

**SOCIAL DETERMINANTS OF ENVIRONMENTAL
CONCERN: THE CASE OF ÇUKURAMBAR, ANKARA**

A THESIS

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INTERIOR ARCHITECTURE AND ENVIRONMENTAL
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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF FINE ARTS**

By

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July, 2011

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ABSTRACT

SOCIAL DETERMINANTS OF ENVIRONMENTAL CONCERN:

THE CASE OF ÇUKURAMBAR, ANKARA

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This study aims to explore the effects of gender, income and education level on environmental concern. This aim is based upon a general understanding that environmental problems have to be considered in urban areas for a sustainable world. The empirical study has been conducted in a developing site of Ankara; Çukurambar in which people from different income and education levels live. 64 participants (16 from each group; 8 males, 8 females) from different income levels (low income, middle income, upper- middle income and high income) have been selected through stratified random sampling method. (A questionnaire which includes questions about both demographic information; education, income, family population etc. and environmental issues has been made). The results derived from correlation tables and T- tests show that gender has no significant effect on environmental concern in this case. Education level has a small affect on

people in terms of environmental consciousness, however, it increases peoples' interest and make them watch programs about environmental issues. The most significant determinant of the selected variables; gender, education and income level, is the income level. Although there is no significant difference among other groups, the high income group is significantly different. People, who belong to high income level, show less concern about environment.

Keywords: Environmental concern, social determinants, Çukurambar

ÖZET

ÇEVRESEL DUYARLILIĞIN SOSYAL BELİRLEYİCİLERİ:

ÇUKURAMBAR ÖRNEĞİ, ANKARA

Emine Filiz Kölmek

İç Mimarlık ve Çevre Tasarımı Bölümü, Yüksek Lisans

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Bu çalışma, cinsiyet, gelir düzeyi ve eğitimin çevresel duyarlılık üzerindeki etkisini ortaya çıkarmayı hedeflemektedir. Bu amaç, sürdürülebilir bir dünya için kentsel alanlarda çevresel sorunların dikkate alınması gerektiğine dair genel bir anlayış üzerine kuruludur. Alan çalışması Ankara'nın hızlı gelişim bölgesi olan ve içerisinde farklı eğitim ve gelir seviyesinden insanların birarada yaşadığı Çukurambar semtinde yapılmıştır. Farklı gelir seviyelerinden (düşük gelir, orta gelir, orta üstü gelir ve üst gelir seviyesi) 64 katılımcıyla (her gruptan 16 kişi; 8 kadın, 8 erkek) gerçekleştirilen çalışmada tabakalı raslantısal örnekleme metodu kullanılmıştır. (Demografik bilgileri; eğitim, gelir seviyesi, aile popülasyonu ve çevresel konuları kapsayan bir anket hazırlanmıştır). İstatistikler göstermiştir ki, bu çalışmada, cinsiyetin çevresel duyarlılık üzerinde belirgin bir etkisi yoktur. Eğitim seviyesinin

evresel bilin zerinde az bir etkisi vardır. Ancak, insanların konuya ilgilerini arttırmakta ve eřitli programlar izlemelerini saėlamaktadır. Bahsi geen  belirleyiciden en belirgin etkiye sahip olan gelir seviyesidir. Diėer gelir grupları kendi aralarında belirgin bir řekilde ayrıřmasa da, st gelir grubu diėer gelir gruplarından farklıdır. st gelir grubuna dahil olan kiřilerin evresel duyarlılıėı belirgin řekilde daha azdır.

Anahtar kelimeler: evresel duyarlılık, sosyal belirleyiciler, ukurambar

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To my dear husband...

1. INTRODUCTION

Over the past three decades, protection of natural environment has become not only a common important political and social issue, but also a major assignment in academic research (Shen and Saijo, 2008). Both the professionals of environmental sciences, the social science academicians who are interested in environmental conservation, urban planners and architects have a common point of view that personal and social awareness, and subsequent concern for the quality of natural environment, are at the heart of environmental protection (Hackett, 1993). Numerous studies have been aimed to predict environmental concern, either by focusing on socio-demographic factors like age, gender, education, income or socio-psychological constructs like values such as cultural factors, religious belief, place attachment and belonging (Vorkinn and Riese, 2001).

Although many researchers have attempted to reveal the changing levels of environmental concern among public, the focus of their works has been to determine the social bases of concern for environmental quality. "Whether for theoretical reasons or policy implications, determining what types of people are most concerned about environment has always been an important and dominant theme" (Van Leire and Dunlap, 1980, p. 183).

Van Liere and Dunlap (1980) state that “although there are many studies in identifying and explaining the variation in public concern with environmental problems, there is a considerable dissensus with respect both to the evidence itself and its interpretation” (p.182). Based on the dissensus, this research aims to examine the existing knowledge about the relationship between environmental concern and different characteristics of individuals. Besides, to improve the understanding of environmental concern for a sustainable world, considering the context within which individuals develop environmental concerns, seems really important (Vorkinn and Riese, 2001). As there can be many variables (age, gender, income, education, political ideology, religion, level of scientific knowledge, respondent characteristics, traditionalism, self interest, place attachment or belonging, altruistic behavior etc.) that may differ between individuals, there should be a limitation due to the scope of this study. So, in this research, the individuals are categorized according to their gender (male, female), income level (low income level, middle income level, upper middle income level and high income level) and education (primary-high school education, higher than high school education). In order to reveal how the level of concern changes among these variables, an empirical study will be conducted in one of the rapid urban transformation areas of Ankara, Çukurambar, where people from different income and education levels live in. By conducting the research in such a developing site being shared by heterogonous users in terms of education and income levels, the target is to increase the reliability of the study.

1.1. Aim of the Study

The main purpose of this study is to examine the effects of gender, income and education levels on environmental concern. In order to develop a comprehensive understanding of the study, the concept of “environmental concern” should be clarified. Environmental concern is defined in various ways, because it is a complicated and unstable concept (Chan and Lau, 2004). Crosby et al. (1981) define it as having a strong attitude for protecting the environment. After a period of time, the same authors redefined it as a general attitude which has an indirect influence on attitude via behavioural intent (Gill et al., 1986). On the other hand, several studies exist which accept environmental concern synonymus with environmental attitude (Chan and Lau, 2004). Gifford (2001), in his book “Environmental Psychology” defines environmental concern as: “individuals’ concern for the physical environment as something that is worthy of protection, understanding or enhancement”. One of the most inclusive definitions is indicated by Dunlap and Jones. They (2002) state, “environmental concern refers to the degree to which people are aware of problems regarding the environment and support efforts to solve them and/ or indicate a willingness to contribute personally to their solution” (p. 3). Besides, Kim and Choi (2005) explain that environmental concern is something about caring the environment while purchasing products. The products that people buy show their environmental characteristics. There are also many studies which admit that the level of a person’s environmental concern has a direct and strong relationship with his/her habits about recycling, energy saving, environmental friendly product purchase and travel type selections (Bomberg, 2003).

Although many psychologists, sociologists and environmentalists have explored the roots of environmental consciousness, there is not a consensus about the issue (Kollmuss & Agyeman, 2001). So, this research aims to examine the existing knowledge about the relationship between environmental concern and main sociodemographic characteristics of people (male-female, wealthy-poor, educated- uneducated).

Beside revealing the reasons of changing levels of environmental concern, this study is important since the empirical part is conducted in a rapid urban transformation area, Çukurambar which is shared by heterogeneous users in terms of income and education levels. As the profile of the users change from site to site, the results may really change from place to place. Besides, although the social determinants of environmental concern are examined all around the world, these studies have been conducted in Turkey very rarely. So, this study will contribute to the literature in terms of the profile of its research site.

As Olofsson and Öhman (2006) emphasize, determining the reasons of environmental concern contribute to create a sustainable world. Since being concerned about the common environment shared by all living things becomes a crucial matter of modern world, the result of the study may give a chance to see due to which constraints environmental awareness is developed.

1.2. Structure of the Thesis

The study focuses on the social determinants of environmental concern. The first chapter is the introduction. In order to understand the topic, the concept “environmental concern” is clarified; the aim and the contribution of the study are explained.

In the second chapter, the historical development process of environmental concern is examined. In this context, the effects of the agricultural and industrial revolutions on the environment and environmental concern are briefly surveyed. After these, the environmental movement and the environmental issues in the 20th and 21th centuries are mentioned.

In the third chapter, a literature review is made on the selected social determinants of environmental concern. The variables; gender, income and education are discussed.

Chapter four includes the empirical part and it begins with the objectives of the study including the research questions and the common hypotheses about the variables of gender, income and education.

As the research site is a squatter transformation area, the next part includes urban transformation process of Turkey, Ankara and Çukurambar in order to understand the research field better. After these sections, a spatial analysis of new Çukurambar Residential District is made. Additionally, information about the location, topography and the inhabitants of the site is explained.

In the next sections of the thesis, the method of the study is described covering the explanations on the sampling procedure, data collection and evaluation and analysis technique in detail. Then, the results will be given in the light of the correlations and T tests.

In the last chapter, major conclusions about the social determinants of environmental concern are presented. Discussions of the findings are made. The limitations of the study are discussed. Lastly, suggestions for further studies are generated.

2. CONCEPT OF ENVIRONMENTAL CONCERN IN PREVIOUS LITERATURE

“Environment” is a complex and vague term which is much used in modern societies. Different conceptions and theoretical positions give different meanings to environment. Some people consider it as synonymous with nature (See Figure 2.1), other tend to see it as a human element like cultivated landscape of agricultural areas (See Figure 2.2) and some others understand it as built environment of cities (See Figure 2.3) (Teymur, 1982).



Figure 2.1. Environment as Nature



Figure 2.2. Environment as Cultivated Landscape of Agricultural Areas



Figure 2.3. Environment as Built Environment of Cities

Teymur (1982) states that one of the most important factor in the conception of environment is the human and environment relationship. He mentions that “environmental discourse”, in all its theoretical, scientific and social aspects, is established upon this relationship. Also Basa (2009), in her study, mentions environmental discourse as one of the powerful and prevailing

discourses that regulates the field of architecture and planning according to specific environmental conceptions and principles.

By a general definition, Hays and Tarr (1998) define *environment* as; what surrounds a thing or an item. They state:

“The environment is the surrounding. It could be a physical element - physical environment, that includes the built environment, natural environment - air conditions, water, land, atmosphere etc. or it could be human environment - people surrounding the item or thing.”

In line with this definition, “*environment*” is defined in similar ways in the internet world. It refers to: the circumstances or conditions that surround one¹.

In another definition, “environment” refers to “the sum, total of all surroundings of a living organism, including natural forces and other living things, which provide conditions for development and growth as well as of danger and damage”.²

In ecology, *it* refers to the air, water, minerals, organisms, and all other external factors surrounding and affecting a given organism at any time. In sociology, *it* refers to the social and cultural forces that shape the life of a person or a population.³

¹ <http://www.thefreedictionary.com/environment>

² <http://www.businessdictionary.com/definition/environment.html>

³ <http://dictionary.reference.com/browse/environment>

As it can be derived from the definitions and approaches, relationship is an important item in the critical understanding of environment. So, environmental studies are very much involved with the relationship between society and environment (Kemp, 2004).

The reserach area of my thesis study is Çukurambar which is a built environment with a specific socio-spatial character. During this study, the relationship between environment and people will be examined in terms of their concern for their environment.

While measuring peoples' environmental concern in this study, a special care has been given for the content of questions that cover all the related items of environmental concern.

2.1. Before the Environmental Movement

In the literature, it is possible to see that there has always been a close relationship between people and the environment that they live in, since the prehistoric times. In the prehistoric age, the earth's human population survived by hunting and gathering. The main source of energy for the hunters was fire and human muscle. They were living in nomadic life style and so their impact on environment was minimal (Kemp, 2004).

Hays and Tarr (1998) explain that in time, some hunting and gathering communities left their nomadic lifestyle. They discovered how to domesticate plants and animals and this led them to a more sedentary life style and so the

development of the first agrarian civilizations began. Accompanying this was an increase in the human intervention in the environment, associated with rapid population growth and new technology based on agriculture.

Kemp (2004) explains that the level of human intervention in the environment increased slowly over thousands of years. However, as late as the mid-eighteenth century, the environmental impact of human activities turned to regional level from local level.

During the agricultural revolution, a period of more rapid change in agricultural activities began in Britain, with improvements introduced in all aspects of farming leading to a substantial increase in food production. Greater attention was paid to increasing the quality of the soil by adding lime and manure. Land that was too dry previously, was brought into production by improving drainage, and soils that were too dry or light were treated with marl to improve their texture. New crops were grown more frequently and crop rotation was introduced. New mechanized or semi-mechanized implements were developed to deal with all aspects of cultivation from ploughing and planting to harvesting.

As a result, soil composition and texture were changed, non-native plant and animal species were introduced. Hays and Tarr (1998) state that as the new agriculture diffused throughout Europe and was carried to other continents through colonial expansion, it brought a group of potentially serious environmental problems ranging from the destruction of natural flora and

fauna . This was not the result of any malicious intent. Indeed, improvements in agriculture were seen as natural and necessary to enhance the quality of life for mankind. Ignorance of the impact of the new agricultural techniques on the environment ensured that mistakes would be made and the contribution of agricultural activities to environmental disruption and deterioration would grow (See Figure 2.4.).

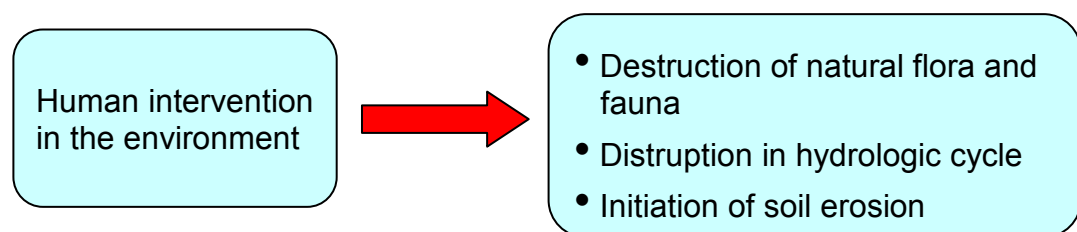


Figure 2.4. Effects of Agricultural Revolution on Environment

The changes in agriculture in the 18th and 19th centuries paralleled similarly innovative changes taking place in industry at that time (Hudson, 1992). These brought the industrial revolution, characterized by a major expansion in the use of coal as a fuel, in the steam and in the iron industry (Hudson, 1992).

Kemp (2004) mentions that the rapidly growing population, new urbanization, and industrialization created local and regional consequences like insufficiency of sewage disposal techniques, mineral extraction and energy conversion. Since then the human impact on the environment has expanded from the local or regional level to the global level. The results have become permanent and irreversible. Air and water pollution became a common

problem in many places. Natural vegetation has been used faster than it can grow or replaced by cultivated crops. Rivers have been dammed. Nature has been replaced by the built environment created by urbanization (See Figure 2.5.).

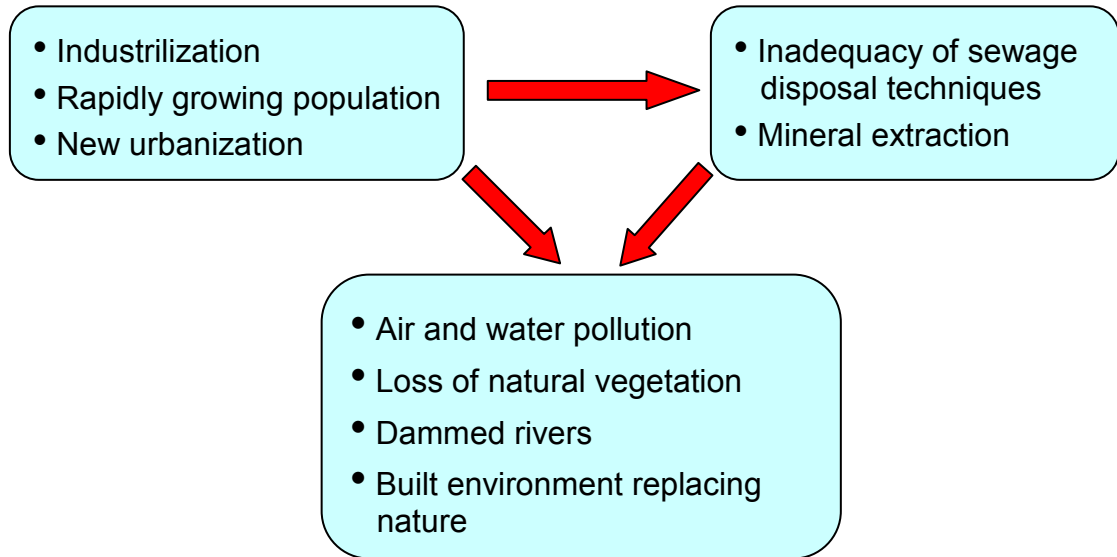


Figure 2.5. Effects of Industrial Revolution on Environment

2.2. The Environmental Movement

“Environmental movement” is a term which is widely used to include a variety of individuals and groups working through scientific or political agendas to achieve the common goal of defending the environment, conserving resources and generally protecting nature (Kemp,2004). It is indicated that as the impacts of environmental changes all around the world became more obvious, concern for the environment grew, until today it is greater than it has ever been (Kemp, 2004, Hays and Tarr, 1998).

The environmental movement dates from the 1960's. New environmental organizations such as Friends of the Earth, Pollution Probe and Greenpeace established in this period. Besides, the celebration of the first "Earth Day" was on 22 April 1970.

An interest in natural science and philosophy, a growing appreciation of nature through literature, art and travel, a special concern over habitat loss, forest decline, preservation of species and scenery, provision of quality recreational space, water management and allocation are the characteristics of that term.

2.3. Environmental Issues in 20th and 21st Centuries

"Environmental movement" is a term which is widely used to include a variety of individuals and groups working through scientific or political agendas to achieve the common goal of defending the environment, conserving resources and generally protecting nature."(Kemp,2004). Besides, "Environmental movement" can simply be defined as a social and political movement mainly concerning with the conservation of environment as well as improving the state of environment. It can also be said as green and conservation movement (Hughes, 1998).

It is indicated that, during this term, as the impacts of environmental changes all around the world became more obvious, concern for the environment grew, until today it is greater than it has ever been (Kemp, 2004, Hays and Tarr, 1998).

The conceptual, institutional and organizational foundation of environmental movement dates from the 1960's and 1970's. New environmental organizations such as Friends of the Earth, Pollution Probe and Greenpeace established in this period. Besides, the celebration of the first "Earth Day" was on 22 April 1970.

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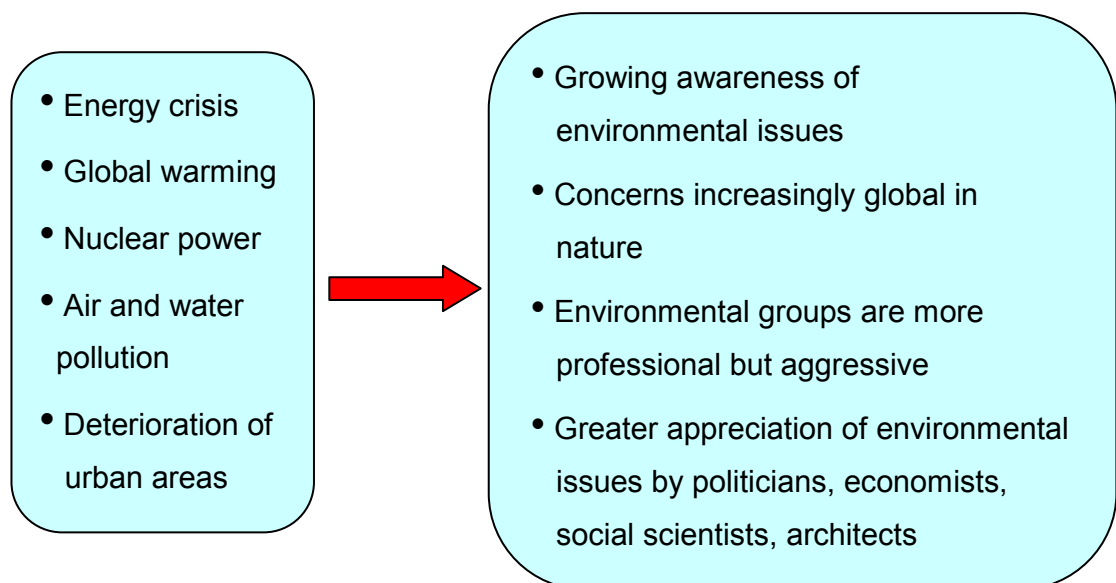


Figure 2.6. Environmental Issues in 20 th and 21 st Centuries

3. DETERMINANTS OF ENVIRONMENTAL CONCERN

As it is mentioned before, professionals of environmental sciences, the social science academicians who are interested in environmental conservation and architects have shown a great deal of interest in public attitudes towards environmental problems and a large number of studies have been conducted about the environmental quality and public concern (Hackett, 2003; Van Leire and Dunlap, 1980, Shen and Saijo, 2008; Vaske et al., 2001; Kollmuss and Agyeman, 2002; Grendstad and Wollebaek, 1998, Buttell and Flinn, 1978). Although many researchers aimed to reveal changing levels of environmental concern among public, the central issue has been to determine the social bases of concern for environmental quality (Van Leire and Dunlap, 1980). It is indicated that although there are many studies in identifying and explaining the variation in public concern with environmental problems, there is a considerable dissensus about what kind of people are more concerned about the environment.

Identification of the reasons of the changing degrees and/or absence of environmental concern is essential for the structuring of a sustainable environment. As there can be many variables (age, gender, income, education, political ideology, religion, level of scientific knowledge, respondent characteristics, traditionalism, self interest, altruistic behavior etc.)

that may differ between individuals, there should be a limitation. So, in this research, the individuals will be categorized according to their gender (male, female), income level (low income level, middle income level, upper middle income level and high income level) and education (primary-high school education, university and higher education).

3.1. The Role of Gender in Environmental Concern

This study examines gender as the first variable that may affect the level of environmental concern. A number of studies have dealt with the question of whether there are significant differences between women and men in terms of their level of concern for the environment (Shen& Saijo, 2008; Gifford, 2001; Van Liere and Dunlap, 1980; Schann andHolzer, 1990; Blocker and Eckberg, 1997). However, the available information has showm that there are conflicting findings on the subject; some studies indicate that men are more concerned about the environment than women, others indicate that women are more concerned in environmental issues, and some other findings indicate that there are no significant differences between genders. In this respect, gender seems to be a discursive and variable to be observed.

Several studies have specifically focused on gender variation in environmental concern, with the results providing modest evidence that women express more concern on environmental issues compared to men (Blocker and Eckberg, 1997; Bord and O'Connor, 1997; Davidson and Freudenburg, 1996; McStay and Dunlap, 1983; Mohai, 1992,1997). A review research made by Zelezny, Chua& Aldrich (2000) has found that women

report greater participation in pro-environmental behavior and activism compared to men. However, some studies suggests that women are less likely to engage in pro- environment “public” behaviors like public meetings and volunteer times (Blocker and Eckberg, 1997; Davidson and Freudenburg, 1996; McStay and Dunlap, 1983; Mohai, 1992,1997; Tindall, Davies& Mouboules, 2003). According to the findings of these researches, women are more likely to engage in private behaviors within the household that reflect their concern for environmental issues. They are more aware of the sustainability especially in terms of recycling, consuming organic food and merchandizing environmental friendly products etc. (Blocker and Eckberg, 1997; Davidson and Freudenburg, 1996; McStay and Dunlap, 1983; Mohai, 1992,1997; Tindall, Davies& Mouboules, 2003).

The findings show that the patterns of gender socialization influence the dimensions of environmental behavior. It is argued that within the traditional gender socialization, the position of women, childbearers and caretakers, leads them to embrace a worldview based on concern for the maintenance of life and relationships (McStay and Dunlap, 1983). Females, due to their nature, have also been shown to value altruism, which is in turn associated with environmental behaviors (Dietz, Kalof & Stern, 2002). Traditional men socialization, on the other hand, encourages males to emphasize providing financial means for the life standards of their families (Blocker and Eckberg, 1989, McStay and Dunlap, 1983; Mohai, 1992,1997). Accordingly, it is not surprising that the so called “bread-winner” social role encourages men to be

more sensitive and controlling about the use of the resources (Gilligan, 1982).

Lehmann (1999) and Fliegenschnee and Schelakovsky (1998) also mention that women usually have a less extensive environmental knowledge than men. They (1999; 1998) argue that women are emotionally more engaged, show more concern about environmental destruction and are more willing to change, although they are less interested in technological solutions. In contrast to them, another research conducted by Hayes (2001) explains that there is a close relationship between knowledge of environmental issues and environmental concern. The author (2001) claims that women are less informed about environmental issues than men are. Women do not only demonstrate less confidence than men in potential benefits of science, but they are also significantly less likely to be informed about scientific and technological developments than their male counterparts. She (2001) concludes that when the relationship between gender and knowledge of scientific issues is concerned, public understanding and knowledge of scientific matters remain under the jurisdiction of men. Thus, according to the assumption of the study, as men know more, generally they show more concern about environmental issues.

However, Gifford, Hay and Boros (1983) emphasize that although women declare that they are more upset by anti-environmental events and they are concerned about the problems, they actually know and do less about the environmental problems than men. Likewise, Schahn and Holzer (1990),

Gambro and Switzky (1999) and Stern, Dietz and Kalof (1999) mention that women express more concern, but men are more knowledgeable and more active about environmental problems. Tuan (1990) explains that as males are more likely to be politically active, more involved with community issues and have higher level of education than females, they are more concerned with environmental problems. Although recent studies have a consensus about the issue of women reporting more concern but doing less about the environment than men, a study of 70' s findings are obviously different. Passino and Lounsbury (1976) argue that males are more likely to be concerned about jobs and economic growth, and thus they are less concerned with protecting environmental quality than females.

In spite of the plethora of different views on the gender-based aspect of environmental concern, Hunter and Johnson (1998) claim that there is no direct correlation between gender and environmental concern. They assert a distinct point of view that some other personal traits determine the level of concern. Likewise, Ignatow (2006), Soma and Tolleson-Rinehart (1997) emphasize that the research site that change the characteristics of people determine the level of environmental concern. A combined study that Soma and Tolleson-Rinehart (1997) conducted in U.S.A and twelve European nations showed different results. In the United States, they have found no significant difference between men and women in terms of their awareness about energy crisis, the use of nuclear and solar energy and some other environmental issues. However, they (1997) state that European men are significantly more likely to endorse pro- environmental policy than women.

On the basis of these arguments, the relationship between gender and environment is both complex and inconclusive. Although there are many hypotheses claiming a gender gap, the result is complicated due to the discrepancy.

3.2. The Role of Education in Environmental Concern

Researches on education show that it is a fundamental determinant of environmental concern. As Vaske, Williams & Jonker (2001) emphasize, the relationship between education and environmental value orientations display a mixed pattern of findings.

Hsu and Rothe (1996) indicate that individuals with higher education in general are more concerned about environment. Likewise, Fliegenschnee and Schelakovsky (1998) found education to be the most significant predictor of environmentally responsible behavior. Lyons and Breakwell (1998) also stress that the best discriminator between environmentally concerned and indifferent teens is the amount of knowledge about specific issues they claimed to have. Lehmann (1999) state that the year of education is not important, instead, the thing is to be educated about environmental sciences. Kollmuss and Agyeman (2010) suggest that the longer the education, the more extensive is the knowledge about environmental issues. Support for a positive correlation between the level of education and environmental concern has been found in several studies (Arcury and Christianson, 1990; Howell and Laska, 1992; Schahn and Holzer, 1990; Scott and Wilits, 1994).

Yet, a remark has to be made that more education does not necessarily cause increased environment friendly behavior or awareness of a sustainable environment. Steel et al. (1994) for example, found education to be a significant determinant of environmental value orientations in a study conducted in Oregon. Among the Oregon respondents, people with more education were more biocentric. However, it is explained that the same study did not give the same results in Norway. No significant correlation was found between education and the level of environmental concern among Norwegian respondents.

In the light of these researches that give a mixed pattern of findings, it is seen that education is a determinant which is generally considered to give positive correlation with environmental concern.

3.3. The Role of Income in Environmental Concern

Income, the third variable of this study, is considered as a dominant factor that affects the environmental concern. The findings of the researches examining the relationship between income level and environmental concern also display various results. Studies on social classes of members of environmentalist organizations almost invariably conclude that environmentalism is typically an upper-middle-class action (Balderjahn, 1988). Likewise, Greider and Garkovich (1994) state that environmentalists tend to be middle class or upper-middle class. It is suggested that the most politically and socially active members in societies are the middle and upper

classes (Schultz and Stone, 1994). Thus, it is not surprising for middle and upper classes to present a concern about environmental problems.

On the other hand, one comprehensive survey found that low income earners are more concerned about environment than higher income earners (Uyeki and Holland, 2000). In addition, Walmsey and Lewis (1993) state that citizens of poorer countries are far more concerned about local environmental problems than citizens of wealthy countries.

However, Diekmann and Franzen (1999) show that the issue is more complicated. Using the data from two different surveys, they showed that when people from poorer countries are asked to rank the most pressing problems, environmental issues are ranked lower. But, if the people are asked to rate the severity of different problems, pro-environmental issues always rank high, no matter if the country is wealthy or poor. In this case, ranking this issues lower can be considered to be a result of the scarcity of economic resources or lower possibility of advanced technological crises, in poor countries. However, it can not be accepted that poorer people are less concerned just because they rank environmental problems lower than basic surviving issues (Diekmann and Franzen, 1999).

Moreover, Marrison (1982) presents a related argument by stating that members of the lower class, whose incomes are low, typically experience only poor physical conditions, and, thus, they are less aware that they live, work, and play in polluted and overcrowded conditions. However, the middle

and upper middle classes are more likely to experience pleasant residential, work and recreational environments, and consequently are more concerned about deterioration of the physical environment (Marrison, 1982).

Vaske, Williams & Jonker (2001) state that there is a curvilinear relationship between income and environmental orientation. This relationship is explained by Nelson (1999) as follows. Individuals with very high income, have traditionally been employed in business that value economic conditions more than environmental preservation. Similarly, the very poor people rate economic values higher than the environment, since they need income to survive. Besides, people in middle income level have sufficient resources to live and sufficient formal education to be aware of the common environment in which they are living. He (1999) concludes that when used as a predictor of environmental orientation in regression analyses, income is insignificant due to this curvilinear relationship. Because environmental orientation does not increase directly proportional to income level.

Kollmuss and Agyeman (2002) explain that economic factors have a strong influence on people's decisions and behaviors. Some economic researches indicate that people make purchasing decision using a 50 % or higher interest rate. In other words, if the person has two options, one is energy efficient and other is not, he/ she will only choose the energy efficient item if he/ she gets the result in a very short time. They (2002) state that individual benefits and liking and economical fashion are key factors while purchasing products.

These arguments, with changing focuses and results, address income as an essential determinant of environmental concern that has to be taken into consideration.

4. THE CASE STUDY

4.1. Research Objectives

This study aims to explore the effects of gender, income and education on environmental concern. In other words, it seeks the reasons of concern for the environment. Although there are many studies about the issue, as mentioned in previous chapter, the results are very changeable according to the research areas and so the profile of the participants. As all studies have some specialties that make them unique, this study attempts to differentiate from others and contribute to the field of research in terms of the research site, Çukurambar, a rapid urban transformation area, which allows reaching a variety of people with a wide range of income and education levels.

4.1.1. Research Questions

As this study focuses on the relationship between gender, income, education and environmental concern, it seeks answers to the questions of how does gender affect environmental concern? Do women report more concern but do and know less than men? Or isn't there any correlation between gender and environmental concern? Is environmental concern a matter of middle and upper-middle income earners? Is really lower income class less concerned since they experience only poor physical conditions? Is education the main discriminator of environmental concern?

4.1.2. Hypotheses

This study has three main hypotheses that are based on the previous studies.

- There is a gender difference in expressing environmental concern.
- Education level influences environmental behavior.
- Income level has an important effect on the level of environmental concern.

4.2. Research Site: Çukurambar Neighborhood

As it is mentioned in previous sections, the research site of this study is Çukurambar, in Ankara. Çukurambar is a rapid urban transformation area of Ankara. In contrast to its present high income population, it was a modest village-like settlement in the past. Today, it is possible to see people from different income and education levels in this area all together. Due to these characteristics, this neighborhood has been identified as an appropriate area for this research. As Marrison (1982) indicates, the physical conditions that people face with affect their level of environmental concern. People who experience poor physical conditions because of their low income, may be unaware of the bad, polluted and overcrowded conditions in which they live, work and play. However, people belonging to the middle and upper middle classes generally experience pleasant environments and they are aware when the quality of their physical environments decreases. Choosing such a common site shared by heterogeneous users in terms of their income and education levels minimizes unreliable consequences resultant from the

places that all of the participants from these different income and education levels live and face with.

Akçura in his research analysis (1971), identified Çukurambar as a rural area in the outer ring of the city. Since 1972, it was connected to Balgat neighborhood and the transportation was provided from there. During 1970s, Çukurambar was one of the least crowded regions of Ankara with 14 person/ha. During the time, the neighborhood transformed fastly, however, it could not complete the transformation process since there are many incomplete constructions, empty buildings and vacant lands (See Figure 4.1 and Figure 4.2.). Togetherness of the modern apartment blocks and the slum houses forms the complex texture of the neighborhood both in physical and social senses (Figure 4.3., Figure 4.4., Figure 4.5. and Appendix G).

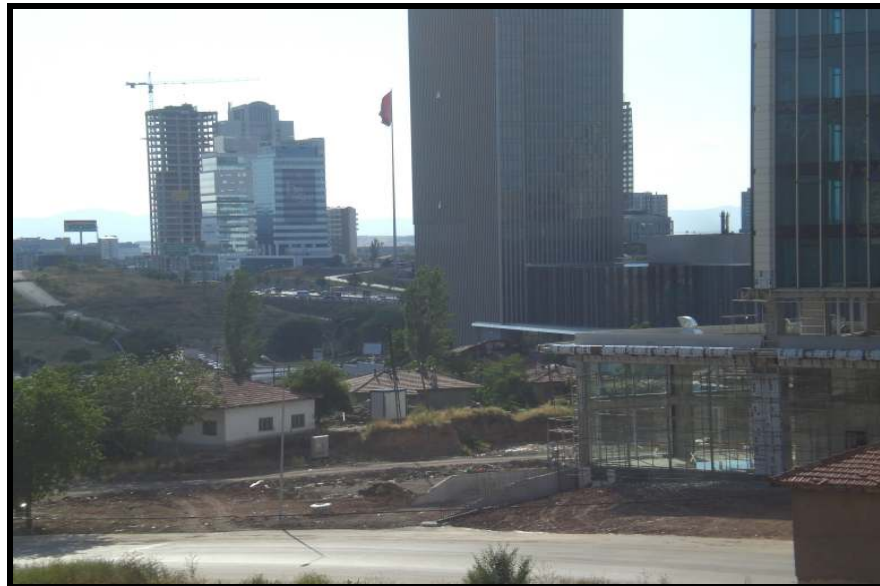


Figure 4.1. Vacant land and empty buildings in Çukurambar



Figure 4.2. Incomplete constructions and vacant lands in Çukurambar



Figure 4.3. Togetherness of apartments and slum houses in Çukurambar



Figure 4.4. Texture of Çukurambar-I



Figure 4.5. Texture of Çukurambar-II

4.2.1. Urban Transformation of Çukurambar Neighborhood

Çukurambar has an important and special position among the gecekondu areas in the Çankaya district. As the city expanded through the west, it became closer to the city center and important investments took place in and around Çukurambar. In contrast to Dikmen Valley and Portakal Çiçeği Valley,

this area has been transformed with revision of the improvement plan instead of a special transformation project. On the other hand, in contrast to other gecekondu built on the governmental land, private ownership of land is dominant in Çukurambar (Devecigil, 2005; Dündar, 1997; Erşahin, 2002). In Çukurambar, new development takes place in parcel level in the light of the revision improvement plan, opposite to transformation project approach. The transformation project examples like the Dikmen Valley project and the Portakal Çiçeği Valley Project are realized by a private firm to make the construction. Public participation was an important issue, projects of housing, office and other social facilities were ready in design. Çukurambar had no chance to have such comprehensive approach. It is an unorganized place left to market and shaped with urban rent and improvement plans (Köroğlu& Ercoşkun, 2006).

4.2.2. Socio-Spatial Transformation Process in Çukurambar

In the 1960's the gecekondu became an important and serious problem in Ankara. During this period, migrants came both to the city centre and the periphery. The rural periphery of Ankara took migrants from Ayaş, Beypazarı, Bala, Haymana and Kızılcahamam which are the main towns of the city. In addition, from Kars, Sivas, Nevşehir, Erzurum and Çankırı, many people migrated to the capital city (Erşahin, 2002). The headman of Çukurambar Mehmet İhsan Günbudak (2011) explains that:

“The first migrants did not feel unfamiliar at Çukurambar with its rural characteristic occupied by agricultural activities in the 1960s. In this

transformation process from rural to urban, the existing inhabitants of Çukurambar sold their cultivated field to the new comers in order to improve or build their own houses. They construct their houses on their own lands, without having construction permission.”

As it is stated above, Çukurambar differs from other gecekondu areas of Turkey which are built on public lands (Köroğlu& Ercoşkun, 2006, Erşahin, 2002; Günbudak, 2011).

In the end of the 1960s, the number of gecekondu accelerated rapidly in Çukurambar between 1967 and 1974, it reached cap. Lack of electricity and running water, transportation problems, inadequate roads were the most serious problems that the residents faced with. However, the existing population and the new comers shared the problems. Instead, of trying to solve the problems individually, they seek for solutions all together and founded an association for the improvement of Çukurambar and Kızılırmak neighborhoods (Kızılırmak neighborhood is just adjacent to Çukurambar), ÇAKDER; “Çukurambar ve Kızılırmak Mahalleleri Güzelleştirme Derneği” (Günbudak, 2011). In 1965, as a result of the associations’ hard workings, the problems of electricity and running water have been solved. In the following years, the primary school and health center were opened at Çukurambar by the efforts of the association.

In 1972, Çukurambar became an independent neighborhood of the metropolitan municipality and the Çankaya district. Separating Çukurambar

from Balgat had been a turning point for the transformation process of Çukurambar. The sewage system was the last facility brought into the neighborhood (Köroğlu& Ercoşkun, 2006, Erşahin 2002, Günbudak, 2011).

At the beginning of 1980s, the population was counted as 2400, in 2000, 4919 and nowadays it is said to be more than 6000 (http://www.tuik.gov.tr/PrelstatistikTablo.do?istab_id=213, 20/04/2005., Günbudak, 2011). As a result of the rapid increase of the population, the only school, Arjantin İlköğretim Okulu, had become insufficient with its 10 classes 815 student capacity. Besides, other social facilities were also not satisfactory.

Solidarity and assurance between the residents have been very beneficial for the transformation process of Çukurambar. After the planning process, the gecekondu left their laces to luxury apartment blocks. However, this process has been unsuccessful to provide a common life for two different social classes (Köroğlu& Ercoşkun, 2006). Köroğlu and Ercoşkun claim that this consequence is resultant because of two aspects. The first one is economical reasons. The gecekondu owners were able to buy two or more houses from periphery for their children when they sold their houses, that they had by selling their gecekondu lands. This was preferable for them. The second one is social reasons. It is stated that the life style that the gecekondu owners got accustomed to, were making them much happier. So, instead of being alien in high income class, they prefer living with people with whom they are sharing similar lives.

In the first half of the 1980s, illegal houses were legitimized with the amnesty laws and an improvement plan was prepared for Çukurambar at 1/ 1000 scale. In 1984, this plan was approved to transform the gecekondu (Şenyapılı, 1996). In this plan, the minimum plot area was 2500 m², minimum distance between houses and road was 10 meters and minimum distance among the houses was 5 meters. In this improvement plan, two storey houses were planned. Besides, it accepted the local development plan and let development decision only for planned areas (Şenyapılı, 1996).

In 1993, the Greater Ankara Municipality has prepared a revision plan for Çukurambar in 1/5000 scale. This plan has changed the future and status of Çukurambar. According to the reports presented by Ankara Metropolitan Municipality, in the improvement plan, Çukurambar was planned to be a low density residential area. However, the revision plan increased the density of the population. The current population density of old gecekondu settlement was about 150 people per hectare, the density that the improvement plan proposed was 200, the proposal of the revision plan was 350 people. The reasons behind the increasing of the density of the settlement are corresponded to three reasons:

1. The location of the site: It is very close to the city centre
2. Being on the west corridor of Ankara which is the development axis
3. High rent value

In parallel to the increase in the density of the population, increase in the areas of education and health services are also proposed. However, this proposal could not be realized as quickly as the construction of luxury apartment blocks. The areas near Eskişehir and Konya High-ways and Yüzüncüyıl settlement are transformed quicker than the midlands (See Figure 4.6, Figure 4.7 and Figure 4.8) (Köroğlu and Ercoşkun, 2006). The areas that the transformation can be observed most dramatically are 41. and 48. Roads (See Figure 4.9, Figure 4.10, Figure 4.11, Figure 4.12)

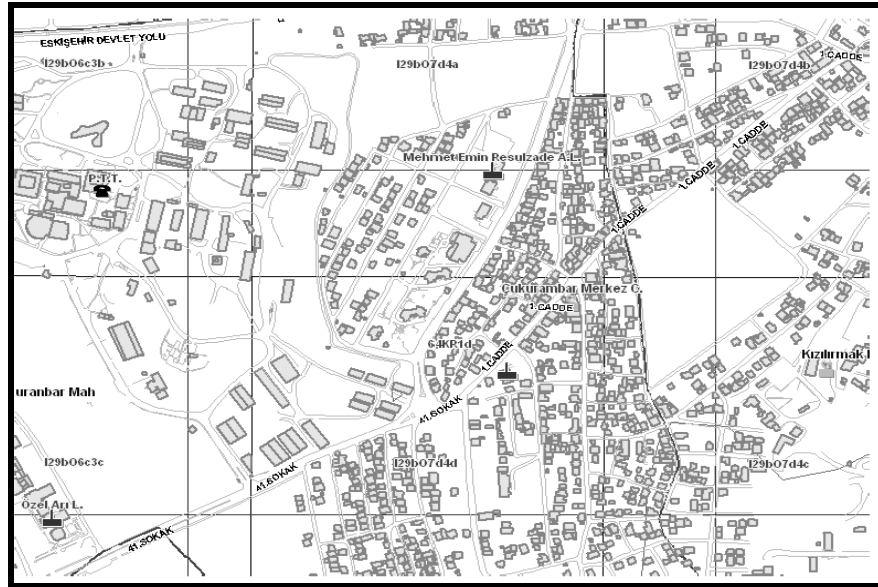


Figure 4.6. Çukurambar neighborhood with many gecekondu in 2000

(Köroğlu and Ercoşkun, 2006)

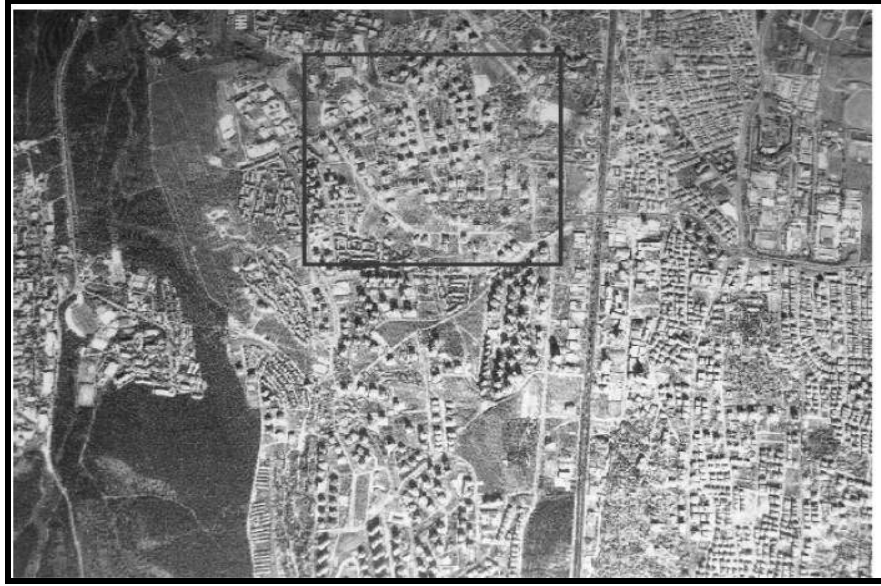


Figure 4.7. Çukurambar neighborhood with few gecekondu in 2003
(Köroğlu and Ercoşkun, 2006)



Figure 4.8. Çukurambar neighborhood with single gecekondu in 2006
(Köroğlu and Ercoşkun, 2006)



Figure 4.9. An old picture of 41. Road (Çak-Der Photo Archieve)



Figure 4.10. A new Picture of 41.road



Figure 4.11. An old picture of 48. Road (Çak-Der Photo Archive)



Figure 4.12. A new picture of 48. Road

4.2.3. Location

Çukurambar is located on the southwest of the center of Ankara (See Figure 4.13). It is surrounded by the Konya highway and Balgat district on the east,

Maden Tetkik ve Arama Enstitüsü on the west, Eskişehir highway and Kızılırmak neighborhood on the north and by Yüzüncüyıl neighborhood on the south. The neighborhood is located at the junction of Eskişehir and Konya highways. The Konya highway separates Çukurambar from Balgat, the neighborhood which Çukurambar was belonging to, in the past. The Eskişehir highway separates Çukurambar from Söğütözü. In other words, the neighborhood Çukurambar, is defined by two of the main arterers; Eskişehir and Konya highways, of the city from the north and the east (See Figure 4.14). Besides, it is located very close to the existing and currently constructing underground metro stations.

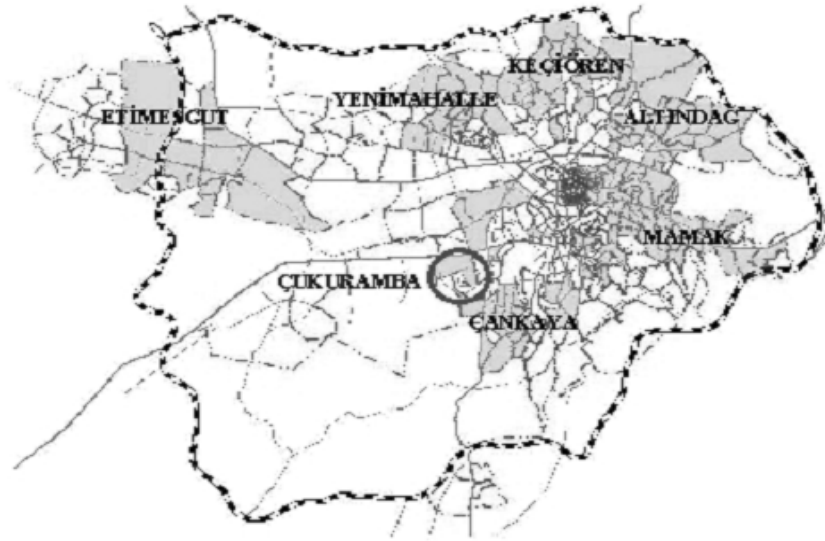


Figure 4.13. Location of Çukurambar-I (Akçura, 1971)



Figure 4.14. Location of Çukurambar-II

4.2.4. Profile of the Residents

As a result of the rapid urbanization process in 1950, Turkey experienced an unavoidable migration process from rural to urban areas. Since Ankara is the capital city of Turkey, it was one of the cities that took most amounts of migrants (Erşahin, 2002). In 1960s, people who migrated to Ankara were from the cities of Sivas, Nevşehir, Kars, Erzurum, Çankırı and the downtowns of Bala, Ayaş, Beypazarı, Gölbaşı and Polatlı (Köroğlu& Erşahin, 2006; Erşahin, 2002; Günbudak, 2011).

In contrast to other illegal gecekondu settlements, in Çukurambar, people did not settle on other peoples' land without permission. The first inhabitants who are still living in Çukurambar are the land owners. The first inhabitants of Çukurambar were belonging to low income class. During the transformation process, people from both low and high income class lived together but nowadays; the residents of Çukurambar are mostly the members of high

income class, retired members of the parliament, and wealthy students of Metu, Bilkent and Çankaya universities (Köroğlu& Erşahin, 2006; Erşahin, 2002; Günbudak, 2011).

4.3. Method of the Study

As detailed information about the research field is given, in this section the method of the study will be explained.

4.3.1. Setting

As it is mentioned in previous sections, the relationship between the social determinants and environmental concern is measured in many regions all around the world and a variety of results reveal accordingly. While conducting this study, a special care has been given for the appropriateness of the location. So, Çukurambar which is a developing site of Ankara was chosen in terms of its heterogenous users.

4.3.2. Sampling Procedure

While conducting this study, people from four income levels; low income, middle income, upper- middle income and high income, were chosen through stratified random sampling and convenience sampling methods. For selecting the families from these four income levels, observation techniques were used on the houses that people live in. As there are approximately 15-20 squatters, which is considered to be the houses of low income level group, this number determined the sample size for each group. Therefore, this research has been done with 64 residents. 16 residents from each income level have been

chosen. Two variables; age and getting education about environmental sciences have been controlled between groups in order to prevent unreliable consequences. All of the participants were selected from the adults who are over 25 and did not get education about the environmental sciences. The 16 residents of each group consisted of 8 males and 8 females.

4.3.3. Data Collection

While collecting data for this research, survey was used as the operational definition and a well structured questionnaire was used as the instrument. The questionnaire consisted of two parts (See Appendix C). In the first part, it is aimed to identify the independent variables, gender, income level and education. In this part, the participants were asked to answer some questions about their jobs, education levels, income, ownership of the houses that they live in, the number of the cars that they have, populations of their homes, the number of people who work in the family, and the income group that they feel to belong. The questions, except the ones that directly ask the education level and monthly income, were asked in order to measure the reliability of the answers that the participants gave about their income levels. The answers about the monthly income, the proportion of the number of working members in the family to the population of the family, ownership of house and car and the perceived income group were taken into consideration while identifying peoples' income level. The ones which gave too contradictory answers were eliminated and the questionnaire was done with some other people. The limits of income are determined according to the data taken from TÜİK. The minimum gross salary is 664, 25 TL (TÜİK, 2009). So, the below

limit for low income was chosen as 660 TL and the upper limit was chosen as 1500 TL, a round level greater than twice the minimum gross salary. Other intervals for middle, upper-middle and high income levels were chosen accordingly as the multiples of the first upper limit.

In this part, the participants were asked to answer the questions by their handwritings since it is observed that some participants; especially the ones who belong to low income group and not high- educated, feel uncomfortable when they answer these questions orally.

The second part was aimed to measure the participants' level of environmental concern. In this part, there were questions including several important issues about the environment such as; evaluation of water as a resource, knowledge of life cycle, ecological considerations in the purchase of products, sense of responsibility and care of the common environment (Uzzell, Pol and Badenas, 2002). Likert scale method was used in most of the questions. The questionnaire also included one open ended question which is about the first thing that comes to the mind about environmental concern. The answer of this question is evaluated according to its scale; whether local or global. All of these questions were asked verbally in order to prevent the participants to see the controlling questions and change their answers. Besides, as people from different income and education levels understand different things from the questions, each of items were explained according to the participants' own characteristics. A special care has given to

talk to the participants when they are alone. In this way, they became more comfortable to talk about their attitudes and behaviors.

4.3.4. Evaluation and the Method of Analysis

After the steps mentioned above, the data was analyzed. All data about both dependent and independent variables were coded for numerical and statistical methods (See Appendix D and Appendix E). While analyzing the changing levels of environmental concern by education and income level, correlations were used. Besides, T- tests were used to reveal the changing levels of environmental concern by gender.

4.4. Results

The results of the T-tests and correlations show that the variables which are gender, education and income do not affect environmental concern significantly in this study. The T- test showed that gender variable has no effect on environmental concern in this case. The most significant correlations are stated below. Education, which has significant positive correlation with income level has only small effects on environmental concern. Although not significantly, the education level seems to increase the interest about environmental issues since there is a positive correlation between education level and watching national geographic, documentaries etc. (See Table F.1 and 4.1). The correlation table shows that there is a significant negative correlation between education and reusing the left overs (See Table 4.2). Besides, although a significant difference could not be determined between the different income levels, the results show that the most significant

determinant of environmental concern is the income level among other tested variables; gender and education. The results show that there is a significant relationship between the income level evaluated according to the salary and the perceived income level (See Table 4.3). It is tested that the results which are valid for the income level is also valid for the perceived income level.

Correlations		Education level	Watching nat.geog.
Education level	Pearson Correlation	1	,280(*)
	Sig. (2-tailed)		,025
	N	64	64
Watching nat.geog.	Pearson Correlation	,280(*)	1
	Sig. (2-tailed)	,025	
	N	64	64

Correlation is significant at the 0.05 level (2-tailed).

Table 4.1. Correlation between education level and watching national geographic, documentary films etc. (Question 24)

Correlations		Education level	Reusing left overs
Education level	Pearson Correlation	1	-,410(**)
	Sig. (2-tailed)		,001
	N	64	64
Reusing left overs	Pearson Correlation	-,410(**)	1
	Sig. (2-tailed)	,001	
	N	64	64

** Correlation is significant at the 0.01 level (2-tailed).

Table 4.2. Correlation between education level and reusing left overs (Question 19)

Correlations		Income level	Perceived income level
Income level	Pearson Correlation	1	,864(**)
	Sig. (2-tailed)		,000
	N	64	64
Perceived income level	Pearson Correlation	,864(**)	1
	Sig. (2-tailed)	,000	
	N	64	64

** Correlation is significant at the 0.01 level (2-tailed).

Table 4.3. Correlation between income level and perceived income level

The statistical analyses show that there is a negative correlation between income level and water saving (See Table 4.4). As the income increases, the importance that people give to saving decreases.

Correlations		Income level	Water saving
Income level	Pearson Correlation	1	-,368(**)
	Sig. (2-tailed)		,003
	N	64	64
Water saving	Pearson Correlation	-,368(**)	1
	Sig. (2-tailed)	,003	
	N	64	64

** Correlation is significant at the 0.01 level (2-tailed).

Table 4.4. Correlation between income level and water saving. (Question 13)

Besides, there is a significant negative correlation between reusing the left-overs and income level (See Table 4.5).

Correlations			
		Reusing left overs	Income level
Reusing left overs	Pearson Correlation	1	-,392(**)
	Sig. (2-tailed)		,001
	N	64	64
Income level	Pearson Correlation	-,392(**)	1
	Sig. (2-tailed)	,001	
	N	64	64

** Correlation is significant at the 0.01 level (2-tailed).

Table 4.5. Correlation between income level and reusing the left- overs (Question 19)

Lastly, the results show there is significant negative correlation between income level and ecological considerations in the purchase of products (See Table 4.6.). As the income increases, people think less about the harmful effects of the products on other living things, animals

Correlations			
		Income level	Harms on animals
Income level	Pearson Correlation	1	-,397(**)
	Sig. (2-tailed)		,001
	N	64	64
Harms on animals	Pearson Correlation	-,397(**)	1
	Sig. (2-tailed)	,001	
	N	64	64

** Correlation is significant at the 0.01 level (2-tailed).

Table 4.6. Correlation between income level and ecological consideration in the purchase of products (Question 16)

To sum up, the results of the survey show that gender has no significant effect on environmental concern in this case. Education level has a small affect on people in terms of environmental consciousness. Although not significantly, it increases peoples' interest and make them watch programs about environmental issues. The most significant determinant of the selected variables; gender, education and income level, is the income level. Although it does not differ so much in its groups, the high income group is significantly different. People, who belong to high income level, show less concern about environment.

5. CONCLUSION: EVALUATION AND DISCUSSIONS

This study aimed to explore the effects of gender, income and education level on environmental concern. Although there are many studies about the variation in public concern for environmental issues, it is clear that there is not a consensus. If the reasons of unconcerned behaviors are not defined well, it becomes impossible to increase the level of concern toward the environment. Thus, a sustainable environment turns into a dream. Based on the dissensus about the determinants of environmental concern, this research aimed to provide a contribution with an empirical study conducted in Çukurambar; an urban transformation site of the capital city. The results show that gender has no significant effect on environmental concern in this case. Education level has a small affect on people in terms of environmental consciousness but it increases peoples' interest and make them watch programs about environmental issues. The most significant determinant of the selected variables; gender, education and income level, is the income level. Although it does not differ so much in its groups, the high income group is significantly different. It is observed people, who belong to high income level, show less concern about environment.

As it is mentioned before, the results show that gender has no significant effect on environmental concern in this case. The result is very interesting as

there were many questions which were expected to give different results among males and females. For instance, since many women are addicted to cosmetics, which are produced by killing the animals, leather and furs, they are expected to care less than males while purchasing products (Question 14,15,16,17). However, the results did not show significance about the issue. One possible reason maybe women's reporting more concern but doing less about environment (Gambro and Switzky, 1999). As women are considered to report more concern and men are more knowledgeable and active about environment, the difference can not be followed in this questionnaire. Although there were many controlling questions, the results were inferred from what the participants express. So, the ones who reflected the realities or not may not be differentiated. That may be the reason of similar level of concern between male and female participants.

Another interesting result for the gender variable is about public behaviors. In many studies it is claimed that men are more likely to engage in pro-environment public behaviors like public meetings and volunteer times since they are more active in public world (Blocker and Eckberg, 1997; Davidson and Freudenburg, 1996; McStay and Dunlap, 1983; Mohai, 1992,1997; Tindall, Davies& Mouboules, 2003). However, there is not a significant difference about the issue. The result may be the changing characteristic of the public world as women are as active as men in present public world.

One more dramatic point is that in many studies it is stated that gender socialization influence the dimension of environmental behavior. In some

studies, it is explained that women are expected express more concern since their position are childbearers and caretakers which lead them to embrace a worldview based on concern for the maintenance of life and relationships (McStay and Dunlap, 1983). In some other studies, men are expected to express high level of concern since his social role is “bread-winner” which encourages them to be more sensitive and controlling about the use of the resources (Gilligan, 1982). The reason why there is not a gender difference in expressing environmental concern may be resultant from the mixed social roles of men and women in present society. Men are not the only “bread-winners” and womens’ social role is not childbearers and caretakers as 1980s.

Another reason of similar answers given by males and females may be the characteristics of the questions. Since most of the questions were about personal attitudes and behaviors, most of the people, both males and females, were disposed to give high marks for themselves. This attitude may also be the result of similar answers.

In the light of theses results, it is possible to say that the results did not verify the hypothesis of the study about gender since there is not a gender difference in expressing environmental concern.

The results show that education does not affect environmental concern significantly. This result is interesting in terms of two aspects. At first, as it is indicated many studies, individuals with higher education are more

concerned about environment (Hsu and Rothe, 1996; Fliegenschnee and Schelakovsky, 1998; Lyons and Breakwell, 1994; Kollmuss and Agyeman, 2010; Arcury and Christianson, 1990; Howell and Laska, 1992; Schahn and Holzer, 1990; Scott and Wilits, 1994). It is already expected the high educated people to be more conscious about the environment, energy consumption and sustainability. However, as it is found, the educated people are not as conscious as it is expected. Second, as there is a positive significant correlation between income level and education, the negative correlations between income and environmental concern may be expected to be valid also for the relationship between education and environmental concern (See Table F.1). If it is so, then it is expected the higher educated people to be less conscious and concerned about the environment which makes a sustainable world difficult. Fortunately, the results do not show such significant negative correlation between education level and environmental concern but the correlation between education level and reusing of the left-overs. However, in terms of many aspects there is an insignificant negative correlation between education level and environmental concern (See Tables F.2. and F.3.).

The reason why these correlations are not significant may be the effects of education. Probably, people whose incomes are high are significantly unconcerned about the environment but by the effects of education, their levels of concern increase. However, this increase is not significant because the correlations are still negative.

On the other hand, it is expected higher educated people to feel more responsible about the common environment than the others. However, the results do not show any significant correlation about that. This consequence may result from people's high marking tendency for themselves. Since all people have a tendency to give high marks for themselves, the ones who really feel responsible about the common environment may not reveal.

As it is found, education level has a small affect on people in terms of environmental consciousness but there is not a significant relationship between education and environmental concern. In many subjects, there is a negative correlation between them. So, these results did not verify the hypotheses on education and environmental concern.

The results showed that the most significant determinant of the variables selected for this study is the income level. Although it does not differ so much in its groups, the high income group is significantly different. People, who belong to high income level, show less concern about environment. The result is not surprising since it almost fits the hypotheses mentioned before. However, it is also expected the low income group to be less concerned since environmental quality is considered to be something of a luxury which can be taken into consideration after providing basic needs like adequate food, shelter, economic security etc. The correlations show that there are negative correlations between income level and water saving, reusing of the left overs, consideration of the harmful effects of products while purchasing. The interpretation of these results seems to be simple since the study is

conducted in Turkey. As people become wealthier and have opportunity to buy and consume new things, they do not seem to be concerned about anything. Instead of reusing the left overs, they may prefer to buy new things. Besides, it is a common attitude of people to buy the things that they like. So, it can be understandable for people to buy expensive leather products and furs if they have financial power to buy these things. As generally wealthier people like to consume and not to cogitate about the resources, it is not surprising them to be unconcerned about water saving, too. However, as each site is unique, these interpretations are valid for some people in Turkey and can not be generalized for all wealthy people.

In order to make an evaluation, it can be said that the study contribute to the literature in terms of the research site that it was conducted. As these studies were conducted very rarely in Turkey and the solutions for a sustainable world may change from site to site (because of different profiles of people) it is important to make such studies in different places. However, the results did not verify the hypotheses except the one about the income level. As a significant correlation could not be found between education and environmental concern, increasing education level can not be suggested for a sustainable world. However, in some other studies the effect of education about environmental sciences can be tested and the solutions can be suggested accordingly. Besides, as the only significant result of this study is the less concern of high income people, it can be said that, studies to make these people more conscious should be beneficial to create a sustainable world.

The work presented in this paper is subject to a number of limitations. At first, since the questionnaire includes many questions about attitudes and behaviors and participants are asked to give marks for themselves, the strong tendency of people about giving high marks for themselves is reflected to the results. So, most probably, their answers did not reflect the realities about their actions. Besides, people are not willing to give information about their economical conditions. On the other hand, since four income groups are defined and the attendance of a sufficient number of samples has to be provided from each of the groups, it became difficult to make the questionnaire verbally and one by one. Further work may be conducted in some other sites or cities with more samples. By that way, it becomes possible to compare the results with some other sites. Besides, Çukurambar can be tested by some other determinants of environmental concern.

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APPENDICES

Appendix A – Urban Transformation Process of Çukurambar, Ankara

Since it was a slum area a few years before, it will be beneficial to describe the transformation process of the site to understand the profile of the settlement better. In this section, deep analyses about the transformation of gecekondu areas in Turkey and specifically Ankara will be presented. Next, the transformation process of Çukurambar, which is one of the most popular and prestigious sites of Ankara, will be explained step by step in detail because it differentiates from other transformation areas of Ankara in many aspects.

In the 1950's Turkey has met the fact of mass migration from rural to urban areas. In the year 1945, the national population was 19 million and the population living in the cities was % 25 of the total. In ten years time, the urban population ratio increased to % 32. In 1980, this ratio reached to % 44 and in 2000, to %65 (Devecigil, 2005). This process which seems to be very quick was not only the change at the special organization of the population. Instead, it was a reflection of series of important changes in economic, political, social and cultural levels (Devecigil, 2005). As the population accelerated rapidly, the government could not produce adequate house for the new urban population and the migrated groups had to build their own

original dwellings which we call “gecekondu” today. In the year 1950, the population size living in gecekondu was so significant that the government began to see the large amount of population living in the gecekondu as potential votes. In order to gain their sympathy and so their votes, these areas gained infrastructure, new roads and streets and almost a new view of low-middle-class residential character with the “Law of Gecekondu”.

After the 1960s, gecekondu, which was born as individual solutions for the need of housing, grew in number and changed character. Since the public land was almost eroded during 1960s, it became impossible for poor people to build the new ones. So, some of the newcomers had to rent from the gecekondu owners’ second or third houses.

Between the years 1983 and 1988, a series of amnesty laws has inured. The main aim of these laws was make legal the existing stock of gecekondu and solve the ownership problems of these districts. In order to fulfill this aim, the ownership of the lands of gecekondu changed hand and they transferred to municipalities. This law provided the necessary condition for the transformation of gecekondu to proper apartment housing for low income groups. However, this transformation had to be rapid and it had to include a mass scale (Şenyapılı, 1996).

Şenyapılı (1996), states that apartment housing in Turkey, has always been considered as the opposite of gecekondu. She (1998) adds that according to the modernist elite, the gecekondu symbolizes the informal part of Turkish

urban society, whereas, apartment housing was used as the symbol of formal and modern urban society. After the legalization process, the transformation from gecekondu to planned apartment areas started with new dynamics and development plans. Rising land rents served the owners of gecekondu as an award with the impetus of market dynamics. Gecekondu population was encouraged by the builders to unite their parcels and let multistory buildings be constructed. By that way, the owners of gecekondu had a chance to have flats from modern apartment buildings (Dündar, 2003).

Towards 2000s, gecekondu construction again changed character, lost its legitimacy and became a general uncontrollable housing problem. The total number of legally constructed houses in 2000 has been approximately 10 million, which accounted % 62 of the total housing stock in Turkey (Devecigil, 2005). By the time, these type gecekondu areas got older and became the squatter areas of the city (Dündar, 2003).

Ankara, the capital city of Turkey, has important experiences with gecekondu areas and their transformation process. During the migration period in Turkey, industry in Ankara could not develop much. The city population was formed by the state officials and military forces like today. This condition forced the new comers to shelter and so to construct their gecekondu near the city centre in order to decrease the cost of transportation. In other words, gecekondu areas located in close proximity to the city centre in Ankara, compared with other large cities of Turkey (Şenyapılı, 1998). At first times, the main gecekondu areas were on rough topography which was not suitable

to settle and they were important parts of the green system of the city, such as valleys; Dikmen Valley and Portakal Çiçeği Valley. In later stages, with the expansion of urban macro form, the gecekondu areas formed a belt round the city centre (Şenyapılı, 1998).

In order to solve the problems of gecekondu areas, and to achieve a rapid urban transformation on a mass scale, the first attempt for the transformation in gecekondu areas was included in the Improvement and Development Laws in 1948. After the year 1980, Ankara Metropolitan Municipality prepared various gecekondu transformation projects. Today, although the preparation process of improvement plans has been finished for almost all gecekondu areas in Ankara (See Table A.1), the implementation of transformation projects is limited.

Districts of Ankara	Total Gecekondu Area (ha)	Improvement Plan Areas (ha)	Percents of Improve ment Plans (%)
Altındağ	3034	850	28
Çankaya	2171	1385	64
Etimesgut	368	368	100
Keçiören	1970	1785	91
Mamak	4147	4147	100
Sincan	9	9	100
Y.mahalle	957	957	100
Total	12656	9686	76,5

Table A.1. Improvement and development plans (Köroğlu and Ercoşkun, 2006)

The reasons for the limited implementation of the transformation projects are closely related with their location in Ankara and the characteristics of the

areas. The gecekondu areas of Ankara are divided into seven districts as in the table. In Keçiören and Sincan, only “improvement and development plans” are used to transform the gecekondu areas. In Altındağ, Çankaya, Etimesgut, Mamak and Yenimahalle additional urban transformation projects are produced in the light of the previously prepared “improvement and development plans”(See Figure 4.13). Gecekondu neighborhoods which are located close to the city center have been transformed much easily due to the high rent values.

The transformation projects in Çankaya have been implemented due to the central position of the area, high land values and their environmental values, such as Dikmen Valley and Portakal Çiçeği Valley Projects (Malusardi and Occhipinti, 2003). Dündar (1997) indicates that Dikmen Valley and Portakal Çiçeği Valley are governmental lands covered with green and partly with topographically unsuitable thresholds. He adds that “PORTAŞ would buy the land from the shareholders with an agreement in return for a share from the construction in proportion with location and dimensions of their lands and distribute profits of the company” (Dündar, 1997). The projects include luxury housing, office and social facilities with green areas. Dündar (1997) expresses that the transformation through these projects could solve only the problems about physical spaces, but there were still social problems in Ankara. While high income groups settle in these new residential area, gecekondu population leaves the transformed areas re-builds their houses in other gecekondu areas in Ankara with similar characteristics to their previous gecekondu. In this way, they had a chance to keep their life styles.

On the other hand, the other gecekondu areas which are located in the peripheral positions of Ankara could not transform as easily as the central settlements like Çankaya. For instance, in Yenimahalle, Şentepe gecekondu area, the improvement plan was produced in 1985. However, although the development and improvement plans exist, these areas could not be transformed because of the low rent values and their peripheral location in the city (See Table A.1.).

Appendix B – Spatial Analysis of New Çukurambar Residential District

As the transformation process still continuing, a view of construction has become very typical. As a result of this continuing transformation process, the infrastructure system and the roads could not settle yet.

New apartment blocks are generally single, 10-14 high-storey and they are located in the middle of their parcels. Many times, the facades of the apartments are ornamented, they have gardens surrounded with fences, and they have both open parking lots and special garages at the basement floors (See Figure B.1. and B.2.). Except the gardens of the apartment blocks, green areas are very limited (See Appendix G).



Figure B.1. Apartment blocks of Çukurambar - I



Figure B.2. Apartment blocks of Çukurambar -II

Although a green network and public parks are proposed in zoning plan, Çukurambar has only two public parks yet. In the neighborhood, there are sufficient education areas. With the first primary school of Çukurambar; Arjantin İlköğretim Okulu, there are three governmental primary schools. Besides, there are private schools; Özel Pınar Koleji, Arı Koleji and Çankaya University. In addition to these education areas, a hospital for children, a dialysis center, a governmental hospital clinic, a teeth health center and private doctor offices serve as health areas. In addition, some popular restaurants and cafes are located on the 48. road with Hayat Sebla Houses, one of the most prestigious sites of Ankara (See Figure B.3.).



Figure B.3. 48. Road with Hayat Sebla Houses and Popular Restaurants

This road combines the main streets of Çukurambar to Eskişehir and Konya highways. The second important road; 41. Road also combines to 48. Road. There are many supermarkets, home decoration shops, cafes pastries, stationer's shop and shops for babies take place on 41. Road (See Figure B.4.). This is the road, which many people come for their daily shopping, most often.



Figure B.4. 41. Road with many shops

As the neighborhood is very close to the city center, the number of business centers is increasing very rapidly. In addition to these, a medium scale shopping center is located in the limits of the settlement.

Appendix C – Questionnaire

Part I

1- Name & surname:

2- Occupation:

3- Education level:

4- Income:

↑ 700-1500 TL

↑ 1501-3000 TL

↑ 3001-6000 TL

↑ 6001 TL and above

5- Is your house rent or yours?

6- Number of family numbers?

7- How many of the family members work?

8- Do you have a car? How many?

9- What is your perception about your income level?

↑ low income level

↑ middle income level

↑ upper-middle income level

↑ high income level

Part II

10- In your spare time, you...

↑ cycle, walk, etc.

↑ go to shopping malls

↑ read books, listen to music

↑ do sport

↑ have hobbies like motorcycling, flying

↑ go hunting

↑ none

11- When you don't use electrical equipments, you...

↑ unplug them

↑ switch them off

↑ leave them in standby mode

12- What do you do for water saving? (more than one option can be checked)

↑ paying attention not to waste water when brushing teeth and washing face

↑ not flushing unnecessarily

↑ not filling the bath tub

↑ not washing the dishes by hand

↑ reusing the waste water

13- Evaluate your water saving concern

low _ _ _ _ high

14- Do you care about environment while shopping?

↑ yes

↑ no

15- Evaluate your environmental concern while shopping

low _ _ _ _ high

16- If you know that animals are killed in order to produce a dress or an accessory, does it affect your decision on buying that product?

↑ yes

↑ no

17- What is the level of this effect?

none _ _ _ _ high

18- Do you pay attention to separate paper, plastic or glass materials from other wastes?

low _ _ _ _ high

19- Do you reuse the leftovers?

low _ _ _ _ high

20- How much do you feel responsible about the common environment you live in?

low _ _ _ _ high

21- Do you want to participate in projects on environmental protection?

↑yes ↑no

22- Have you ever participated in such a project?

↑yes ↑no

23- Evaluate your sensibility on environment?

low _ _ _ _ high

24- Do you watch National Geographics, Discovery Channel or documentaries?

↑yes ↑no

25- What is the first thing that comes into your mind about environmental sensibility?

Appendix D – Coding

1- Gender

1: Male 2: Female

2- Education

1: Primary, high school 2: University or higher

3- Salary

1: 660-1500

2: 1501-3000

3: 3001-6000

4: 6001 and above

4- Perceived income level

1: low income level

2: middle income level

3: upper-middle income level

4: high income level

5- Spare times

0: hunting and flying

1: hunting or flying

2: none

- 6- Electrical equipments
 - 0: Others
 - 1: switch off for energy saving

- 7- Water saving
 - 0: 0-1 item checked
 - 1: 2-3 item checked
 - 2: 4-5 item checked

- 8- Caring about environment while shopping
 - 0: 0-1 points
 - 1: 2-3 points
 - 2: 4-5 points

- 9- Bad effects on animals
 - 0: 0-1 points
 - 1: 2-3 points
 - 2: 4-5 points

- 10- Separating paper-plastic
 - 0: 0-1 points
 - 1: 2-3 points
 - 2: 4-5 points

- 11- Reusing left-overs
- 0: 0-1 points
 - 1: 2-3 points
 - 2: 4-5 points
- 12- Participating in environmental projects
- 0: No
 - 1: Yes
- 13- Watching national geogr.
- 0: No
 - 1: Yes
- 14- One word for concern
- 0: local
 - 1: global
- 15- Level of environmental concern
- 0: 0-1 points
 - 1: 2-3 points
 - 2: 4-5 points
- 16- Responsibility for the common environment
- 0: 0-1 points
 - 1: 2-3 points
 - 2: 4-5 points

Appendix E –Table of Statistics

participant number	gender	education	salary	per_income	activities	electrical equipments	consumption	shopping_env	animals	asparation_paper_plastic	reusing_left_overs	attendance_env_projects	natl_watch	ona_word_env_concern	level_of_env_concern	responsibility_common_env
1	1	3	4	4	2	0	0	1	1	1	0	1	1	0	4	1
2	1	3	4	4	2	0	0	0	0	0	0	1	1	1	1	1
3	1	4	4	4	2	0	1	1	0	1	1	0	1	0	1	1
4	1	4	4	4	2	0	1	1	0	1	1	1	1	1	1	2
5	2	2	4	4	2	0	0	0	0	0	0	0	1	0	1	2
6	2	1	4	4	2	0	1	0	0	1	1	0	1	1	1	2
7	2	3	4	3	2	0	0	0	0	0	0	0	0	0	1	1
8	2	4	4	4	2	0	0	0	0	0	0	0	1	0	1	1
9	2	3	4	4	2	0	0	0	0	0	0	0	0	0	4	2
10	2	2	4	4	2	0	0	0	0	0	0	0	0	0	4	2
11	2	2	4	4	2	0	1	0	0	0	0	0	0	0	4	2
12	1	4	4	4	2	0	1	1	0	0	0	0	1	1	4	2
13	2	3	4	4	2	0	0	0	0	0	0	0	1	1	4	2
14	1	4	4	4	2	0	0	0	0	0	0	0	1	0	1	1
15	1	4	4	4	2	0	0	2	0	0	0	0	1	1	4	2
16	1	3	4	4	2	0	0	2	2	2	0	1	1	1	4	2
17	2	2	3	3	2	0	0	1	0	0	0	1	0	0	1	2
18	2	2	3	3	2	1	1	2	1	1	0	1	1	0	4	1
19	2	3	3	3	2	1	1	0	1	1	1	0	1	0	1	1
20	2	3	3	3	2	0	2	2	2	2	2	1	1	0	4	1
21	2	3	3	3	2	0	0	2	2	2	2	1	1	0	4	2
22	1	3	3	3	2	0	0	0	0	0	0	0	1	0	4	2
23	1	3	3	3	2	0	1	0	0	0	0	0	1	0	4	2
24	1	1	3	3	2	0	1	0	0	0	0	0	1	0	4	2
25	2	3	3	3	2	0	0	1	1	1	0	0	0	0	1	1
26	2	4	3	2	2	0	0	1	0	0	0	0	0	0	1	2
27	1	3	3	3	1	0	0	0	0	0	0	0	0	0	1	1
28	1	3	3	3	0	0	2	0	0	1	2	0	1	0	4	1
29	1	3	3	3	0	0	1	0	0	0	2	0	1	0	4	1
30	2	2	3	3	2	0	2	2	0	2	2	0	1	0	4	2
31	1	4	3	3	2	0	1	0	0	2	2	0	1	0	4	1
32	2	3	3	3	2	0	2	0	0	0	2	1	1	0	4	2
33	1	3	3	2	2	0	2	0	0	0	0	0	0	0	4	2
34	1	3	2	2	2	0	0	2	0	0	0	0	0	0	4	2
35	2	3	2	2	2	0	0	2	0	0	0	0	0	0	4	2
36	2	1	2	2	2	0	0	2	0	0	0	0	0	0	4	1
37	2	4	2	2	2	0	2	1	0	1	1	1	0	1	4	1
38	2	3	2	2	2	0	2	0	0	0	0	0	1	0	4	1
39	2	3	2	2	2	0	1	0	0	0	0	0	1	0	4	1
40	2	3	2	2	2	0	1	0	0	0	0	0	1	0	4	1
41	2	3	2	2	2	0	1	0	0	0	0	0	1	0	4	1
42	2	3	2	2	2	0	2	0	0	0	1	0	1	0	4	1
43	2	3	2	2	2	0	2	0	0	0	1	0	1	0	4	1
44	1	3	2	2	2	0	2	0	0	0	1	0	1	0	4	1
45	2	3	2	2	2	0	2	0	0	0	1	0	1	0	4	1
46	1	3	2	2	2	0	2	0	0	0	1	0	1	0	4	1
47	2	3	2	2	2	0	2	0	0	0	1	0	1	0	4	1
48	2	1	2	2	2	0	2	0	0	0	1	0	1	0	4	1
49	2	1	2	2	2	0	2	0	0	0	1	0	1	0	4	1
50	1	1	1	1	1	0	0	1	0	0	0	0	0	0	1	1
51	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1
52	2	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1
53	2	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
54	2	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
55	2	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
56	1	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
57	1	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
58	1	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
59	1	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
60	1	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
61	1	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
62	1	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
63	1	2	1	1	1	0	0	0	0	0	0	0	0	0	1	1
64	2	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1

Appendix F – Correlation Tables

Correlations

		Education level	Income
Education level	Pearson Correlation	1	,370(**)
	Sig. (2-tailed)		,003
	N	64	64
Income	Pearson Correlation	,370(**)	1
	Sig. (2-tailed)	,003	
	N	64	64

** Correlation is significant at the 0.01 level (2-tailed).

Table F.1. Correlation between education level and income

Correlations

		Education	Water saving
Education level	Pearson Correlation	1	-,190
	Sig. (2-tailed)		,132
	N	64	64
Water saving	Pearson Correlation	-,190	1
	Sig. (2-tailed)	,132	
	N	64	64

Table F.2. Correlation between education level and water saving

Correlations

		Education	Harms on animals
Education level	Pearson Correlation	1	-,100
	Sig. (2-tailed)		,434
	N	64	64
Harms on animals	Pearson Correlation	-,100	1
	Sig. (2-tailed)	,434	
	N	64	64

Table F.3. Correlation between education level and considering the harmful effects of the products on animals