

*Full Length Research Paper*

# Effects of personal characteristics on environmental awareness; a questionnaire survey with university campus people in a developing country, Turkey

Nalan Demircioglu Yildiz\*, Hasan Yilmaz, Metin Demir and Süleyman Toy

Department of Landscape Architecture, Faculty of Agriculture, Ataturk University, 25240, Erzurum, Turkey.

Accepted 5 January, 2011

**This study was carried out to identify the awareness and sensibility levels of campus people about environmental problems in Erzurum, the largest city of the East Anatolian Region, Turkey. A standard questionnaire form was completed by 350 volunteers and the data obtained were evaluated with Chi-square ( $\chi^2$ ) test. Environmental sensibility of the campus population was found to be 64.4% and the relationships between the sensibility and education levels, age, gender and income groups were investigated.**

**Key words:** Environmental problems, environmental sensibility, survey study, Erzurum, Turkey.

## INTRODUCTION

Regardless of their types, environmental problems have no respect for national borders and existent problems may trigger new ones. It is well-known that environmental problems have impacts primarily on human health and his economic, social, and cultural development. From this perspective, it is an obligation for nations to eliminate or, at least, reduce the effects of environmental problems to harmless levels. On the other hand, this aim can only be achieved by determining the existent conditions and problems of natural reserves and then preparing long-term environmental policies. In preparing environmental policies, public participation and awareness towards environmental matters are very important. Improvement in the public consciousness and awareness of environmental matters may offer people healthier life and safer environment. In order to assess public awareness and sensibility levels about environmental matters and obtain efficient public participation in decision-making process for planning attempts, the most preferred detection method is public questionnaire surveys. This method has widely been used by the authors from various parts of the world. For example, Leboyer et al.

(1996) used this method in France, Germany, Italy, Portugal and UK; Chung and Poon, (1999) in Guangzhou, China; Anonymous (1999) in Fort Collins in Colorado, USA; Chau et al. (2002) in Hong Kong; Anonymous (2002a) in Colorado USA; Anonymous (2003) in Japan; Gwebu (2003) in Old Naledi-Gaborone, Botswana; Moser and Robin (2006) in Adana; Tekçe (1995) in Burdur; Yücel (1994) in Adana and Yılmaz and Öz (2004) in Erzurum.

Turkey faces environmental problems, including air, water and soil pollutions; waste materials; excessive noise; housing problems; lack of infrastructural facilities and destructions of green areas and many more. Although not industrialised, the city of Erzurum is among the Turkish cities, where stress on the nature is increasing in the parallel of the growth in economy and population, because the city receives rural migration in addition to its existent population increase and has harsh climatic features, which mainly cause air pollution in winter. A long-term-valid and healthy development planning process is an obligation for the city because it is one of the most important historical and natural wealth of the Country and has so important a place in world's winter sports that "Universiade" winter games in 2011 is going to be held in the city (Yıldız et al., 2008).

The objective of this study is to determine the environmental awareness and consciousness levels of

\*Corresponding author. E-mail: [nalandemircioglu25@hotmail.com](mailto:nalandemircioglu25@hotmail.com).

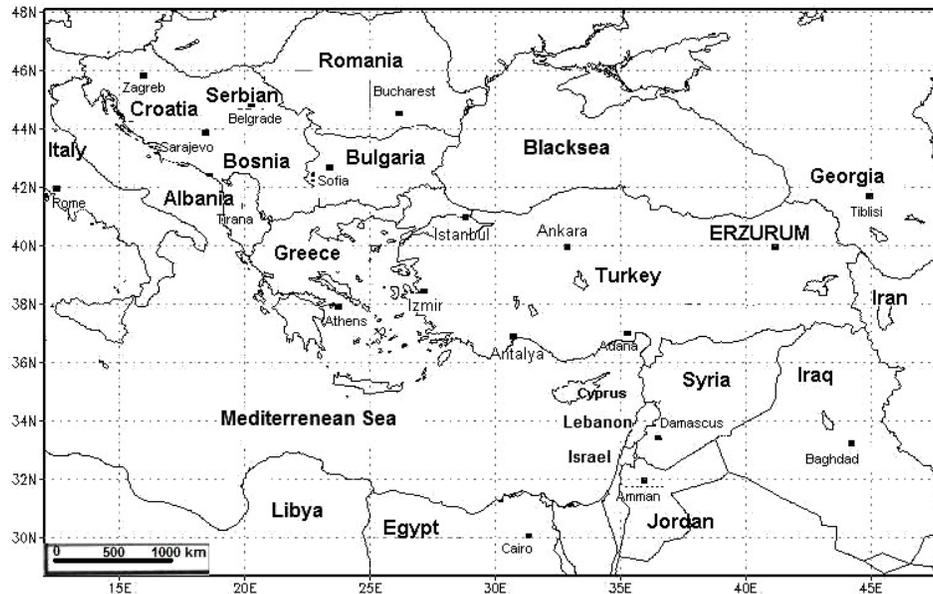


Figure 1. Study area.

campus people in Erzurum Atatürk University, which was among the oldest and biggest Turkish universities.

## MATERIALS AND METHODS

The study was conducted in the city of Erzurum in 2005. The city, at an average elevation of 1,850 m, is located in the north-eastern part of Turkey (39° 55' N and 41° 16' E; Figure 1) and has harsh continental climatic features (annual mean temperature is only 5.2°C; (Yılmaz et al., 2007). Population of the city is 361,235 according to the census in 2000 (Anonymous 2002b). A standard questionnaire form consisting of 26 questions, through which the personal characteristics and environmental awareness levels of the participants were expected to be determined, was applied using face-to-face method in the campus of Atatürk University in centre of the city of Erzurum. The questions in the questionnaire forms were selected for determining socio-cultural levels, opinions about the most important environmental matters and attitudes towards environmental sensibility of the participants.

A standard questionnaire form, taken from a research project at Çukurova University ZF2004BAP12) and consisting of 26 questions, was applied to 400 volunteers with face-to-face technique in the centre of the city of Erzurum. Although initially 400 questionnaire forms were completed, among them 350 could be evaluated for various reasons (for example incomplete information or illegibility). SPSS 10.0 software package was used for the statistical analysis, where percentage distributions; averages; Z-test; Chi-square ( $\chi^2$ ) test for the determination of associations between the groups; and T test for the differences between the groups were used.

## RESULTS AND DISCUSSION

Since the respondents to the questionnaire were selected randomly in the campus area, among them not only academicians and students took place but also the

people who were then present in the campus for various reasons, for example for the university hospital or canteens. Personal characteristics of subjects are presented in Table 1. Of 350 participants, 213 (60.9%) were male, 119 (34.0%) were between 29 and 38 years old, 122 (34.9%) were university graduate, 212 (60.6%) were married, 126 (36.0%) were in 1,000 to 2,000 TL income group and 109 (31.1%) were officers in government. One of 26 questions in the questionnaire was about the most important problems of Turkey and Erzurum. According to answers given by participants, environmental problems were not included among the first three problems for Turkey whereas one was the third most important problem for Erzurum.

Interviewed campus people stated that the most important problem in both Turkey (67.4%) and Erzurum (65.1%) is unemployment while they see distorted urbanisation and air pollution as the most important environmental problems in Turkey (58.1%) and Erzurum (41.9%), respectively (Table 2). Although their surveyed people were not at a campus area, this result is convenient with those in other studies in Turkey, such as Yılmaz and Özer (2001); Yılmaz and Öz (2004); Eren (1995); Çelen et al. (2002), where again air pollution was determined to be the most important environmental problem, and in the world, such as Smith (1987), who reported that in New York, 68% of people suffer from air pollution and respiratory system diseases; Anonymous (1999) in Fort Collins stating that 73% of surveyed people think that air quality is good but 78% of them think in a five-year time it will be polluted. When people included in the study were asked to rank the environmental problems of Turkey and Erzurum, they stated that the most important environmental problem was distorted

**Table 1.** Distribution of the participant characteristics.

Characteristics	Categories	n	%
Gender	Female	137	39.1
	Male	213	60.9
Age	13 to 18	19	5.4
	19 to 28	100	28.6
	29 to 38	119	34.0
	39 to 48	67	19.1
	48 and above	45	12.9
Education	Illiterate	9	2.6
	Literate	6	1.7
	Primary school	25	7.1
	Secondary school	24	6.9
	High school	83	23.6
	Pre-bachelor's degree	14	4.0
	University	122	34.9
Marital status	Master	67	19.1
	Married	212	60.6
Monthly Income	Single	138	39.4
	Less than 500 Turkish Liras (TL)	44	12.6
	500 to 1,000 TL	120	34.3
	1,000 to 2,000 TL	126	36.0
	2,000 to 3,000 TL	46	13.1
	3,000 to 4,000TL	9	2.6
	Above 4,000TL	5	1.4
Occupation	Officer in government	109	31.1
	Workman in government	31	8.9
	Worker in private sector	11	3.1
	Lecturer	29	8.3
	Student	67	19.1
	Pensioner	12	3.4
	Tradesman	47	13.4
	Unemployed	44	12.6
Total		350	100

**Table 2.** Ranking of the problems of Turkey and Erzurum according to the answers.

Problems of Turkey	Mean ( $\bar{X}$ )	Order	Problems of Erzurum	Mean ( $\bar{X}$ )	Order
Unemployment	7.0971	1	Unemployment	6.7686	1
Terror	5.2486	2	Education	5.5200	2
Education	5.1371	3	Environment	4.8200	3
Environment	3.6257	4	Traffic	4.0343	4
Inflation	3.6171	5	Health care	3.9200	5
Health care	3.6000	6	Inflation	3.4571	6
Traffic	3.5686	7	Terror	3.3229	7

**Table 3.** Environmental problems of Turkey and Erzurum.

Environmental problems of Turkey	Mean ( $\bar{X}$ )	Order	Environmental problems of Erzurum	Mean ( $\bar{X}$ )	Order
Distorted urbanisation	6.5200	1	Air pollution	6.3171	1
Air pollution	5.1943	2	Distorted urbanisation	5.9429	2
Noise pollution	4.3771	3	Waste materials	4.9429	3
Soil Erosion	4.2257	4	Water contamination	4.0400	4
Water contamination	4.0314	5	Noise pollution	4.0029	5
Extinction of plant and animal species	3.6657	6	Soil Erosion	3.4457	6
Soil pollution	3.4514	7	Soil pollution	3.1857	7

**Table 4.** Responses of the nature to environmental problems.

Nature is	Meaning	n	%
Limitedly tolerant	Nature is limitedly tolerant for the negative effects caused by the pollutions, which may not be controlled next.	199	56.9
Susceptible	Nature is very sensitive to all kind of effects. Even a single small unfavourable factor can disrupt its balance.	78	22.3
Unpredictable	The results of the effects cannot be predicted.	43	12.3
Resistant	Nature can consistently renovate itself. For this, it can erase all undesired effects and take the form at the beginning.	30	8.6
Total		350	100

**Table 5.** Contributions to environmental preservation.

Contribution levels to environmental preservation	%
I can voluntarily take part in the environmental preservation attempts	67
I can subscribe	11
I can pay extra tax for environmental preservation	14
I don't give any contribution	5
Other	3

urbani-sation, air pollution and noise pollution; and air pollution, distorted urbanisation and waste materials for Turkey and Erzurum, respectively (Table 3).

When the participants were asked about the sources of some environmental problems, they considered settlement areas, traffic and industry to be the sources of air pollution with the percentages of 93.4, 84.6 and 70.3, respectively; settlement areas, solid waste materials and industry to be the sources of water contamination with the percentage of 72.6, 68.6 and 66.6, respectively; settlement areas, agricultural activities and industrial areas to be the sources of soil pollution with the percentage of 72.6, 67.4 and 65.7, respectively; traffic, construction areas and settlements areas to be the sources of noise pollution with the percentages of 84.9, 60.0 and 58.3%, respectively; and nuclear power plants,

nuclear experiments and hospitals to be the sources of radioactive pollutions with the percentage of 75.7, 65.4 and 60.9, respectively. When the participants were asked to choose the statements in the form they agreed with about the responses of nature against environmental problems, 56.9% (n = 199) of them chose statement "Nature is limitedly tolerant for the negative effects caused by the pollutions, which may not be controlled next" (Table 4).

When the participants were asked about the extents of their contribution to environmental preservation, 67% stated that they could voluntarily take part in the environmental preservation attempts, whereas 5% were unwilling to take part in this kind of activities (Table 5). In addition to this finding, 87.4% of the people surveyed reported to be the member of a voluntary environmental

**Table 6.** Actions to be taken against the environmental problems.

Actions to be taken against the environmental problems	Mean ( $\bar{X}$ )	Order
Increasing the environmental awareness and sensitivity of people through education	6.3200	1
Using advanced technologies	3.7200	2
Taking efficient legislative and regulatory actions	2.1971	3
Use of recyclable raw materials in industry	0.9486	4
Economical actions	0.2629	5

**Table 7.** Attitudes towards the harmful people to environment.

Attitudes	n	%
Preferring to complain them to a related institution	116	33.2
Preferring to warn themselves	156	44.6
Never warn	50	14.3
Preferring to inform press about the problem and let people know it	26	7.4
Other	2	0.6
Total	350	100

**Table 8.** Answers about the separation of domestic waste materials.

Domestic wastes	n	%
Papers	91	26.0
Glass	69	19.7
Batteries	54	15.4
Plastic products	47	13.4
Plant products	23	6.6
Never composing	169	48.3

**Table 9.** Meaning of the waste material containers.

It means	Frequency	%
Throwing the rubbish away	34	9.7
Protection of the environment	134	38.9
Recycling of materials	165	47.2
Being economical	50	14.3
Nothing	8	2.3

association. In another study, Özmen et al. (2005) in Turkey conducted over 410 student subjects; it was found that 84.9% of the subjects do not take part in the environmental protection activities. From the answers participants gave about the actions to be taken against environmental problems, it was seen that the first thing they mentioned was to increase the environmental awareness and sensitivity of people through education, followed by other alternatives, such as using advanced technologies, taking efficient legislative and regulatory actions etc (Table 6). In a study (Chau et al., 2002), in Hong Kong conducted over 369 subjects, it was

emphasized that legal regulations must be done to protect the nature while in Polinard and Wrinkle (1980), it was reported that to increase the environmental quality extra taxes and legal based regulations are needed.

When the interest of participants in environmental TV or radio programs, paper news, or articles was questioned, 73.3% of the participants stated that they sometimes watch, listen, or read this kind of documentaries while 13% of them constantly follow and again 13% are never interested in them. In a similar study (Tekçe, 1995) in the city of Burdur, Turkey, it was reported by the interviewed people that they take their first information from the communication devices. When participants were asked about their attitudes towards people who give harms to environment, 44.6% of them preferred to warn them by themselves, 33.2% reported them to the related authorities (Table 7). In this respect, highly sensitive people are well educated and aware about environment by the communication devices.

About the separation of domestic waste materials at source, 48.3% of the participants stated that they did not do this, while 26% separated only papers (Table 8). The reason for this may be the lacking of designed waste material boxes for this aim. About the meaning of waste material containers, 47.2% of the subjects stated that they mean recycling of the materials while nothing for 2.3% (Table 9). About the container preferences, 42.9% of participants stated that they prefer to buy liquids in glass containers while 41.4% of them prefer to buy solid materials in paper bags (Table 10). In another study (Şafak and Erkal, 1995, 1999, 2000), it was stated that 77.9% of the females and 55.5% of the males prefer glass containers. From the results of the study, in the aim of conservation of the environments people often (38%) prefer public transportation, such as subway and bicycles

**Table 10.** Container preference.

Container preference	Frequency	%
Metal boxes	21	6.0
Plastic boxes	21	6.0
Glass container	143	42.9
Paper bag	145	41.4
Plastic bag	20	5.7

**Table 11.** Preference of ozone including products

Use of ozone harmful materials	Frequency	%
I have no idea	21	19
I consider not buying	21	37
I don't mind buying	143	15
I prefer ozone friendly products	145	29

**Table 12.** Official education levels about environment.

Informed at	Frequency	%
Primary school	79	22.6
Secondary school	61	17.4
High school	79	22.6
University	59	16.9
Master	8	2.3
Never	64	18.3

(21%), while 11% use cars. On this subject, in a study in the city of Fort Collins, it was found that in order to reduce the air pollution, 53% of people suggested the use of bicycle, 35% public transportation and 22% alternative devices (Anonymous, 1999). For the products including ozone-harmful materials, 37% of the subjects prefer not to buy these products while 15 are not sensitive to this topic (Table 11).

About the foresting attempts, 68% of the subjects stated that they volunteer this kind of activities. While the subjects stated that they were informed about the environment and the nature at primary and high schools in the rate of 22.6%, 18.3% of them they had no class about this subject (Table 12). Çelen et al. (2002), reported the rate of informed people at schools to be 94.4% and the rate of people who want this to be obligatory 61.8%. The effect of the personal sensitivity and efficient environmental education is not negligible in the solution of environmental problems (Çabuk and Karacaoğlu, 2003). For an efficient environmental education, tendencies of students must be evaluated. Özmen et al. (2005) over 410 students stated that 65% of the subjects are sensitive to the environmental problems while Özdemir et al. (2004) over 310 students stated that 75.8% of them know what to do about the environmental problems and

practice them; Burke and Nellutla (2003) found that students are aware of the environmental problems and according to them the most important problem is water contamination (52%), and Tuncer et al. (2005) over 1497 attempted to differences between the factors affecting the environmental sensitivity.

People have various thoughts about the use and conservation of natural resources. In the evaluation of the responses given by the subjects to questions about the necessity of the conservation of the nature, Z test was used, determining the confidence interval at 95% and remaining the significance level at 5%. From the answers, it was seen that people mostly believe that natural resources are the common wealth of humankind and for this; they must be used commonly and not be sold and rented individually. In addition, they believe that without the human intervention, nature can survive its balanced structure; sharing equality must be considered between the generations in sustainable development targets; and it is vital that an unaffected environment should be inherited to the next generations. However, they stated that if the natural resources have an economical value, the first thing to be considered must be again nature itself. For this, they think even if the processors of these resources pay the expenses of their polluting activities they should not use them (Table 13).

In the evaluation of the responses given by the subjects to questions about the future scenarios on the disruption of environmental balance, Z test was used, determining the confidence interval at 95% and remaining the significance level at 5%. In this respect, eight of variants are higher than the mean while two are lower and no variants show an unstable tendency. This means that the subjects believe that in the future people will face the problems of climatic change, global warming, poverty, hunger, floods, desertification, petrol and fresh water shortage (Table 14). In the studies on the determination of the attitudes and behaviour towards the environments, some kinds of characteristics such as gender, age, educational levels and income show differences compared to their responses. This situation is true for the present study, for example, responses for the problems of inflation ( $p:0.000$ ;  $p \leq 0.01, x^2:26.581$ ), terror ( $p:0.048$   $p \leq 0.05, x^2:7.909$ ) and education ( $p:0.044$   $p \leq 0.05, x^2:8.080$ ) in Turkey and environmental problems ( $p:0.002$   $p \leq 0.05, x^2:15.233$ ), unemployment ( $p:0.000$ ,  $p \leq 0.009$ ,  $x^2:11.489$ ), education problem ( $p:0,000$   $p \leq 0,01, x^2:26.581$ ) and health care problem ( $p:0,001$   $p \leq 0.05, x^2:16.980$ ) in Erzurum, in addition, soil pollution from settlement areas ( $p:0.002$ ;  $p \leq 0.05, x^2:9.861$ ), noise pollution from construction areas ( $p:0.002$ ;  $p \leq 0.05, x^2:14.105$ ), participation in foresting attempts ( $p:0.004$   $p \leq 0.01, x^2:8.150$ ) change according to gender. On these topics, male subjects are more sensitive than the females.

The same condition is also seen in the age, for example, responses about the environmental problems in Turkey ( $p:0.015$   $p \leq 0.05, x^2:24.879$ ), unemployment in

**Table 13.** Thoughts about the necessity of the protection of nature.

Thoughts	Mean ( $\bar{X}$ )	
A- Natural reserves are the common wealth of humankind. For this, if the processors of these resources pay their harms, they can use them.	5.4457	Lower
B- Natural reserves are the common wealth of mankind. For this, their use must be common. They cannot be sold or rented.	6.7629	Higher
C- Without human intervention, nature can survive its balanced structure.	6.6971	Higher
D- If the natural resources have an economical value, the first thing to be considered must be their use and protection must be in the second row.	2.1857	Lower
E- Socio-economical problems may be more important than the environment. For this, socio-economic problems must have priority.	5.0057	Lower
F- Sharing equality must be considered between the generations in sustainable development targets. An unaffected environment should be inherited to next generations.	9.1486	Higher

**Table 14.** Future scenarios about the environmental distortion.

Scenario	Mean ( $\bar{X}$ )	
1. Climatic change and Global Warming will increase	6.5629	Higher
2. Poverty and hunger will increase	6.3200	Higher
3. Petrol shortage will be increase and alternative products will be used in the cars	6.2171	Higher
4. Fresh water will be inefficient and very expensive	7.1543	Higher
5. Wars for natural resources and water reserves will break out	6.9486	Higher
6. Nuclear energy will be given up	2.1347	Lower
7. There will be cloned people	2.0143	Lower
8. Ecologic agriculture will have importance	6.0314	Higher
9. Due to melting of ice-bergs coastal regions will be flooded	6.2086	Higher
10. Desertification will increase	7.1029	Higher

Erzurum ( $p:0.038$   $p \leq 0.05$ ,  $x^2:21.994$ ), environmental problems ( $p:0.002$   $p \leq 0.001$   $x^2:31.395$ ) and health care problems ( $p:0.047 \leq 0.01$ ,  $x^2:21.230$ ) are associated with the age groups. In addition to these, responses about the distorted urbanisation in Turkey ( $p:0.000$   $p \leq 0.01$ ,  $x^2:35.523$ ), extinction of species ( $p:0.001$   $p \leq 0.01$ ,  $x^2:33.384$ ), global warming ( $p:0.000$   $p \leq 0.01$ ,  $x^2:41.380$ ), water and noise pollution from settlement areas ( $p:0.002$   $p \leq 0.05$ ,  $x^2:16.459$ ;  $p:0.002$   $p \leq 0.05$ ,  $x^2:23.928$ ) are significantly associated with the age groups. On these topics, the most sensitive age group is 29 to 38. Married people are more sensitive to environmental problems in Erzurum than those single. Especially, responses for the unemployment and environmental problems in Erzurum ( $p:0.029$   $p \leq 0.05$ ,  $x^2:9.031$ ;  $p:0.001$   $p \leq 0.001$ ,  $x^2:15.525$ ) are associated with the marital status.

Another factor that may affect the sensitivity is occupation. While the academicians are sensitive to education problems in Turkey ( $p:0.003$   $p \leq 0.05$ ,  $x^2:42.694$ ), membership of a voluntary association ( $p:0.000$   $p \leq 0.01$ ,

$x^2:46,508$ ) and the use of public transportation for environmental concerns ( $p:0.002$   $p \leq 0.01$ ,  $x^2:53.820$ ), tradesmen are sensitive to soil pollution in Erzurum ( $p:0.000$   $p \leq 0.01$ ,  $x^2:71.831$ ). Similarly, income levels also show some differences on sensitivities, for example responses for the unemployment in Turkey ( $p:0.004$   $p \leq 0.01$ ,  $x^2:33.715$ ) and education problems in Turkey and Erzurum ( $p:0.004$   $p \leq 0.05$ ,  $x^2:33.232$ ;  $p:0.028$   $p \leq 0.01$ ,  $x^2:27,035$ ) and air pollution in Erzurum ( $p:0.000$   $p \leq 0.01$ ,  $x^2:45.969$ ) are associated with the income levels. In another study (Çetin, 2002) on the same topic in Eskişehir, Turkey, it was stated that environmental sensitivity depends on the socio-economic and demographic status. In Anonymous (2006) in India, it was stated over 968 subjects and comparing occupations and cities that the most sensitive occupation group is journalist (100%) and the city is Bhubaneswar while Özdemir (1987) in Ankara, Istanbul, Zonguldak and Çankırı, Turkey interviewed people in 500 houses and 40 offices and stated that the most sensitive people are

scientists and the least are farmers. Sensitivity is higher among males, youths, high income and education levels. However, Özdemir (1987) stated that people old but with high education levels are more sensitive while Çalışkan (2002) in Lefke, found that the most important factor that affects the sensitivity of adults is education level and partially income levels.

There are many studies from Turkey and various parts of the world in the literature dealing with the determination of the existent conditions of natural reserves; the problems seen in these areas; and the constitution of the long-term environmental policies. For instance, Ozdemir (1987) conducted a study over Turkish cities of Antalya, Giresun and Istanbul and found that people receiving environmental education are more sensitive to the environmental matters than those not received are. In a similar study, dealing with a Turkish city, Canakkale, by Kelkit (2003), environmental problems of the city such as air pollution, water pollution, soil pollution, solid wastes, noise pollution, and negative effects on flora and fauna were mentioned under three main headings: analysis, evaluation and synthesis and some recommendations unique to the area were presented. In the survey study of Yilmaz and Oz (2004) in Erzurum, the same study area with present study, 66% of participants found air pollution to be the most significant environmental problem for the city. In another study from Turkey by Doygun (2005), the environmental problems of Adana, the sixth largest and most developed city in Turkey were examined and it was stated that the city of Adana faced huge problems of water, soil and noise pollution, solid and liquid waste elimination and loss of fertile agricultural areas and rapid economic development -industrialization, population growth and unplanned urbanization -were determined to be the main causes of these environmental problems, making some recommendations for mitigating and managing these problems in the sustainable urban development perspective.

In the study of Leboyer et al. (1996), conducted by research teams in five countries (France, Germany, Italy, Portugal, UK) on individual attitudes and behaviours towards the environment, and on the importance of environmental issues in the media of these countries using a sample composed of 742 subjects, teachers and engineers, important differences are observed between the level of pro-environmental behaviours and the nature of their determinants. Anonymous (1999) reveals the opinions and solution proposals of the Fort Collins (USA) residents about the air pollution in their area, who find diesel and gasoline vehicles to be the major source of air pollution with a survey study. Survey study of Chung and Poon (1999) in Guangzhou, China, one of the most populated cities in the world and facing waste management problems, reveals the situation in a rapidly industrialising country, with about 800 questionnaires on the attitude and opinion of people on source separation of household waste. Blake (2001) stated in his study

conducted over the population of British Columbia that various environmental problems have various effects on environmental perceptions and behaviour of people. In the study of Chau et al. (2002) in Hong Kong, the exposure of the Hong Kong people to nitrogen dioxide (NO<sub>2</sub>), respiratory dust (PM<sub>10</sub>) and carbon monoxide (CO) pollutants experienced by different age groups was investigated.

In another survey study, Anonymous (2003) in Japan, the questionnaire surveys targeting children and citizens' groups were on an environment-conscious lifestyle targeting elementary and junior high school children and on the environmental conservation activities of citizens' groups. In the study of Gwebu (2003), conducted in Old Naledi, a low income urban neighbourhood in Gaborone, the capital city of Botswana, the profile, dynamics and dimensions of environmental problems were investigated based on documentary and field research, including meetings, discussions and open-ended interviews with the interested and affected persons and structured survey questionnaire to 171 resident respondents and it was found that because of the costly land and construction materials, residents of the area fail to catch the construction standards, which causes a distorted and overcrowded settlement along with a rapidly increasing population. The survey study of Moser and Robin (2006) shows the view of people to the environmental problems in a developed country, France, with 1791 individuals from all parts of the country who stated that environmental features cause many difficulties in their daily lives and inhabitants of rural areas do not consider themselves significantly less exposed to stressors like noise, air pollution, traffic problems or criminality than inhabitants of big cities. In a survey study from another rapidly developing country, India, Anonymous (2006), face to face interviews were conducted, using a structured questionnaire with opinion leaders, such as Teachers, Executives in Private Sector, Government officials, College/university students, etc. and ordinary people (Males or Females between 18 and 60 years of age) in ten big cities of India, such as Delhi, Mumbai, Chennai and so on.

## Conclusion

In this survey study, awareness level of campus people in Erzurum was found to be 64.4%, which may be taken as moderate. Although people know the problems, they do not give importance to them. In this respect, actions to be taken may be the repetition of the studies on the determination of the environmental sensitivity and development of policies based on their results; enforcement and control of the legal regulations on this topic and announcement of the results of the studies or measurements to inform people on communication devices. In addition to these mentioned ones, civil society

organisations on environment may increase the public awareness with their activities such as plantation, cleaning etc.

## REFERENCES

- Anonymous (1999). General Air Quality Survey Report, Fort Collins. [www.ci.fort-collins.co.us/airquality/pdf/1997.pdf](http://www.ci.fort-collins.co.us/airquality/pdf/1997.pdf)
- Anonymous (2002a). Outdoor Air Quality Survey Report for the Colorado Springs Urbanized Area. Pikes Peak Area Council of Governments, Colorado Springs.
- Anonymous (2002b). Social and Economic Quantities of Census in 2000. Turkish State Statistics Institution, ISBN 975-19-3086-3, Publication No:2684. Ankara.
- Anonymous (2003). Ministry of the Environment Government of Japan Godochosha.,5:1-2-2Kasumigaseki,Chiyoda-ku,Tokyo100-8975,Japan <http://www.env.go.jp/en/press/2003/1006a.html>
- Anonymous (2006). Study to gauge public perception on environmental pollution in India, [www.greenpeace.org/raw/content/india/press/reports/greenpeace-hansa-survey.pdf](http://www.greenpeace.org/raw/content/india/press/reports/greenpeace-hansa-survey.pdf) –
- Blake DE (2001). Contextual Effects on Environmental Attitudes and Behavior Environ. Behaviour., 33(5): 708-725.
- Burke CD, Nellutla P (2003). Evaluating Public Perceptions in Kansas: A survey on Health and Environmental Issues Department of Geology. Wichita State University. Wichita. KS 67206-0027 316-978-3140.
- Chau CK, Tu EY, Chan DWT, Burnett J (2002). Estimating the total exposure to air pollutants age groups in Hong Kong. Environ. Int., 27(8): 617-630.
- Chung S, Poon C (1999). The attitudes of Guangzhou citizens on waste reduction and environmental issues. Resources, Conserv. Recycling., 25(1): 35-59.
- Çabuk B, Karacaoğlu C (2003) Study of environmental awareness of university students, Ankara Univ. Educ. Sci. Facul. J., 36(1-2).
- Çalışkan M (2002). Factors affecting the environmental awareness of adults. Ankara Univ. Educational Science Institute Dept. Ms. Thesis, Ankara, p. 164.
- Çelen Ü, Yıldız A, Atak N, Tabak RH, Arısoy M (2002). Environmental Awareness of Students at Health Education Faculty of Ankara Univ. and Related Factors. Proceedings of 8<sup>th</sup> National Public Health Congress, pp. 23-28, Diyarbakır, pp. 421-425.
- Çetin OB (2002). Environmental Knowledge, Attitudes And Behaviour In Eskişehir, Middle East Technical Univ. Graduate school of Social Sciences, PhD Thesis, Ankara. p. 269.
- Doğun H (2005). Urban Development in Adana, Turkey, And Its Environmental Consequences. Int. J. Environ. Stud., 62(4): 391-401.
- Eren N (1995). Environmental Problems in Balıkesir. Istanbul Univ. Graduate school of Social Science, Faculty of Art, Physical Geography Dept. Ms. Thesis. Istanbul, p. 244.
- Gwebu TD (2003). Environmental problems among low income urban residents: an empirical analysis of old Naledi-Gaborone, Botswana, Habitat Int., 27(3): 407-427.
- Kelkit A (2003). Environmental problems of Canakkale City and solutions. Int. J. Environ. Pollut., 19(1): 2003.
- Leboyer CL, M Bonnes, J Chase, J Ferreira-Marques and K Pawlik (1996). Determinants of Pro-Environmental Behaviours: A Five-Countries Comparison Eur. Psychol., 1(2): 123-129.
- Moser G, Robin M (2006). Environmental annoyances: an urban-specific threat to quality of life? Revue Européenne de Psychologie Appliquée/European Review of Applied Psychology, Article in Press
- Özdemir S (1987). Sensitivity towards Social changes and Environmental Problems. Ankara Univ. Graduate School of social sciences, PhD Thesis, Public management and politic science Dept., Ankara. p. 293.
- Özdemir O, Yıldız A, E Ocaktan, Ö Sarışen (2004). Awareness and Sensitivity of Medical Students on environmental matters. Ankara Univ. J. Med. Facul., 57(3).
- Özmen DŞ, Çetinkaya AÇ Nehir S (2005). Attitudes of University students towards environmental matters. Turkish Army Force Preventive Health Bull., 4(6): pp. 330-344.
- Polinard JL, R D Wrinkle (1980). Willingness to pay for environmental quality: Evidence from survey data. Environ. Int., 4(4): 325-330
- Smith KR (1987). Bio-fuels, Air pollution and health: a global review. Plenum Press, New York. p. 452.
- Şafak Ş, Erkal S (1995). Study of behaviours about the environmental conservation activities. Standard Econ. Technique, J., 34: 405.
- Şafak Ş, Erkal S (1999). Environmental Education and Family. Educ. Sci., 23(112): 63-65.
- Şafak Ş, ve Erkal S (2000). The Study of Behaviour of Turkish Families in Regard To Environmental Protection in Household Activities. Journal of Qafqaz University, Volume III Number 5, Bakü.
- Tekçe B (1995). Public Education for Environmental Awareness. Ankara Univ. Graduate School of Social Sciences. Public Education Dept. Ms. Thesis, Ankara, p. 203.
- Tuncer G, Ertepinar H, Tekkaya C, Sungur S (2005). Enviromental attitudes of young people in Turkey: effects of school type and gender. Environ. Edu. Res., 11(2): 215-233.
- Yılmaz S, Öz S (2004). Determination of Public Awareness towards Air pollution Akdeniz Univ. Agric. Facul. J., 17(2): 1301-2215.
- Yılmaz H, Özer S (2001). A study on the public awareness of people in Erzurum towards noise pollution. Atatürk Univ. Agric. Facul. J., 32(3): 321-327.
- Yılmaz S, Toy S, Irmak MA, Yılmaz H (2007). Determination of climatic differences in three different land uses of the city of Erzurum, Turkey. Building Environ., 42(4): 1604-1612.
- Yücel M (1994). Determination of public sensitivity towards environment in Adana, Çukurova Univ. Agriculture Faculty Journal, Special Issue for 25<sup>th</sup> anniversary, pp. 121-136, Adana.
- Yıldız ND, Yılmaz H, Toy S (2008). Problems caused by land-misuse; the sample of Erzurum. Environmental Monitoring and Assessment, in press.