, this is not a significant result, since most respondents who filled in this open question have an environmental study type (25.4%) and/or are master students (71.1%). As can be seen in appendix 7, none of these results are therefore extremely clarifying or significant.

## 4. Conclusion

Most students that filled out the survey were master students, female, and within the age of 19 up to 25 years old. The study types that were the most represented in our survey were Food, Development and Management and Environmental Studies. Those studies are mostly situated at the Leeuwenborch and Forum building. Furthermore, most students that filled in the survey come from Europe. Finally, it was interesting to see that the information we had from the Wageningen UR about students' origin almost matched with our results from the survey. The only difference is that South America and Africa are switched in rank.

The quantitative analysis shows that students are interested most in waste management, energy related issues and recycling. These topics are all related to not wasting materials or products.

There is no big gap between what students think is important and what they think is relevant. Both the quantitative as the qualitative analysis show that students give similar answers when comparing relevance and importance. Thus, it may be concluded that there is a thin line between importance and relevance when it comes to sustainability. When students think an issue is important, they also see this issue as relevant.

The most important and relevant category from the qualitative analysis is 'food related'. The given answers are a nice addition to the answers from our quantitative analysis, where food related questions scored relatively lower. When analysing the open-ended answers, it becomes clear that the food-related answers are (both for importance and relevance) mainly focused on the reduction of production and consumption of meat. Also the reduction of CO<sub>2</sub> emission by using alternative ways of traveling than by car, the usage of sustainable materials, and recycling turn out to be very important and relevant for students of Wageningen UR according to the qualitative analysis. Less important and relevant categories from the qualitative part are animal welfare, knowledge and politics.

Of all students, 31% totally agrees that Wageningen UR is sustainable. Another 49.1% just agrees on this statement. The remaining 20% is less positive about the sustainability of Wageningen UR. Female students relate these issues significantly more with sustainability than male students. Regardless of origin or study type, students think waste related (reduction, types of packaging, composting, recycling etc.) and energy related (green energy, building insulation, etc.) topics have the highest priority.

The results show that there is a significant difference in opinion between men and women when it comes to the priority of waste measures and energy measures. Female students score higher on these subjects than male students. In addition to this, male master students give a significantly higher priority to waste measures and energy measures than male bachelor students do.

When dividing students in age categories of 2 years (<18, 18-20, 20-22 and so on), younger students state that Wageningen UR is significantly more sustainable than older students. Also, students from environmental studies are less positive about the sustainability of Wageningen UR.

African and South American students are significantly more willing to pay for sustainability than European students. Besides, European students take sustainability of a university significantly less into account when choosing a university than students from different origins.

Students that follow an Environmental related study are significantly more willing to pay for sustainability than students from other studies, while older students are significantly more willing to pay for sustainability than younger students. Students from Environmental related studies state more often that sustainability should be the first priority than students from other studies. They also take sustainability significantly more into account when choosing a university than other students.

Quantitative analysis also shows that a great deal of students do not have a good experience with GOW. This is for two reasons. First, due to a lack of promotion of the activities and the absence of a clear link to GOW, many students are not aware of the existence of GOW and their activities. Second, a great deal of students have stated they did not have a good experience, even if they have attended one or more activities. However, the qualitative research provided insights about specific opinions. For example, there were some activities mentioned which were appreciated, such as the sustainability festival. All the respondents who did not like GOW and clarified why, stated that this was due to the fact they did not know about GOW and/ or the activities. It is therefore clear that lack of promotion is the main reason that students do not have a good experience with GOW.

Finally, qualitative research has clarified that many respondents have a suggestion for an activity they would like to see organized by GOW. Most of these suggestions could be aggregated to the main topic of 'events', including passive, large scale, and entertaining events. Specifically, debates and seminars were requested most. However, also within this research question it became apparent that GOW should improve their means of promotion. It is clear from this research that there is demand for the activities of GOW as well as interest in them.

## 5. Recommendations

Once a person has the attitude towards an issue (in this case towards sustainability), the person makes the evaluation, and he takes a stand that can be accompanied with feelings and the sustainability is no longer inert for him. The feelings and thoughts are either positive or negative to sustainability.

Firstly, the reputation of GOW should be enhanced and the name should get into the awareness of students of Wageningen UR. The general awareness can help with linking GOW to particular activity, so that the student may easily connect name of GOW and the activity. GOW can also play the role of mediator between Wageningen UR and students for sustainability matters. GOW can enhance their reputation and thereby improve other events related with these seminars.

Secondly, based on the findings mentioned in conclusion part, there are several sustainability topics (prevention of waste, reduction of energy and renewable resources, sustainable food packaging) that could be take into consideration in terms of future activities of GOW.

1. Prevention of waste: organize debates and workshops about way of controlling of waste at Wageningen UR and at households
2. Reduction of energy and renewable resources: organize debates, workshops, excursion to companies in order to get the insight of energy consuming, subsequent environmental impact and offer possible ways to apply renewable sources for personal and common purposes
3. Sustainable food packaging: organize workshops and discussion about biodegradable materials because some students probably do not know much about this kind of material. These events can help to student to consider how big impact do the conventional materials have on the environment.

Last but not least it is recommended to start some educated seminars with different topics about sustainability.

Other topics mentioned by students are recycling, durability of products and loss of rainforest. However, it is remarkable that students are willing to pay for sustainability, which is something that GOW can take an advantage of. GOW can arrange events where they will collect money, which can be invested in other activities concerning sustainability.

In order to recommend a certain way of promotion, it should be more clear which groups of students are somehow better reachable than the others. Environmental sciences students should be more engaged into the activities of GOW because they are more interested in these topics. On the other hand, biotechnology and food related students show quite low interest about sustainability. Bachelor students are not exactly familiar with GOW and its activities. So, the promotion should be adjusted accordingly.

Since there is a significant amount of 57.6% of students out of the total 406 respondents who are not familiar with GOW and/or its activities, it is difficult to make a general recommendation about the type of activities which should be organized in the future. However, based on the 49 suggestions provided by the respondents, events are preferred - especially debates, competitions and some kind of entertainment.

Of the 49 respondents for SRQ5, 15 respondents indicated their study type is 'food' (including three responses which indicated another study type as well) and another 15 respondents indicated their study type is 'environment' (including four responses which indicated another study type as well). The number of responses to this open question (a maximum of 25 semi-similar suggestions) is not representative for the total number of students of Wageningen Ur and not even for the total number of respondents of our survey. It can serve as an interesting side note for GOW and Facilities and Services to see that students of a certain study type or background are willing to join or request a certain activity, but no recommendations can be made based only on this qualitative analysis.

Concluding, in order to attract more people to their activities and broaden their platform. GOW should improve own promotion as well as promotion of its activities and make sure that it is clear to the students of Wageningen UR that an event is organized by or related to GOW. This will increase their recognition and appreciation (expectedly) among the students of Wageningen UR. Moreover, GOW could consider addressing bachelor students specifically or aim for activities which are interesting for students in their field of study.

## 6. Discussion

First aspect for discussion is the survey question: “Do you have a good experience with GOW and their events? If yes, what do you like most? If not, why?”. This question could be answered by: Yes, No or N/a. These answer categories turned out to be inefficient, since if respondents answered not having a good experience, this does not automatically imply that they had a bad experience. To avoid this, an answer possibility for ‘neutral’ should have been inserted. Another option is to rephrase the question into “How was your experience with GOW and their events?”, which could be answered with: Good, Neutral, Bad or Not applicable.

Second, the selection of the suggested activities could have been stricter. In that way, some suggestions could have been excluded from this analysis. The reason it has not been done, is because all the responses – even if they include suggestions of activities which have already been organized or if they do not suggest a specific activity – are valuable to the marketing strategy of GOW.

A third aspect is that the data obtained from survey question “What is your nationality?” is not taken into account, since the opinion of students from the countries which are most represented do not significantly differ from students of their continent (which is defined by survey question “What is your origin?”).

Fourth aspect has to do with the validity of the data, which is checked by a PP-plot and factor analysis. The PP-plot shows if there is a normal distribution of the data. The factor analysis shows which topics can be grouped, if the topics of these groups are matching it shows that the data is internally valid.

In chapter 3.3.1, for instance production and reducing of energy consist of energy related subjects, but as well loss of biodiversity related topics. Expected is that this overlap is due to the 5 point Likert-scale in the survey. When students think these topics are both very relevant, they both get the same score. When a 7 point Likert-scale had been applied, it could be that there would be a difference between multiple topics and thus would be listed in another component.

A fifth aspect is that the amount of respondents in the qualitative part (open ended questions) is low. For instance, for the open question about GOW and their activities, the amount of 49 respondents is very low compared to the general study population (8.000 students). Thus, recommendations on this part are less reliable than recommendations obtained from the quantitative part.

When compared to the sample size of 406 respondents, 1 out of 8 respondents responded to this question. The sample size is representative for the whole study population as is described in paragraph 2.5.2. With this in mind, recommendations on the answers have been given, but it needs to be taken into account that this recommendations are not as solid as desirable.

Finally, the link to the survey has been put on the Facebook page of GOW on Wednesday November 27<sup>th</sup>, to see if people that ‘like’ GOW on Facebook have a significantly different attitude towards sustainability than students who did not ‘like’ GOW on their Facebook page. There are only 10 respondents which were directed via the GOW Facebook page, which is a too small amount to compare to the initial group of respondents.

Within the initial group of respondents, there were also people that ‘liked’ the Facebook page of GOW. This group was left in the initial group of respondents, since they were not biased before taking part in the survey.



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## **Appendix 1: Overview of survey questions**

**Q= This study is only for students of Wageningen University. Are you student of Wageningen University?**

Yes/ No

***Following questions to answer: What aspects of sustainability do students of Wageningen UR find most relevant?***

**QA= Question Attitude; Which of those issues do you relate with sustainability?**

1. Very related; 2. Related; 3. Somewhat related; 4. Not related; 5. Not related at all

QA1: A trend/ hype

QA2: Waste reduction

QA3: Durability of products

QA4: Biodegradability of packaging

QA5: Production of “green” energy

QA6: Composting

QA7: Water saving

QA8: Reduction of energy usage

QA9: Bio-fuels

QA10: Consumption of seasonal products

QA11: Insulation of buildings

QA12: Recycling

QA13: Purchasing of sustainable products (e.g. buying fair-trade clothes, biological food, products made of recycled materials)

QA14: Pollution prevention

QA15: A lifestyle

QA16: Preventing further loss of biodiversity and natural habitat

QA17: Renewable resources

QA18: Emission reduction

QA19: Consumption of local products

**QA0= Question Attitude open: What other sustainable topic do you think of?**

***Following questions to answer: What aspects of sustainability do students of Wageningen UR find most important?***

**QI= Question Importance; In your opinion, to what extent should the following have priority of sustainability?** 1. Very high priority; 2. High priority; 3. Some priority; 4. No priority; 5. No priority at all

**QIO Which of those issues are the most important elements of sustainability?**

1. Very important; 2. Important; 3. Somewhat important; 4. Not important; 5. Not important at all

QI1: Reduction of waste

QI2: Making products more durable

QI3: Making packaging biodegradable

QI4: Production of “green” energy

QI5: Composting of biomass

QI6: Water saving measures

QI7: Reduction of energy usage

QI8: More usage of bio-fuels

QI9: Consumption of seasonal products

QI10: Applying insulation to buildings

QI11: Recycling of waste

QI12: Using sustainable materials (food/ packaging)

QI13: Prevention of pollution

QI14: Using tree plantations instead of tropical wood

QI15: Usage of renewable resources in companies

QI16: Emission reduction

QI17: Consumption of local products

QI18: Reduction of food waste

QI19: Preventing further loss of biodiversity and natural habitat

**QIO= Question Attitude open; To which extent do you agree with the following statements**

1. I totally agree; 2. I agree; 3. I somewhat agree; 4. I do not agree; 5. I do not agree at all

QIO1: I think that more environmental friendly products (e.g. recyclable, biodegradable) should be available on the market.

QIO2: I think the studies of Wageningen UR is a sustainable university

QIO3: I choose companies that are sustainable

QIO4: Sustainability was an important criteria when choosing my studies

QIO5: I do not mind to pay more if I know that a product is sustainable

QIO6: I think that Wageningen UR offers sustainability-oriented education

QIO7: I think Green energy is the future

QIO8: I think that sustainability should have high priority for governments

QIO9: I am willing to pay more taxes when this money will be used for sustainability

QIO10: Sustainability should be an important part of national policies

QIO11: I am willing to invest in green energy (such as solar panels) when I can afford it

***Following questions to answer: Do the students of Wageningen recognize GOW and their activities and what is their opinion about them?***

**QGOWM= Question GOW Multiple choice: Do you know Green Office Wageningen (GOW)**

1. I never heard of them; 2. I have heard of them; 3. I know exactly what they do

**QGOWY1= Question GOW Yes/No: Did you "like" Green Office Wageningen on Facebook?**

Yes/No

**QGOW= Questions GOW: Have you heard about the following events? And did you participate?**

Heard about it: 1. Yes; 2. No. Participate: 1. Yes; 2. No

**QGOW1:** Sustainability Tour

**QGOW2:** Green Barbecue

**QGOW3:** Waste paper (Art installation in Orion)

**QGOW4:** Student Cooking Corner

**QGOW5:** Sustainability Tour

**QGOW6:** Warmetruiendag (warm sweater day)

**QGOW7:** Eat Plant Week

**QGOW8:** Green Resolutions 2013

**QGOW9:** Rijnveste Challenge

**QGOW10:** Collect, Fix Share (bike project during AID)

**QGOWY2= Question GOW Yes/No: Do you have a good experience with Green Office Wageningen and their events?**

Yes/ No/ N/a

**QGOWO= Question GOW Open: If yes, what do you like most? If not, why?**

**QGOWOp= Question GOW Open: What (kind of) event or activity would you like Green Office Wageningen to organise? If you have any suggestions, please write them down below.**

***Following questions to answer: What are the profiles of the students of Wageningen UR and the Facebook "friends" of GOW?***

**QPA=Question Personal Age: What is your age?**

**QPG= Question Personal Gender: What is your gender?**

Male/ Female

**QPS= Question Personal Study: What do you study?**

Food/ Environment/ Agriculture/ Biology/ Biotechnology/ Spatial planning/ Water management/  
Development and management

**QPE= Question Personal Education: Are you Bachelor, Master or PhD student?**

Bachelor/ Master/ PhD

**QPO=Question Personal Origin: What is your origin?**

Africa/ Asia/ Europe/ North America/ South America

**QPN= Question Personal Nationality: What is your nationality?**

China/ Germany/ Greece/ Ethiopia/ Netherlands/ Other, please specify.....

## **Overview of how the survey questions relate to the sub research questions:**

### **SRQ1: What are the profiles of the students of Wageningen UR?**

Q:	Are you a student of Wageningen University?
QPA:	What is your age?
QPG:	What is your gender?
QPA:	What do you study?
QPE:	Are you a Bachelor, Master or PhD student?
QPO:	What is your origin?
QPN:	What is your nationality?

### **SRQ2: What aspects of sustainability do students of Wageningen UR find most important and relevant?**

QA:	Which of the following issues do you relate with sustainability?
QAO:	What other topics do you relate with sustainability?
QI:	Which of the following issues are the most important elements of sustainability according to you?
QIO:	What other sustainability topics do you think are important?
QS:	To which extent do you agree with the following statements?

### **SRQ3: What is the relationship between profiles of Wageningen UR students and their attitudes towards sustainability?**

Analyse the relationship between SRQ1 and SRQ2 in SPSS.

### **SRQ 4: Do students of Wageningen UR recognize GOW and their activities, and what is their opinion about them?**

QGOWM:	Do you know Green Office Wageningen?
QGOWY1:	Did you 'like' Green Office Wageningen on Facebook?
QGOW:	Have you heard about the following events? Have you participated in those events?
QGOWY2:	Do you have a good experience with Green Office Wageningen and their events?
QGOWO:	If yes, what do you like most? If not, why?

### **SRQ5: What events/activities of GOW did trigger the students of Wageningen UR in the past? What events/activities would students like to see in the future?**

QGOW:	Have you heard about the following events? Have you participated in those events?
QGOWOp:	What (kind of) event or activity would you like Green Office Wageningen to organise? If you have any suggestions, please write them down below.

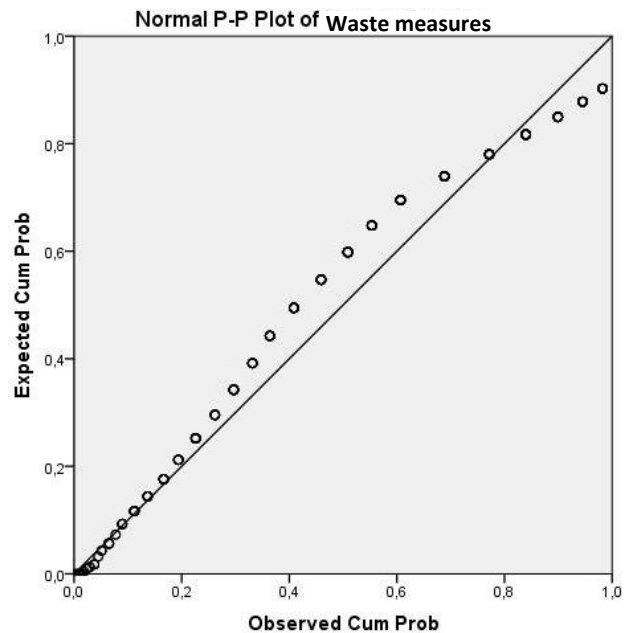
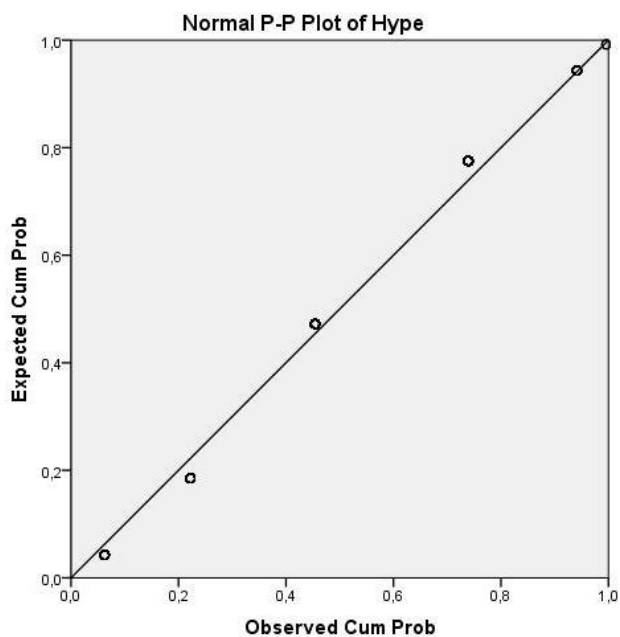
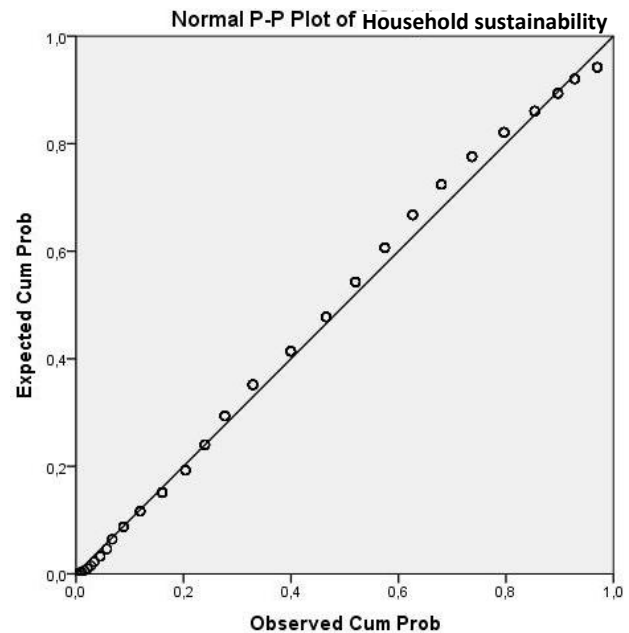
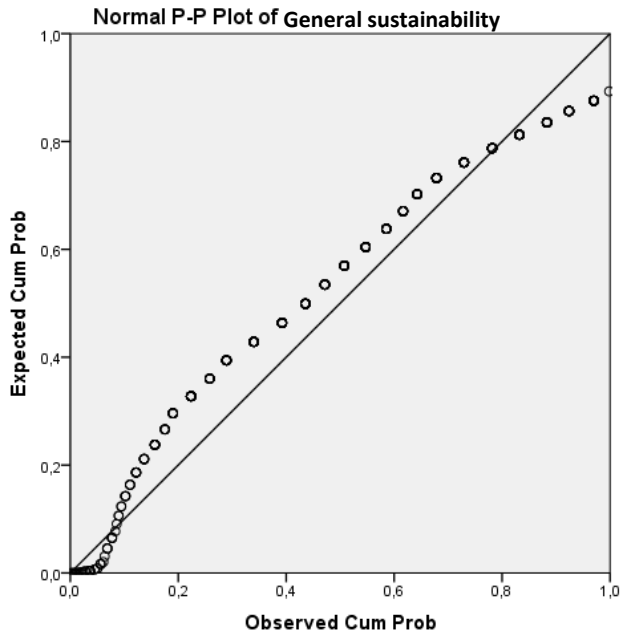
## Appendix 2: Operationalization of the coded data

	Questions	Coding
Attitude	<p><b>Which of the following issues do you relate with sustainability?</b></p> <ul style="list-style-type: none"> <li>- A trend/hype;</li> <li>- Waste reduction;</li> <li>- Durability of products;</li> <li>- Biodegradability of products;</li> <li>- Production of 'green' energy;</li> <li>- Composting;</li> <li>- Water saving;</li> <li>- Reduction of energy usage;</li> <li>- Bio-fuels;</li> <li>- Consumption of seasonal products;</li> <li>- Insulation of buildings;</li> <li>- Recycling;</li> <li>- Purchasing of sustainable products;</li> <li>- Pollution prevention;</li> <li>- A lifestyle;</li> <li>- Preventing further loss of biodiversity and natural habitat;</li> <li>- Renewable resources;</li> <li>- Emission reduction;</li> <li>- Consumption of local products.</li> </ul>	<p>Per topic:</p> <p>1 = Very related; 2 = Related; 3 = Somewhat related; 4 = Not related; 5 = Not related at all.</p>
Importance	<p><b>Which of the following issues are the most important elements of sustainability according to you?</b></p> <ul style="list-style-type: none"> <li>- Reduction of waste;</li> <li>- Making products more durable;</li> <li>- Making packaging biodegradable;</li> <li>- Production of 'green' energy;</li> <li>- Composting of biomass;</li> <li>- Water saving measures;</li> <li>- Reduction of energy usage;</li> <li>- More usage of bio-fuels;</li> <li>- Consumption of seasonal products;</li> <li>- Applying insulation to buildings;</li> <li>- Recycling of waste;</li> <li>- Using sustainable materials (food/packaging);</li> <li>- Prevention of pollution;</li> <li>- Using tree plantations instead of tropical wood;</li> <li>- Usage of renewable resources in companies;</li> <li>- Emission reduction;</li> <li>- Consumption of local products;</li> <li>- Reduction of food waste;</li> <li>- Preventing further loss of biodiversity and natural habitat.</li> </ul>	<p>Per topic:</p> <p>1 = Very important; 2 = Important; 3 = Somewhat important; 4 = Not important; 5 = Not important at all.</p>
Statements	<p><b>To which extent do you agree with the following statements?</b></p> <ul style="list-style-type: none"> <li>- I think that more environmental friendly products should be available on the market;</li> <li>- I think that Wageningen UR is a sustainable university;</li> <li>- I choose companies that are sustainable;</li> <li>- Sustainability was an important criteria when choosing my studies;</li> <li>- I do not mind to pay more if I know that a product is sustainable;</li> <li>- I think that Wageningen UR offers sustainability-oriented education;</li> <li>- I think green energy is the future;</li> <li>- I think that sustainability should have high priority for governments;</li> <li>- I am willing to pay more taxes when this money will be used for sustainability;</li> <li>- Sustainability should be an important part of national policies;</li> <li>- I am willing to invest in green energy (e.g. solar panels) when I can afford it.</li> </ul>	<p>Per topic:</p> <p>1 = I totally agree; 2 = I agree; 3 = I somewhat agree; 4 = I do not agree; 5 = I do not agree at all.</p>

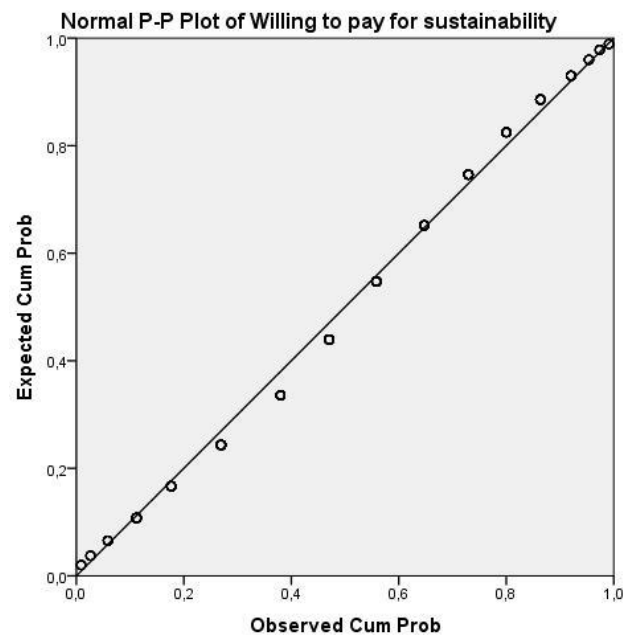
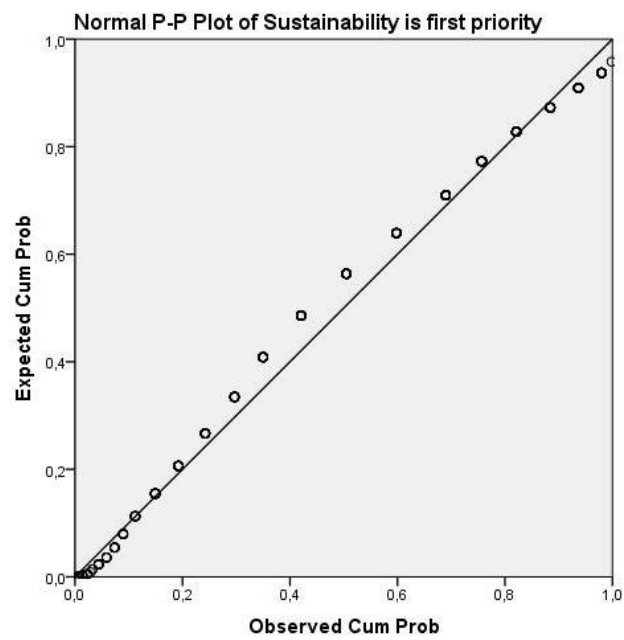
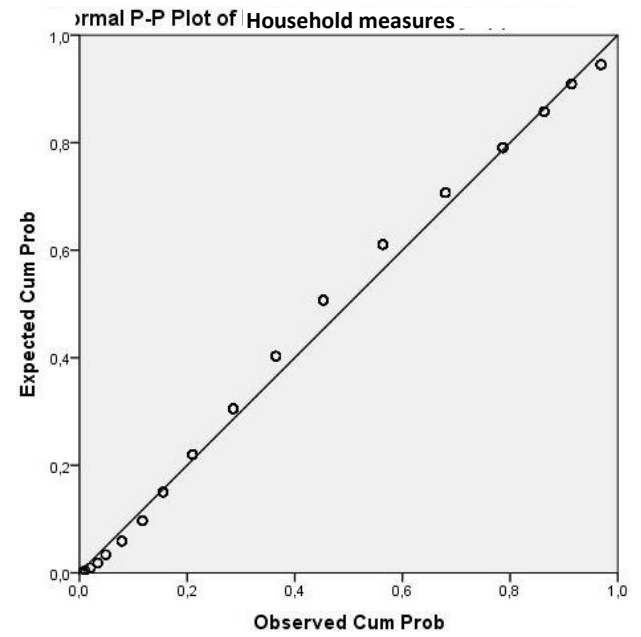
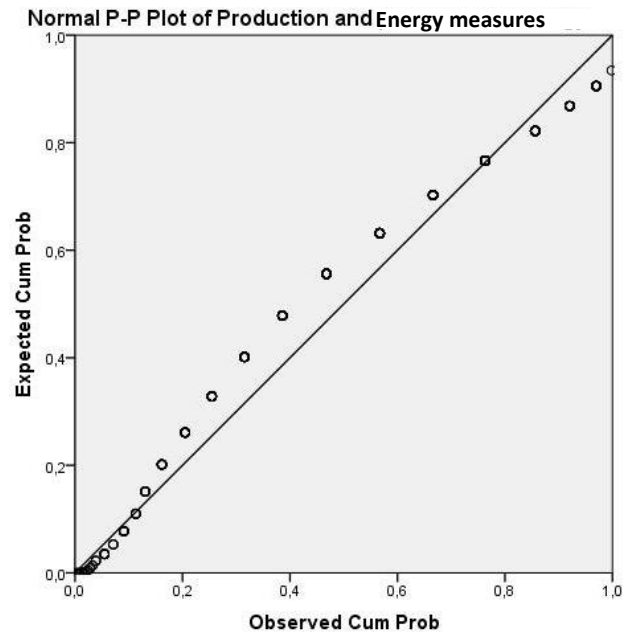
## Appendix 3: Internal validity (P-P plots)

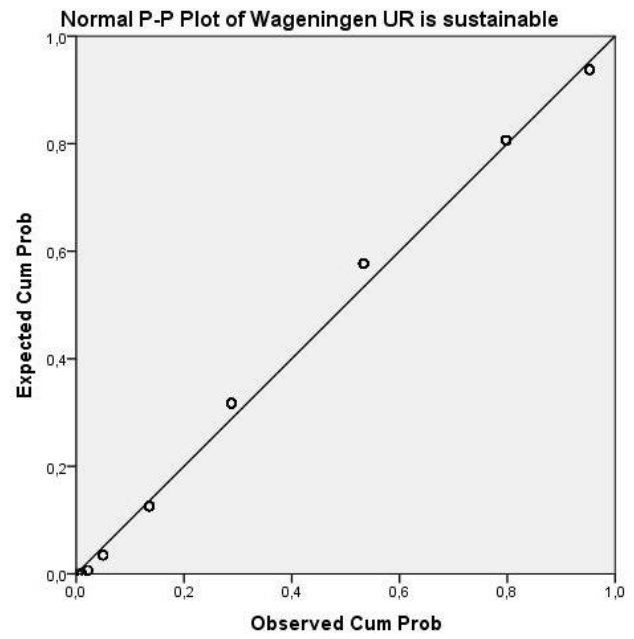
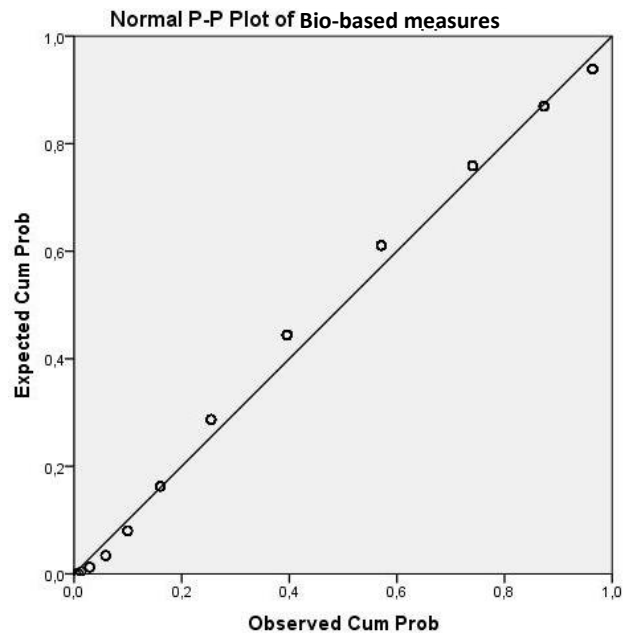
### P-P plots

The P-P plots shows the results of the normality check of all the components. The components Waste measures, Energy measures and General sustainability seem not to have a consistent normality distribution. All other components seem to have a consistent normality distribution.









## Appendix 4: Given answers on open-ended questions SRQ2

QAO: What other topics do you relate with sustainability?

Category	Answers
1. CO <sub>2</sub> reduction	Public transportation instead of driving
	Public transport
	Public transport
	Reduction of CO2 emissions
	Reduction of Footprint
	Taking your bike instead of car
	Go on holiday close at home and not take the plane
	Lowering speed limit
	Biking
	Electric cars
	Taking the bike instead of the car
	CO2 emission of cows
	More forest etc. to account for the CO2 emissions
2. Food related	Vegetarian
	Eating less meat
	Responsible food shopping
	Consume plant based food
	Sustainable agriculture (good soil practice)
	Eating less animal products
	Reducing meat consumption
	Food sources like plant or animal sources
	Entomophagy (eating of insects)
	Reduction of consumption of meat
	Consumption of organic products
	Food production
	Diet
	Urban agriculture
	Vegetarian
	Sustainable meat production, sustainable food production
	Organic food and grow your own food
	Diet
	Meat/diary consumption
3. Animal welfare	Living situation of animals
	Animal welfare
	Sustainable livestock husbandry
	Animal welfare
	Animal husbandry

4. Lifestyle	Healthy living
	Social sustainability: forming a community in which you not only look at aspects concerning the environment but also at how you relate yourself to the persons around you
	Social sustainability
	Cultural habits
	Social aspects
	Separation of garbage
	Doing the laundry whenever necessary, not whenever possible
	Natural lifestyle
	Social aspects, like increased livelihood for underprivileged group of people
	Being balanced with yourself
5. Knowledge	Education
	Better education
	Education
	Preservation of traditional knowledge
	Awareness
6. Materials/recycling	Education
	Cradle to cradle (closed cycle economy)
	Less product packaging
	Reuse of resources (not recycling, reuse)
	Repairing, before replacing by a new object
	Cradle to cradle
	Paper coffee cups instead of plastic cups
7. Politics	Passive design in buildings
	Governments
	Political and economy justice
	Ensuring worker's rights
	Good working conditions for labour
8. Other comments	Stop fighting wars worldwide for money, fuel and power
	User centred design
	High price
	Sustainability is a really broad term, everything that contributes to making this world a better place for us and next generations is somehow related to sustainability. I think because of the diverse character <u>local and national initiatives on sustainability should be supported</u>
	Fair trade
	Collaborate with sustainable companies (sustainable cleaning service)
	I consider Fair Trade and Biological food the exact opposite of Sustainable

Bacteria
Nature
Saving on expenses
Overall durability, buying products made with high quality priority and huge precision and dedication
Fair trade, fair distribution of wealth and resources both within and between countries and generations
Reduction of consumption
No profit organizations to realize sustainability
People, planet, profit
Socio-ecological initiatives
Population growth
Creating new natural habitats
Taking care of future generations
Intensification and efficiency
Liveability
Sober living
Waste management
Waste management
Equality
Environment friendly
Next generation
PES (payments for ecosystem services)
Tradable pollution credits
Composting
Agro-ecology, permaculture, eco villages, friendship/cooperatives
Economically and socially sustainable
Ecological food is not sustainable
Leadership and personal relationships, community
social aspects: fair trade, equality; overconsumption
Small initiatives, like the plastic soup movement and rooftop garden Arnhem
Eco shopping
Manure treatment
Social and economic aspects of sustainability maybe you can take into account. Currently you only emphasize on the ecological part of it

**Q10: What other sustainability topics do you think are important?**

Category	Answers
1. CO <sub>2</sub> reduction	Ways of travelling More public transport and less traffic Clean transport and reduction of global transport
2. Food related	Phosphate saving agriculture Eating less meat Buying organic products Eat less meat Meat reduction! Growing my own food Minimize meat consumption Meat production based on by-products of food processing industry
3. Animal welfare	Prevent the dying of the bees Keeping animals with less waste
4. Lifestyle	Social aspects Separation of garbage Food and energy waste
5. Knowledge	
6. Materials/recycling	Sustainable designs in new technology (e.g. all the rare metals in smartphones) Reduction of plastic usage Renewable energies Recycling of all products not only waste
7. Politics	
8. Other comments	Water purification Less production, less consumption of luxury product, equal distribution of wealth Nuclear energy Reduction of people Important notion when talking on sustainability: don't produce if not able to reproduce. that is sustainability mostly Capital investments Eutrophication  Demand side of the economy, try to limit consumption Payments for Ecosystem Services, tradable emission permits

## Appendix 5: Eigenvalues of components

This appendix shows tables which are linked to the Factor Analysis. These graphs show the Eigenvalue per component. When the Eigenvalue of a component is above 1, the component is used for further analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8,415	44,287	44,287	8,415	44,287	44,287
2	1,541	8,111	52,398	1,541	8,111	52,398
3	1,081	5,690	58,088	1,081	5,690	58,088
4	,899	4,734	62,822			
5	,870	4,577	67,399			
6	,744	3,914	71,313			
7	,668	3,514	74,827			
8	,635	3,343	78,170			
9	,599	3,151	81,321			
10	,515	2,712	84,032			
11	,478	2,517	86,550			
12	,446	2,347	88,897			
13	,392	2,064	90,961			
14	,372	1,958	92,919			
15	,337	1,772	94,691			
16	,312	1,640	96,331			
17	,260	1,371	97,702			
18	,243	1,282	98,983			
19	,193	1,017	100,000			

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7,286	38,347	38,347	7,286	38,347	38,347
2	1,578	8,305	46,652	1,578	8,305	46,652
3	1,087	5,723	52,375	1,087	5,723	52,375
4	1,066	5,608	57,983	1,066	5,608	57,983
5	,897	4,722	62,705			
6	,849	4,470	67,175			
7	,736	3,872	71,047			
8	,658	3,465	74,513			
9	,613	3,227	77,740			
10	,574	3,023	80,762			
11	,552	2,903	83,665			
12	,515	2,708	86,374			
13	,494	2,599	88,972			
14	,472	2,482	91,454			
15	,445	2,340	93,794			
16	,370	1,949	95,742			
17	,303	1,594	97,337			
18	,267	1,403	98,740			
19	,239	1,260	100,000			

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,297	39,064	39,064	4,297	39,064	39,064
2	1,380	12,543	51,606	1,380	12,543	51,606
3	1,220	11,092	62,698	1,220	11,092	62,698
4	,810	7,361	70,059			
5	,671	6,098	76,157			
6	,588	5,343	81,499			
7	,533	4,844	86,343			
8	,478	4,347	90,690			
9	,424	3,852	94,542			
10	,343	3,120	97,662			
11	,257	2,338	100,000			

Extraction Method: Principal Component Analysis.



## Appendix 6: Given answers on open-ended questions SRQ4

QGOWO: Do you have a good experience with Green Office Wageningen and their events? If yes, what do you like most? If not, why?

Good experience?	Category	Answer
Yes	Attitude of GOW	They open and supporting attitude of the board members towards new green initiatives
		They take initiative and do not act like sustainability is trendy
		I liked really the atmosphere
		the kind of activities that were carried on
	Activities	The events from Green Office are not like a boring lesson about sustainability. It is something that make us will to have a sustainable life, because it's good for us, and it's actually cool!
		cooperation and commitment
		Innovative small scale and fun idea
		Sustainability Festival
		I like the "eat from waste" project. It's really clever and a proof that we can really use the waste of food in big scale
		the event about food waste. really interesting information
	Promotion should be better	I liked the thematic weeks/days such as sustainability day and eat plant week
		Veggie bags
		lots of free apple juice, and can take photo with the green man
		I don't think the marketing of the events is really effective, it is nice but maybe if done differently could have more participants
No	Didn't know about the activities	I think all the initiatives are great, there is a lot of advertisement (although I only saw advertisement of eat plants week and Sustainability Festival). I like the point to let people know what sustainability is and what they can do to be sustainable as well
		I didn't know that most of the events where there
		I didn't really notice its activities

		never been there
		I did not get any news or messages from that
	Didn't know about GOW	I don't know it
		Because I have never heard of them
		I just never heard of it!
		I don't know what is it and does
		I never saw this office first and second i am more introvert
		I don't know
N/a	Didn't know about the activities	Because, I did not, at least, be informed for an event of Green Office of Wageningen
	Didn't know about GOW	I have never heard of them before. So, hard to say. Also, they should be more visible in their message creation to the students at Wageningen University
		don't know it (yet)
		Never heard of it
	Don't like it	They are way too hippy about it
Other comments	Said that he/she never heard of it	I see the cooking corner, but I bring bread. I totally dig the warm sweater they. it is my opinion the thermostat does not need to be higher than 18 during the day. Cold air makes me think better. I did not hear about the other events so I think I don't know enough to judge them
	Unclear what is meant	Awareness

## Appendix 7: Given answers on open-ended questions SRQ5

GOWOp: What (kind of) event or activity would you like Green Office Wageningen to organise? If you have any suggestions, please write them down below.

Character-ization	Answer	Specified Character-ization	Study type	Level	Gender	Origin
<b>GOW continues as it does now, but promote better</b>	Continue what you do. It sounds great, but I just did not know about it...		Dev.	M	F	EU
	I would like to hear more about the above mentioned events.		Food	B	F	EU
	More information for students who haven't heard about it		Food	M	F	N-Am
	A campaign to promote themselves		Spatial planning	B	M	EU
	The ones you mention before sound really interesting, maybe you need to improve your advertising. If I had knew of course I would join		Food	M	F	N-Am
	I would like more promotion of the actual events, I have never heard about them :(. They sound so interesting.		Food	M	F	N-Am
	I've never heard of these events but they seem interesting, maybe more promotion		Env.	M	M	EU
	maybe more promotion about events, maybe in resource or more promotion in buildings where no education is given. I do now my thesis at zodiac and miss a lot of stuff, because there is barely promotion for events. Or more posters of event in idealis student buildings		Biotech.	M	F	EU

	More promotion and recycable coffee cups, not just plastic.		Dev.	B	F	EU
	speak more about green office and about the events		Agr.	M	F	EU
	promotion act or information on what the Green Office is wanting to accomplish		Env.	B	F	EU
	more Sustainability Tours :-)		Food & Dev.	M	F	EU
<b>Events</b>	Earth Forum - it is an imagining and listening practice where a group of people share their experiences with nature. <a href="http://armadylan.wix.com/earth-forum#!the-practice">http://armadylan.wix.com/earth-forum#!the-practice</a> Sustainability Fashion Week Green Police on campus (but make sure their approach is funny, not blaming) Engage students from the start in these activities, rather than just ask for their opinion or attendance at the end	Debates	Env.	PHD	F	Asia
	debates about sustainability: what it means to us and what we can improve at the WUR	Debates	Env.	M	F	EU
	solar energy seminars	Debates	Food	B	M	EU 7 n-Am
	I think making discussion groups is really valid in a university like wageningen, also workshops teaching people about seasonal food, or reusing, recycling techniques etc	Debates	Dev.	M	F	S-Am
	dance festival that is sustainable	Entertainment	?	B	M	?

	movie night in which they let us see the effect of deforestation in the Brazilian Amazon. This is due to the extensive beef productions in Brazil that need more land. Solutions are out there to stop it but nobody takes the chance to do it (exemple)	Entertainm ent	Agr. & Dev.	M	F	EU
	Events with a higher range, like an open party, or a massive demonstration	Entertainm ent	Env. & Spatial Planning	M	M	EU
	Organize a concert, attract students with funny costumes when promoting an event	Entertainm ent	Env. & Spatial Planning	M	M	EU
	fairs	Fairs	Food & Agr. & Dev.	B	F	Asia
	Sustainability Festival	Entertainm ent	Food	M	F	Asia
	cloth swopping party/ Educate, inform foreign students about the importance to separete waste and how the system works in Holland.	Entertainm ent / Debates	Agr. & Dev.	B	F	EU
	Transformative activities (with a group) that contribute to sustainability awareness on a daily basis. Also projects that provide a lasting and visible change on campus: constant reminders that sustainability is reachable and positive	Debates	Env.	M	M	EU

	Maybe it's a good idea to introduce eating insects to students. If you start by influencing a lot of people at a broader level, the trend might get started ;). I think that eating insects in stead of meat will help sustainability a lot	Fairs	Biology	M	M	EU
	it can provide a opportunity to exchange old books or help new students collect old books from old students. maybe by that can help to save papers (#23)	Fairs	Food	M	F	Asia
	Practical tips about how to have a sustainable life without having to live in droevendaal (#30)	Debates	Env. & Spatial Planning	M	F	S-Am
	Day without using packages of foods	Activities for the WUR	Food	B	F	EU
	more warme truiendagen	Activities for the WUR	Dev.	M	M	EU
	Bring 'waste' products and create something completely new and cool from it; like a violin from a tv and chair (#5)	Fairs	Env. & Agr. & Water man.	M	M	EU
	The awareness project like the Used Cup exposition in the Forum was pretty nice	Entertainment	Food & Biotech.	M	M	EU
	Something with 'good' fashion might be nice.	Fairs	Env.	B	F	EU
	they should organize more competitions for students to come up with a new and innovative ideas for sustainability.	Challenges	Agr. & Biology	M	M	Asia
	Sustainable practices for the day to day student-life . An energy-saving challenge for corridors/houses	Challenges	?	?	?	?

	A challenge to participants to ban as much plastic materials as possible (for example during shopping at the supermarket etc.)	Challenges	Food	M	F	EU
	Sustainability events and awareness building	Debates	Env.	M	M	Asia
<b>Practical solutions</b>	can make some recipes about plant food to send to people		Food	M	F	Asia
	Voting for the placement of electric-car-recharging devices at the P-lot. If thats the line of business there in to...		Env.	B	M	EU
	I am not sure whether you are able to do something about this, but al lot of students live in buildings of Idealis. Al lot of these buildings are very old and are not properly insulated. Mabye you are able to provide students tips to make there houses more draughty by using for instance curtains (they should be more isoling compared to other things), foil which can be applied behind the radiator to reflect warmth, in Dutch tochtstrips (material that can be put in to the holes of the frames of the windows etc. Or get Idealis to fix this problem.		Biotech	B	F	EU

<b>Activities for the WUR to carry out</b>	Any structural changes in WUR, such as lights out in offices during night, regulation of temp. in orion in rooms is from one point, but better from room to room maybe (adapt to number of people, sweaters etc.), put sustainable development as part of all programs		Food	M	F	EU
<b>Overig</b>	About the energy waste in the household, classrooms (like the usage of PC or lights, etc) (#7)		Env	M	F	EU
	local food production and consumption		Env & Spat & water man.	M	M	EU
	plantaion of seeds		Food	M	M	Asia
	a green market, of all students who produce their own crops and food		Water man.	B	M	EU
	Green food processing		Biotech	M	F	Asia
	Renewable energy related		Env	M	M	EU
	showing simple savings on all day activity. Because a lot people do can be done greener.		Biology	M	F	EU







