

# **Evaluation of Attitudes & Knowledge Regarding Municipal Waste among Students.**

## **Case study: Bucharest Academy of Economic Studies**

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### **ABSTRACT**

*As Maloney and Ward (1973) noted thirty eight years ago, “determining what the population knows regarding ecology, the environment and pollution; how they feel about it; what commitments they are willing to make and what commitments they do make are necessary steps that must be made before adopting any strategy that modifies behaviour and habits”. Taking into account that Romania is facing a great challenge to bring its waste management system in line with EU Directives and the key role of education in this process, the paper aims to explore through a questionnaire based survey: (1) the level of knowledge and awareness regarding municipal waste among students, their attitudes and willingness to act in waste related activities, (2) if there are significant differences regarding students awareness, knowledge and concern according to their gender, age, affiliation (faculty) or job status. The paper is structured in four parts, namely: introduction, research methodology, results analysis and conclusions.*

*The findings of this research study showed that the majority of students are generally aware of waste problems. It is important to note, however, that many respondents called for more information, frequent updates and reminders about waste management practices.*

*Pro-environmental and recycling attitudes were shown to be generally positive among students from BAES.*

*Used in the right way such findings might be essential in achieving the overall goal of improving waste management systems, whether it is a recycling scheme, composting scheme or refers to the improvement of environmental awareness process.*

**KEYWORDS:** *environmental behaviour, municipal waste, environmental education*

**JEL Classification:** Q53, I29

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### **Introduction**

The earliest studies on environmental behaviour were published around 1970s and since then there was a boom in research interest on this topic.

Researchers have examined, among other things, the level of environmental knowledge, concerns, attitudes, and behaviours in particular countries (e.g. Antil, 1984; Bech-Larsen, 1996; Danieri & Takahashi, 1999; Chan, 1999), across different national contexts (e.g. Bloom, 1995), and among specific demographic groups (e.g. Wehrmeyer & McNeil, 2000;

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Benton Jr, 1994; Newell & Green, 1997). Taking into account that “today’s business students will be tomorrow business leaders”, many studies have also been conducted to understand the environmental behaviour of students. Synodinos (1990, in Benton Jr., 1994) discovered that business students are less environmentally knowledgeable and display less environmentally oriented attitudes compared to the other students.

A contrasting finding is the one of Shetzer, Stackman & Moor (1991, in Benton Jr., 1994) which discovered that business students expressed positive attitudes towards the environment and were strongly pro-environmental. Shetzer et al.(1991) administered the New Environmental Paradigm Scale and a business environment questionnaire of their own design to 237 undergraduate business students enrolled in a second-year course in organizational behaviour at the University of British Columbia. They conclude that overall the expressed attitudes of the sample are strongly pro-environmental.

Benton Jr (1994) reported that business students were less environmentally oriented compared to non-business students. Business students were found to be environmentally knowledgeable but expressed less concern towards the environment and less willing to act in environmentally friendly ways.

Another study entitled „Environmental Concern: A Cross National Analysis” conducted by Alibeli and Johnson (2009) revealed moderately high levels of concern about the environment among college students from Bahrain, Jordan, Qatar, and Saudi Arabia.

The authors also found that concern about the environment vary according to students’ socioeconomic and demographic characteristics.

Researchers have suggested that the inconclusive results found in previous studies could be partly explained by differences in measurement and national contexts of the studies.

Relatively few studies have captured the level of awareness, knowledge or attitudes of students with regard to waste management.

The studies reviewed highlights two objectives of these efforts, namely: the evaluation of the impact of waste educational programmes (e.g, Grodzinska-Jurczak, Agata & Agata, 2003) and the effectiveness of a new recycling scheme in educational institutions such as universities (e.g. Clay, 2005).

In Romania the concerns in this area of research are poorly represented. During the documentation stage we found only one study referring how students of Economics and Business Administration from Alexandru Ioan Cuza University of Iasi perceive the concept of sustainable development (Nita & Agheorghiesei, 2010). This warrants for further study, taking into account that Romania is facing a great challenge to bring its waste management system in line with EU Directives and the key role of education in this process.

Based on the theoretical framework and empirical evidence, the present research study explores, through a questionnaire based survey, the following issues: (1) the level of knowledge and awareness regarding municipal waste among students from Bucharest Academy of Economic Studies (BAES), their attitudes and willingness to act in waste related activities, (2) if there are significant differences regarding students awareness, knowledge and concern according to their gender, age, affiliation (faculty) or job status.

## 1. Research Methodology

### 1.1 Overview

In order to generate baseline information regarding attitudes and knowledge with respect to the municipal waste issues, the research study involved a questionnaire based survey. A random sampling method was employed allowing an unbiased cross section of the student population to be sampled.

The study was conducted during May 2010. The researcher was the main responsible for delivering and collecting the questionnaires and because of this aspect the questionnaire was not administered simultaneously. The questionnaire was administered on different days during regular seminars or courses at nine faculties from BAES. Completing the questionnaires took respondents about 10 -20 minutes, they worked independently.

The content and the structure of the questionnaire were verified by the supervisors and one teacher from the Statistics Department from Academy of Economic Studies.

Questionnaire reliability was established through a pilot survey of randomly selected students. This led to minor revision of some of the questions used in the questionnaire.

A total of 257 completed questionnaires were obtained from 280 questionnaires administered. The twenty three questionnaires were unusable because of missing responses or lack of appropriate data. The overall response rate for the survey was 91,78% and was deemed sufficiently complete to be useful for the objectives of this research. The sample characteristics are summarized in table 1.

**Table 1. Summary information on the respondents to the questionnaire**

Characteristic (%)	Students
Gender	
Female	72,76%
Male	27,24%
Age	
Under 20	11,28%
20 -22	78,99%
23 -25	9,73%
Affiliation ( Faculty)	
Accounting and Management Information Systems	9,73%
Economic Cybernetics, Statistics and Informatics	8,17%
Commerce	10,89%
Agrifood and Environment Economics	12,84%
Economics	6,23%
Finance, Insurance, Banking and Stock Exchange	8,17%
Management	20,62%
Marketing	9,73%
International Business and Economics	13,62%
TOTAL ( BAES )	
Job	
Yes	22,18%
No	77,82%

Due to the fact that the participation to the study, by completing the questionnaire, was on a volunteer basis, different response rates were recorded for the nine faculties included in the research study.

## 1.2 Questionnaire design

The questionnaire was designed taking into account the objectives of the research. Consequently the questionnaire comprised three sections: section A – knowledge about waste and municipal waste management system; section B – attitudes towards waste; section C- concern and willingness to act; along with specific respondent personal information (age, gender, faculty, job status).

To meet the objectives of the research, the questionnaire included dichotomous questions, multiple choice questions, rating scales and open-ended questions.

Because the three sections had the same degree of importance for the research, each section of the questionnaire comprised almost the same number of questions and statements.

The knowledge section was designed to measure factual knowledge and knowledge from personal experience related to waste and municipal waste management system. It ranged from general items, such as asking which is the more appropriate way of looking at waste, to specific questions such as asking which method of municipal waste disposal is most common in Romania.

Section B questioned students about their behaviour regarding the municipal waste management. Initially students were asked to say how they discard the waste that is of no value for their household. Subsequent questions probed more deeply into what specific actions they undertook regularly in relation to household waste management.

The third section of the questionnaire took into account the analysis of the level of concern and willingness to act of the students, through specific questions such as: „How would you be willing to contribute to the improvement of the waste management system in your town?” or statement such as: „I would need a monetary incentive to get me to recycle (at home/ university/ work)”.

## 1.3 Research study limitations

There are a number of limitations that should be kept in mind when interpreting the findings of this study: the sample of this study is basically formed by undergraduate students and the results can not be extrapolated to students from other cycles of education (MA, PhD) from the Bucharest Academy of Economic Studies; the aim was to engage a wide variety of students from different faculties in order to discover differences in their level of awareness, knowledge and willingness to act, but because completing the questionnaire was on volunteer base<sup>2</sup> we didn't obtained a representative sample of students population for all the faculties included in research.

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<sup>2</sup> Respondents might be strongly encouraged, but the decision whether to become involved and when to withdraw from the research is entirely theirs, Cohen & al (2006), p. 245

## 2. Results Analysis

### 2.1 Questionnaire analysis – section A

The increasing volume of municipal waste is a particularly visible manifestation of the environmental problems. Effective management of municipal waste is becoming progressively problematic for Romanian policy –makers and householders alike.

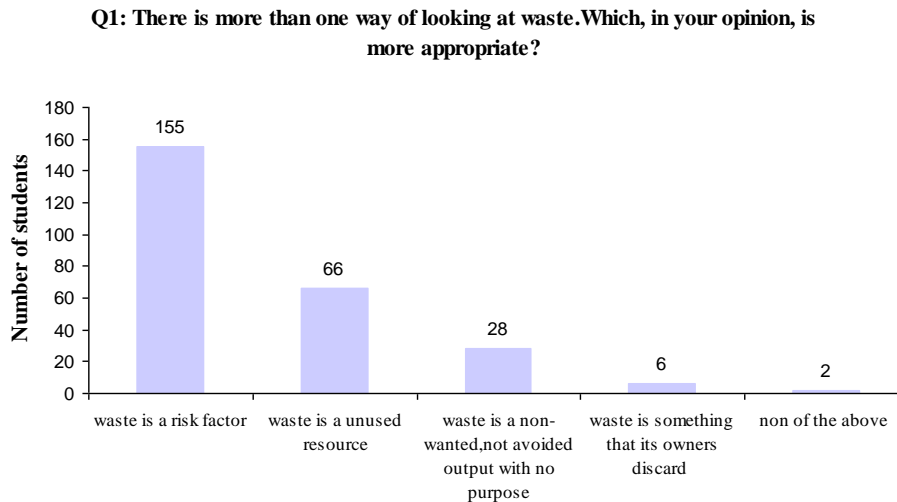
Section A of the questionnaire was intended to assess students level of knowledge about waste and municipal waste management. What is the practical use of knowing what students know about waste and municipal waste management?

The answer is simple: if we gain full understanding of what they know, of how they perceive waste and the municipal waste management system we can develop effective waste management programmes designed to address them in their own language.

In addition we must keep in mind that today's students will be tomorrow people who will shape future communities policy development of Romania.

Next responses to the seven questions included in this section of the questionnaire will be analyzed.

The first question addressed to the students was related to the notion of waste. The way in which students of Academy of Economic Studies perceive waste is shown in Figure 1.



**Figure 1 The notion of waste**

One hundred and fifty five out of the two hundred fifty seven of respondents, which represents 60,32% of those surveyed, believe waste is a risk factor, with consequences for public health and the environment. This result is not surprising because „the characteristics of most solid waste, the unpleasant looks and smell, makes it easy to relate to waste as a risk” (Drackner, 2005).

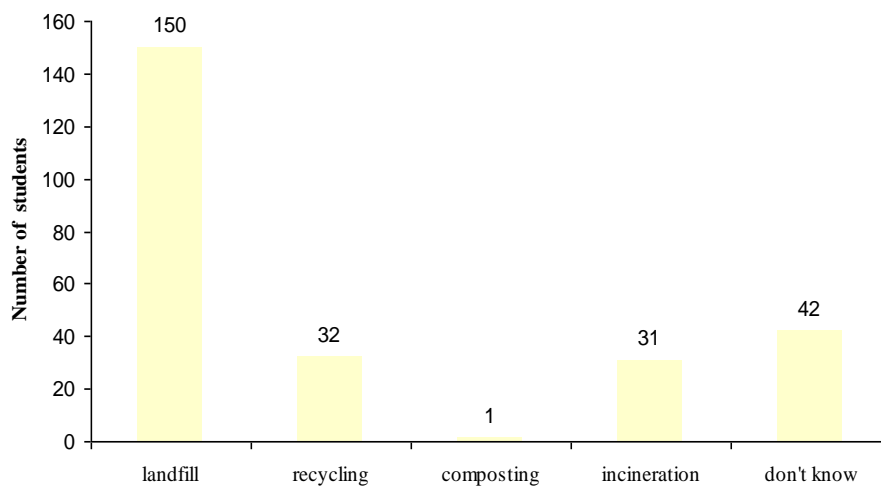
Consequently, if authorities would want to improve municipal waste management practices through a campaign, stressing the importance of public health, might have a greater impact than stressing something else.

Also it is important to mention that 25,68% of respondents consider „waste is a unused resource”. This point of view is in accordance with the Zero Waste Strategy which represents a new planning approach for the 21<sup>st</sup> Century; which defines “the discipline required creating a more sustainable interaction with our natural world, including the principles of conserving resources, minimizing pollution, maximizing employment opportunities, and providing the greatest degree of local economic self-reliance.” (Jessen, 2003, p. 89).

The second question referred to municipal waste management system components. Only 124 of students (48,25% of respondents) knew which are the municipal waste management system components, namely: municipal waste collection; municipal waste transport, municipal waste recovery and municipal waste disposal. This could be explaining by the fact that, in Romania, the municipal waste recovery component is poorly developed and consequently students forgot to take it into account.

The third question (see Figure 2) revealed the fact that 58,36% of students know that landfill is the most common method of disposal in Romania. Another interesting thing is that 12,06% of those surveyed consider incineration is most common method of waste disposal, but in Romania there is no municipal waste incineration plant. Consequently, we believe those students understood by incineration „burning the waste in the backyard,,.

**Q3: Which method of municipal waste disposal is most common in Romania ?**



**Figure 2 Municipal waste disposal method**

The fourth question revealed that the EU requirements regarding municipal waste management in Romania are partially known by 14 % of respondents. The fact that the

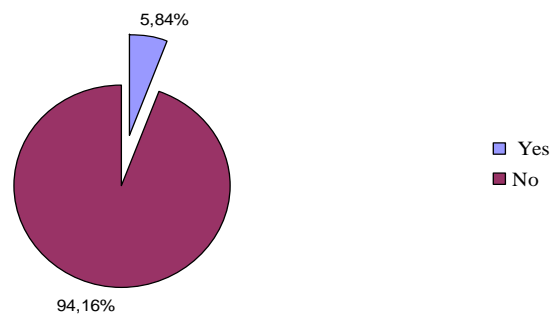
majority of those surveyed (85%) do not know the requirements is a consequence of the lack of communication between the responsible authorities and citizens. This paucity of information must be solved as soon as possible, in order to avoid the infringement procedure.

The fifth question was an open-ended question and took into account the awareness campaigns or recycling programs students heard about. The students most aware about recycling programs and campaigns are those from Marketing faculty, Management faculty, Economic Cybernetics, Statistics and Informatics Faculty and Commerce Faculty.

An interesting observation is that 54,54% of respondents from Agrifood and Environment Economics Faculty did not heard about any awareness campaign or recycling programs. This result was a bit surprising because these students have in their curricula disciplines related to the environment protection.

As Figure 3 shows the information about the waste management system are insufficient. Over 90% of the students felt that they did not receive enough information about waste issues.

**Q6 : Is sufficient information made available to you about the waste management system?**



**Figure 3 Information about the waste management system**

This is an important finding, but provides little guidance on the nature of information that is desired by respondents. Consequently, question seven was used to further probe students about this issue.

The results revealed that students want the provision of frequent, appropriate and practical information on waste management in order to improve their waste management behaviour. The appropriate and practical information on waste management refers to: waste collection schedule, where to complain if there are problems, proper handling of different kinds of waste, and so on.

## 2.2 Questionnaire analysis – section B

Waste is one of the many environmental problems which need to be tackled at the individual level, requiring individuals to develop those attitudes which will guide them towards a responsible environmentally behaviour.

The section B of the questionnaire was intended to assess student's attitudes towards waste.

The results showed generally that the students hold positive attitudes towards the issues raised; also the analysis of the answers indicated that students' attitudes towards waste did not appear to be influenced by the faculties in which they are studying. The results also indicate that students' attitudes towards the waste did not reflect differences which may be attributed to gender. This is not in agreement with the results of several other studies, in which females had a higher level of positive attitudes to environmental problems than males (Kuhn, 1979; Schahn & Holzer, 1990; Stepaniak et. al, 1998).

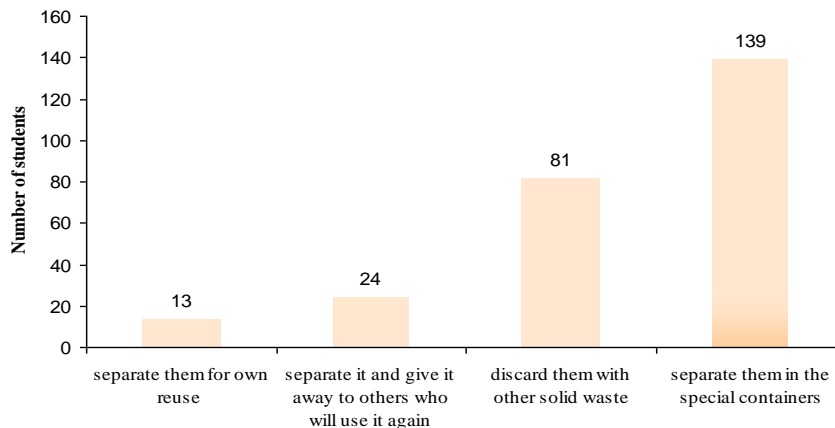
A possible explanation relies on the fact that there was not a balanced number of respondents on gender (only 27,24% of respondents were males in this research study).

The findings to the eight items included in this section B are summarized next.

Two hundred and fourteen out of the two hundred fifty seven of respondents, which represents 83,27% of those surveyed, discard the waste that is no value for their household in the communal containers. However, 16,73% of students surveyed show a negative attitude with respect to waste disposal, because they leave the waste on the street, throw it in the river, or burn it in the backyard.

Figure 4 shows that 68,48% of the students surveyed have a positive attitude towards the management of recyclable waste.

**Q9 : What do you do with your recyclable waste ?**



**Figure 4 Recyclable waste**

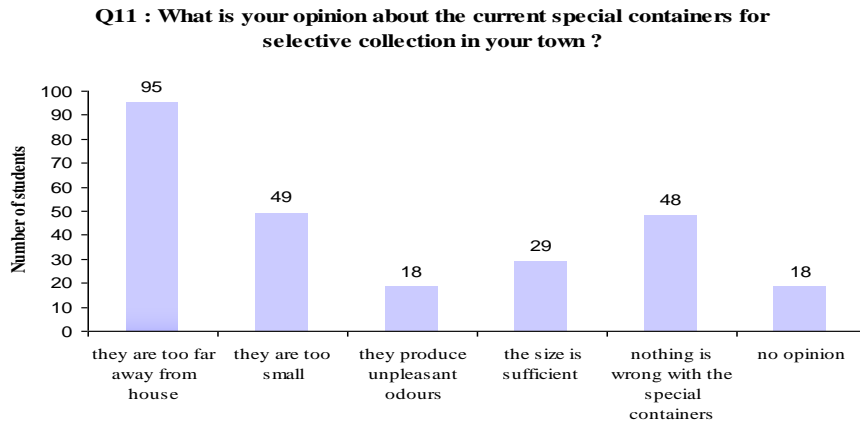
Also it is important to point out that, in present, only a small number of municipal waste (paper and cardboard, glass, plastics, e-waste) are targeted for selective collection and recycling in Romania. However the findings are encouraging, the majority of the students are on the right pathway. These findings are further strengthened by the responses to the



statement „Waste recycling is a worthwhile activity,,.The large majority of the students either strongly agree or agree with the fact that waste recycling is a worthwhile activity.

On the other hand, 31,52% of those surveyed discard the recyclable waste with other solid waste. A partial explanation for this attitude could be found through the answers analysis of the question eleven of the questionnaire. Question eleven referred to the special collection containers which represent a key element that makes the waste recycling scheme to operate at optimum parameters.

The main reasons why the recyclable waste are discarded together with the other solid waste are (see also Figure 5 for the answers distribution ): the special collection containers are too far away from house, the special collection containers are too small and the special collection containers produce unpleasant odours.



**Figure 5 Selective collection containers**

Another question of the section B asked unsatisfied students to come with solutions in order to solve the special collection containers problems. The solutions and suggestions provided by the students are presented below in Table 2.

**Table 2. Waste collection system – Ways of improving**

Solutions / suggestions	Answers Frequency
larger containers for selective collection	18
more investments in awareness campaigns	4
more special containers	40
more special containers in crowded places	2
more special containers near home	22
more special containers placed so that everyone can recycle	25
the containers must be collected everyday	4
use properly the special containers	2
private companies specialized in collection and sorting waste	2
put special containers from 10 to 10 m	1

Solutions / suggestions	Answers Frequency
put containers to each house	2
more special containers and awareness campaigns	5
more publicity on TV, radio, newspapers regarding recyclable waste	1
larger containers that not produce unpleasant odours	3

The majority of students suggested that „more special containers „would solve the problem. Another solutions took into account were: larger containers, more publicity on TV/ radio/ newspapers regarding recyclable waste, private companies specialized in collection and sorting waste, more investments in awareness campaigns and so forth.

The thirteenth question revealed that students have a very low level of satisfaction regarding waste management services. Thus, thirty-nine of the students said they are not satisfied at all, while one hundred and thirty seven of the respondents said they are not satisfied with the current waste management services.

These findings are further strengthened by the responses to the question fourteen. Thus 97,67% of the students surveyed felt that improving the waste management system is important. They suggested that more consideration should be given to providing a satisfactory waste service to people. Issues of fairness were also raised in relation to weak enforcement of waste management policies against illegal dumping.

The majority of the students also underlined is important to improve the waste management system in order to protect the environment and people's health. Other respondents suggested it is important because this is a pathway to reduce the resource consumption.

The last item of the section B, asked students to express their opinion towards the importance of municipal waste diverting from landfill. Thus, the large majority of the students either agree or strongly agree with the fact that „diverting municipal waste away from landfill is important”. Possible explanations for their attitude consist in the fact that students are aware that landfills: (1) take up valuable land space and make it unavailable for many years, (2) contribute to the emission of carbon dioxide and methane into the atmosphere, two major greenhouse gases that have a great impact in the climate change, (3) pollute the groundwater generating additional environmental and health risk.

However, in Romania, moving away from landfill as a waste management option will still take some time, in spite of EU pressure. This observation relies on how slowly the things changed in the waste management field after the EU accession.

### 2.3 Questionnaire analysis – section C

Individual commitment to environment protection may take many forms: some people recycle, others support the NGO's actions, use public transport, buy organic products, and so forth. Others may write articles in the newspapers or scientific journals to help to restore damaged ecosystems, promote composting, renewable energy. However, despite evidence showing that a large number of citizens in various regions of the world expresses commitment to the environment, many empirical studies noted a discrepancy between concern and actual commitment to the environment.

Through the items (four questions and two statements) of this section C, we intended to find out if there is a gap between concern and action in the case of the students from Bucharest the Academy of Economic Studies.

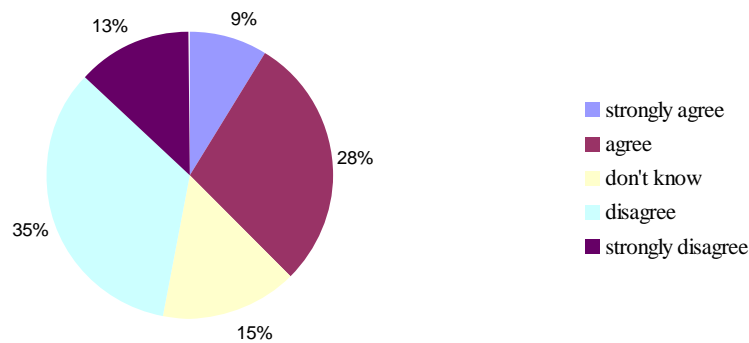
The majority of students, 87,94% of those surveyed, are generally concerned about the environment, natural resources and waste management. This finding is in accordance with the results of worldwide studies, that have shown increases in environmental values and beliefs over the past four decades.

The most frequent actions that students undertake in order to protect the environment and natural resources are : the use of eco-friendly shopping bags; support for the NGO's campaigns; the use of recycled products and so forth. Is important to mention that the use of eco-friendly bags became popular in Romania with the introduction three years ago of the eco-tax for plastics bags.

Over 5 % of those surveyed declared are currently separating recyclable waste, supporting through this action the recycling scheme. On the other hand, 98% of those that are not currently separating recyclable waste said they would recycle if the recycling scheme would be better organised. This result strength the findings from the section B (questions 11, 13, 14).

Figure 6 shows that 37 % of the respondents strongly agree or agree with the statement „I would need a monetary incentive to get me to recycle (at home/ university / work)”.

**Q20 : " I would need a monetary incentive to get me to recycle"( at home/university/work)"**



**Figure 6 Recycling behaviour**

This point of view is in agreement with Pieters (1991) who argues that to change consumers waste disposal patterns financial incentives and legislation are vital components of any environmental policy. On the other hand, 48% of those surveyed strongly disagree or disagree with the idea that financial incentives would motivate them to recycle. This opinion confirm the results found by De Young (2000) and Oskamp at al. (1991) (in Clay, 2005) who discovered that financial incentives did not produce long term changes in behaviour.

The last question of this section C, asked students how they would be willing to contribute to the improvement of the waste management system in their town.

The large majority of the respondents would contribute by separating recyclable waste; 13% of those surveyed said they would contribute by paying an amount agreed upon by the community for a waste selective collection system, recycling and composting scheme; 12% of the students emphasised their desire for participative learning, that is learning by doing in relation to waste issues, such as involving in awareness campaigns.

The development of recycling programs and centers must be addressed; the findings from the last question of the section C underline this thing.

## Conclusions

The research study into attitudes& knowledge regarding municipal waste among students from BAES produced a wealth of interesting data. The students surveyed are generally aware of waste problems. It is important to note, however, that many respondents called for more information, frequent updates and reminders about waste management practices. Therefore it is recommended that efforts should be made by authorities to organize seminars and workshops for students and other stakeholders to sensitize and consciencitise them to waste problems.

Pro-environmental and recycling attitudes were shown to be generally positive among students from BAES. This is in accordance with the findings of the literature, which indicates that „students are developing more positive attitudes about the need to reduce environmental problems” (waste management being one of them).

However, responses indicated that recycling could be improved by: (1) providing information on proper handling of different kinds of waste, and by (2) making it more convenient, mainly by the introduction of more special collection containers in strategic areas.

The majority of students from BAES are generally concerned about the environment, natural resources and waste management. This is encouraging, because students are also consumers and as consumers they can use their buying power to demand non-toxic and easily reused, recycled, or composted products, contributing in this way to the shift towards a green society.

The research study examined, through the questionnaire survey, a range of knowledge, attitudes, concerns and actions of students from ASE on waste and municipal waste management.

Used in the right way such findings might be essential in achieving the overall goal of improving waste management systems, whether it is a recycling scheme, composting scheme or refers to the improvement of environmental awareness process.

In Romania, national, regional or local authorities often organize campaigns without taking into account how people from the community perceive waste and the problems related to waste: what motivates to have an environmentally friendly behaviour (to recycle, to compost, to minimize waste and so on) and what discourages them from involving in waste management actions (e.g. participating to the selective collection scheme).

Designing awareness campaigns based on theoretical and practical considerations using empirical data is certainly superior than selecting a technique based on subjective preferences.

Also, the results of research studies like this, could contribute to the development of a waste education strategy, which would provide an integrated approach in order to educate the Romanian citizens in sustainable waste generation practices.

The introduction of waste management concepts and themes through environmental education and school curriculum at all levels will not only improve understanding of waste management problems and needs but will also contribute to the change of the current waste management practices.

The findings of this research study showed that students are willing to engage in activities that involve participative learning in relation to waste issues. This can be exploited by organizing, together with the local authorities and salubrity firms, educational tours, such as „Recycling and Waste Education Tours” (e.g after the Australian or Portuguese model).

Despite the interesting findings and implications that emerge from this study, it is important to recognize its limitations and the need for additional research.

This research study could have been improved by sampling a great number of students to gain a more representative view of the attitudes & knowledge regarding municipal waste among students from ASE.

The questionnaire survey was useful in showing trends in attitudes and actions, but in some cases it was less informative about reasons why such attitudes and actions exist. Consequently, for future studies we will take into account also another instrument such as interview or focus group, in order to understand more clearly why some students behave in an environmentally friendly or unfriendly way.

#### **Acknowledgments**

This work was carried out within the doctoral research and was supported by CNCSIS – UEFISCDI, project number PNII – IDEI 1834/2008.

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