Measuring the Potential for Ecological Citizenship among Famagusta Residents

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ABSTRACT

Within sustainable urbanism debate, environmental attitudes and behaviours shaping everyday activities and practices of urban communities have been a focus area. All the related work of at least 25 years have introduced the term 'ecological citizenship' as the newly, emerging dimension of Ecological City. In this context, the academicians, policy makers and environmentalists seek to find the strategies and tools to make the behavioural change for the modern urban societies towards implementing ecological citizenship.

In this context, this research focusing on the term 'ecological citizenship', tries to obtain information for understanding Famagusta inhabitants' potential to embrace ecological citizenship as a way of living. Hence, besides seeking the most convenient solutions for the physical shortcomings of the Famagusta city with plans, legislations and so forth, accomplishing ecologically based, sustainable residents seems as a potentially crucial and significant requisite.

Within this framework, firstly, the emergence of ecological citizenship has been evaluated, and then research problem and research objectives have been identified. Secondly modern environmentalism has been discussed and then Ecological City has been deliberated in its five known dimensions with the addition of 'ecological citizenship' as the fifth dimension after 'sustainable urban form', 'sustainable transportation', 'urban ecology and biodiversity', and 'energy use and waste management'. Thirdly, the literature in the field has been reviewed and environmental behaviour as the nucleus of ecological citizenship has been evaluated.

Following the literature review, a survey study has been developed. In this vein, firstly Famagusta has been evaluated based on the dimensions of Ecological City and then the findings of the Famagusta Area Study (FAS) has been interpreted. Then, based on these, a survey research model has been developed. Within this framework, a user survey that seeks to obtain data about the level of existing environmental awareness and concern, ecocentric and anthropocentric attitudes and also about environmental behaviours has been prepared. The user survey, carried out with the help of the firm 'The Management Centre of the Mediterranean', involved four sections; 165 inhabitants between 16 and 75 years old were randomly sampled within the territory of Famagusta municipality including all 16 quarters; it was undertaken in a time period of seven weeks (10 April - 03 June 2013). Finally, the findings of the user survey have been presented, interpreted, and conclusions were drawn based on the study, considering the local environmental peculiarities of Famagusta, N. Cyprus.

According to the findings of the research, Famagusta residents' existing awareness and concern about environmental problems and issues, cannot achieve an adequate level in order to be one of the dynamics shaping their lifestyles. However, their environmental worldview is still at a medium level. Additionally, the survey findings indicate that environmentally based living will increase if the urban environment is improved in line with the requirements of sustainable urban environments.

Keywords: Ecological City, Ecological Citizenship, Environmental Attitude and Behaviour, Famagusta, North Cyprus.

ÖZ

Kentlerde çevreci ve sürdürülebilir yaşam tarzı benimsemiş topluluklar yaratabilmek amacıyla vatandaşların günlük alışkanlıklarının, tutum ve davranışlarının araştırılması yaklaşık son 25 yıldır gündemde olup, sürdürülebilir kent planlama çalışmaları kapsamında gittikçe daha fazla önem kazanmaktadır. Tüm bu çalışmaların sonucunda 'çevreci vatandaşlık', Ekolojik Kent kavramının yeni boyutu olarak ortaya çıkmıştır. Bu nedenle, akademisyenler, politikacılar ve çevreciler kent topluluklarını oluşturan bireylerin çevreci vatandaşlar olmaları için gerekli davranışsal değişimi sağlayacak strateji ve araçları saptamaya çalışmaktadır.

Bu araştırma 'çevreci vatandaşlık' kavramına odaklanarak, Gazimağusa halkının çevreci vatandaşlık nosyonunu bir yaşam biçimi olarak benimsemesinin mevcut potansiyelini ölçmeyi amaçlamaktadır. Bu doğrultuda Gazimağusa kentinin fiziksel sorunlarının aşılması için planlar, yasalar, vs. aracılığıyla çözümler aranırken, kent halkının ekoloji dostu ve çevreci yaşam biçimini benimsemesi önemli bir zorunluluk olarak ortaya çıkmaktadır.

Bu çerçevede, ilk olarak, 'çevreci vatandaşlık' kavramının ortaya çıkışı değerlendirilmiş ve ardından tezin araştırma problemi ve araştırma hedefleri belirlenmiştir. İkinci olarak, modern çevrecilik anlayışı tartışılmış ve sonrasında 'Ekolojik Kent', literatürde çoğunlukla ele alındığı şekilde, beş boyut kapsamında incelenmiş ve 'çevreci vatandaşlık' kavramı, 'sürdürülebilir kentsel biçim', 'sürdürülebilir ulaşım', 'kent ekolojisi ve biyo-çeşitlilik' ile 'sürdürülebilir enerji kullanımı ve atık yönetimi' boyutlarına beşinci boyut olarak eklenerek irdelenmiştir.

Üçüncü olarak, literatür araştırması yapılarak çevreci vatandaşlık ve bu kavramın temel bileşeni olan çevreci davranış değerlendirilmiştir.

Dördüncü olarak Gazimağusa kenti, yapılan literatür araştırmasından elde edilen bilgiler ve kent için önemli bir kaynak olan Gazimağusa Kentsel Yaşam Kalitesi Araştırması (2010) bulguları ışığında ve Ekolojik Kent kavramının bilinen beş boyutu kapsamında irdelenmiş ve tezin araştırma modeli ve uygulanacak anket soruları belirlenmiştir. Bu model, Gazimağusa halkının çevresel farkındalık düzeyi, 'insan odaklı' ve 'çevre odaklı' tutumları ile üç kategoride çevreci davranışlarını araştıran bir kullanıcı anketinin hazırlanmasında kullanılmıştır. Dört bölümden oluşan kullanıcı anketinin uygulanmasında 'The Management Centre of the Mediterranean' firmasından destek alınmıştır. 10 Nisan - 7 Haziran 2013 tarihleri yedi haftalık sürede gerçekleştirilen anketler, Gazimağusa belediye sınırları içindeki toplam 16 mahallede, 16-75 yaş aralığındaki katılımcılarla yapılmıştır. Son olarak, kullanıcı anketinin bulguları sunulmuş, yorumlanmış ve Gazimağusa'nın yerel farklılıkları dikkate alınarak sonuç, değerlendirme ve önerilerde bulunulmuştur.

Bulgulara göre, Gazimağusa halkının çevre konuları ve sorunlarına ilişkin mevcut farkındalık ve ilgisinin, yaşam biçimlerinin şekillenmesine etki edebilecek seviyede olmadığı anlaşılmıştır. Ancak, katılımcıların çoğunluğunun yine de ortalamanın biraz üzerinde bir seviyede çevreci tutum sergilediği ortaya çıkmıştır. Ayrıca katılımcıların çoğunluğu, kentin sürdürülebilirlik özelliği geliştirilirse, daha çevreci bir yaşam şeklini benimseyebileceklerini belirtmiştir.

Anahtar Kelimeler: Ekolojik Kent, Çevreci Vatandaşlık, Çevreci Tutum ve Davranış, Gazimağusa, Kuzey Kıbrıs.

To my grandmother, Fatma Varol…

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INTRODUCTION

1.1 The Emergence of Ecological Citizenship

With the help of the knowledge and wisdom derived from the concept of sustainable urbanism, existing physical environments of many cities have been enhanced and new developments have been planned in order to be sustainable and ecologically responsive. However, it can be suggested that most of the body of work has had a focus on the physical, economic and environmental issues covering topics such as urban form and layout, pollution, global warming, deforestation, depletion of natural resources, social justice, health, education, and so on.

Therefore after the 1970's, it has been determined that enhancing merely innovative waste management systems or green infrastructure for instance, is not adequate to fulfil the requirements of ecologically based urban design and planning. In other words, with the help of residents who have adopted an ecologically oriented way of living, the outcome of the efforts towards sustainable urbanism would be adequate and complete. Thus, it is hypothesized that residents with sustainable lifestyles who are conscious about health life, walking, cycling, energy saving, local taste and food, sustainable public transportation, green economy etc., would have great significance and priority for paving the path towards ecological communities.

When we evaluate the cities that can be characterized as green, ecologically based within different dimensions, it can easily be grasped that the ecologically concerned inhabitants are one of the main dynamics of their sustainability efforts. These citizens with high level of environmental awareness adopting ecologically concerned lifestyles with their values, attitudes and behaviours, have become the significant catalysers of the whole process. It can be suggested that in cities that can be defined as ecological, both the reason and the result for the sustainability efforts are these ecologically responsive citizens. On the one hand, they can be the civil power making pressure to their local and/or governmental institutions about the environmental issues, on the other hand they are the ones using, promoting and enhancing related implementations of cities' ecological dimensions such as green consuming, recycling, sustainable transportation etc.

Within this framework, examining and evaluating socio-psychological and socio-cultural dimensions of cities and focusing on daily practices, lifestyles, attitudes and behaviours of local people with a goal of constituting more sustainable and ecologically based communities received attention within the sustainable urbanism discourse. Briefly it can be suggested that, all the related works of at least 25 years implemented by researches, academicians, governments and policy makers have recently introduced the term '*ecological citizenship'* (Carter and Huby, 2005; Dobson, 2003; Jagers and Matti, 2010; Jagers et al., 2014). Moreover, as a newly concept, this term appears to be emerging dimension of ecologically based cities. In line with these, the academicians, policy makers and environmentalists seek to find the strategies and tools to make the behavioural change for the modern urban societies towards implementing ecological citizenship.

1.2 Problem Statement

Famagusta situated on the eastern coast of the island of Cyprus, is the second largest city of Northern Cyprus. As a central municipality with 16 quarters, it has a de jure population of approximately 40,900 citizens (TRNC 2011 Population and Dwelling Census). Like the other cities of the island of Cyprus, it has great opportunities to achieve the dynamics of a sustainable urban environment and also to encourage its inhabitants for implementing ecologically based lifestyles. But recently, Famagusta has faced an inauspicious and unsustainable urban development. Hence, this process reduced all these dynamics and environmental values day by day.

Figure 1: An aerial view of Famagusta (source: http://ncypruscarhire.com)

After 1974 the urban growth of the city that was not rapid at first, has turned towards north-west instead of south because of the border established along the south of the city. But the urban growth has been accelerated after the establishment of the Eastern Mediterranean University (EMU). It has also been more vertical, because of the mass housing projects and apartment blocks constructed to accommodate the students of EMU. Famagusta has also faced the problem of urban sprawl in recent years, owing to

the now ill-fated 2002 United Nations (UN) Peace Plan, commonly known as the 'Annan Plan'. The plan generated, resulted in a surge in construction boom (Oktay and Conteh, 2007). But with the lack of a master plan to direct this rapid urban growth, the city has become the sum of urban environments with no quality and identity. The social structure of the city has also been broken because of all these impacts.

Because of the cause of urban growth which is not sustainable, the city leads a new way of living to its residents which is unfamiliar to them. In other words, it can be suggested that this physical enlargement underestimating the social, cultural, natural characteristics of the city has produced a vicious circle. Such that beside the effects of contemporary global trends, the citizens fell apart from their traditions, environmental values with the impact of physical environment. On the other hand, sustainability within the city has not been valuable and a matter of demand exactly by these same dwellers having the lack of environmental awareness and concern.

In this context, besides seeking the appropriate solutions for the physical harm of the city with plans, legislations and so forth, also developing strategies targeting to achieve a sustainable way of living among Famagusta inhabitants appears as a potentially crucial necessity. At this point as Oktay, Rüstemli and Marans (2012) also argue, further studies are needed to highlight the significance of and potential for environmental consciousness among local people. Consequently, as effective and viable strategies are needed to be based on the appropriate data, it can be suggested that existing values, attitudes and behaviours of Famagusta inhabitants are needed to be investigated. And the information can be used to understand if there is any potential for adopting sustainable lifestyles among the residents and to evaluate the dimensions

of environmental behaviours for encouraging ecologically based, sustainable lifestyles in the city.

1.3 Research Objectives

Research aim: The research focusing on 'ecological citizenship' within the sustainable urbanism discourse, has a goal to evaluate the dimensions and predictors of environmental attitudes and behaviours among Famagusta city residents. It tries to obtain information about the existing attitudes and the level of environmental awareness and concern that are transformed into the environmental behaviours, the nucleus of ecologically based living.

Research questions: For the fulfilment of the research aim, the following research questions are asked in order to understand if there is any potential for Famagusta residents to adopt ecological citizenship as a lifestyle:

- How can 'ecological citizenship' as a concept be defined?
- What does 'sustainable urbanism' mean as a key concept?
- In an urban environment, what are the predictors of environmental behaviours and everyday actions constituting the ecological citizenship?
- What are the determinants of environmental behaviours in the city of Famagusta?
- What are the dimensions of 'ecological citizenship' as a lifestyle in the city?

Research methodology: First, a theoretical evaluation will be done with the help of the related literature review achieved in Chapter 2 and Chapter 3. Second, closely related issues and studies about 'ecological citizenship' in the context of sustainable urbanism will be elaborated in order to provide a clear perspective of ongoing larger

dialogue in the literature. In this respect, based on a qualitative research approach, a conceptual model for the survey study and also a research model will be achieved. Third, a survey study is structured, including a set of questions which covers several main titles of the conceptual framework. The survey study will be involved in Chapter 4, having a quantitative approach. Finally, results of the user survey will be evaluated and interpreted with the use of SPSS programme and in line with personal observations.

Scope of the research: The thesis involves five chapters. In the first chapter, the emergence of the concept of 'ecological citizenship' will be discussed and problem statement and research objectives will be highlighted. In Chapter 2, the emergence of modern environmentalism as a background information and then, the dimensions of 'Ecological City' will be evaluated. In Chapter 3, 'the concept of ecological citizenship' and 'environmental behaviour' as its nucleus will be clarified, and supporting international cases will be reviewed. In Chapter 4, the user survey and its findings will be evaluated in order to understand the level of environmental awareness both in general and in Famagusta city, environmental (anthropocentric and ecocentric) attitudes and also environmental behaviours in three categories. In the last chapter, the thesis will be concluded based on all studies, reviews and results of the survey.

Chapter 2

UNDERSTANDING THE DIMENSIONS OF ECOLOGICAL CITY

2.1 The Emergence of Modern Environmentalism

As one of the main keywords of this study is ecological citizenship, it is crucial to firstly make a clear definition of its place within the modern environmentalism era. It is eligible to make a summary of the history of modern environmentalism with the headlines as the focus of main concerns until today, in order to explicitly discuss and evaluate the present dynamics of ecological citizenship as a fresh, newly introduced concept. These concerns constitute a back ground for the thesis, as well as the user survey questionnaire that is used as a tool to measure the potential for ecological citizenship among the Famagusta dwellers.

After the Industrial Revolution in 1750's, there was a process of powerful industrial activity such as mining, land drainage and forest clearance. Great factories were flagships of the economic development and the rest -including the environment- was not valued. During those days a few individuals began to react to this ignorance. And it was the beginning of 150 years of continuous effort to create a new era with its own unique philosophy and science enlightening 21 century's ecological worldview.

By 1850's, there were several writers and visioners opening discussions about the respect for nature in relation to the ongoing construction boom undermining the nature.

One of those writers was Henry David Thoreau (1817-1862) from USA. His classic book *Walden* was published in 1848 by him. His aim was to feel and then describe the harmony that humans can experience when living with nature. One other author is John Muir (1838-1914) as a Scottish-born writer and naturalist. He founded the US conservation organization the Sierra Club in 1892. Through the Club, he successfully encouraged the US government to preserve some of the natural environment of the country. Inspired by visionaries like *Thoreau and Muir*, the Western world has begun to experience environmental awareness. As a forester and ecologist, another important milestone for the environmental movement is Aldo Leopold. He wrote a classic of nature observation and ethical philosophy, as one of the founders of the Wilderness Society in 1935.

Briefly until those days, in other words until the end of 1950's, the attention was about wildernesses of the countries and the endangered species (such as buffalo etc.) within these natural lands affected negatively by the pressures of human existence. But after the best-seller book *Silent Spring by Rachel Carson* in 1962, the focus of concern began to be also the human activities damaging the environment. Within the book which is accepted to be the most influential book for the emergence of modern environmentalism, the concern was mainly the harmful effect of pesticides and insecticides. Carson was a nature lover and former marine biologist. She discussed how chemicals used on farms, forests and gardens, were polluting the environment. She suggested that nature was being poisoned; the insect life was dying which meant a silent spring with no food for the birds; no birds, no bird song. She also described in detail how pesticides and insecticides cause higher cancer risks. Chemicals like the

insecticide DDT, enter the food chain and affect the fatty tissues of animals and either humans.

Meanwhile as a result of increasing environmental awareness and concern in different dimensions, federal legislations developed for clean air and water in USA and consequently significant federal laws such as the Clean Air Act of 1970, the Water Pollution Control Act Amendments of 1972 and the Clean Water Act of 1977 were all signed. Prior to that, basic air and water supply protection was a matter of states rather than the federal government.

In sum, as a result of all these efforts in 1970's, especially after numerous U.S. environmental laws, not only the *ecology* as a science and *environmental philosophy* as a new branch of ethics but also the *environmental politics* began to gain importance and power in USA and Europe. Such that the leftists, green parties, ecology and peace movements became more influential within the political and ideological debate in western world, for exactly the same goal of defending the environmentalism. And some libertarians also joined to the struggle for defending the nature and its values. Another notable improvement in 1970's was the establishment of environmental pressure groups like *Greenpeace* and *Friends of the Earth*.

In the year 1972, the first international event of environmentalism was held in Stockholm, Sweden. Officially called the United Nations Conference on the Human Environment, the Earth Summit was initiated by the developed countries to address the environmental effects of issues such as acid rain, industrial poisoning of the seas etc. One of the significant outcomes of the conference was the establishment of UNEP

(United Nations Environment Programme). The programme was created to promote environmental practices across the globe.

However, while all these improvements were emerging in 1980's, another serious focus of concern was added to the existing problems: *the depletion of ozone layer*. The scientists recognized that mainly because of the presence of chlorine containing source gases known as CFC's (chlorofluorocarbons) and related halocarbons that are all common in our deodorants and sprays, the protective layer preventing the exposure of harmful ultraviolet rays was demolishing.

Additionally in the year 1983, the UN General Assembly established the UN World Commision on Environment and Development. It appointed Dr. Gro Harlem Brundtland, the first woman prime minister of Norway, as chairperson. In the year 1987, four years later, she published the Brundtland Report, and coined the term *'sustainable development'* as a new concept. The Report, defines sustainability as:

> 'Development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

"Sustainability" became a key policy concept worldwide since than, combining all the experiences of environmentalism with sensitive social and economic considerations. The term is basically defined within three main dimensions: environmental, economic and social. It should be added that recently, culture has been determined to be the fourth dimension by many academicians and researchers. As in the meantime, different academic disciplines have achieved different understanding and perspectives. In general, the concept became one of the most successful approaches to be introduced.

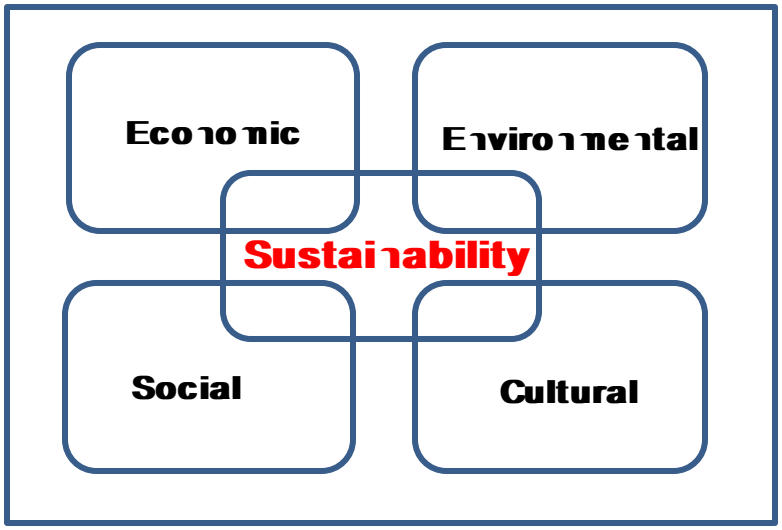

Figure 2: Dimensions of Sustainability (source: anonymous)

Within these global tendencies, the third Earth Summit was held in Rio, Brazil in 1992. For this time, the focus of concern, beside protecting biodiversity and decreasing the usage of dangerous poisons, was another new phenomena called *global warming*.

Global warming is the increase in the average measured global air temperature near the Earth's surface. It is caused by the increasing amount of greenhouse gases since the late 1800's, mostly because of consequences occurred after the Industrial Revolution. Therefore it is also called as the 'greenhouse effect'. Among these greenhouse gases, the mostly known ones are carbon dioxide (CO_2), methane (CH4) and nitrous oxide (N_2O). Such that, solar radiation passes through the clear atmosphere; most radiation (the necessary amount to warm it) is absorbed by the earth surface and the rest is reflected by the earth, through the layers of the atmosphere back to the space. However as a result of the increasing amount of mainly carbon dioxide, methane and nitrogen oxide gases covering the Earth atmospheric surface as a layer that makes a greenhouse effect, the infrared radiation passes back through the

atmosphere is restricted; because some of the infrared radiation is emitted by the layer of greenhouse gas molecules. In other words the heat is trapped in the atmosphere.

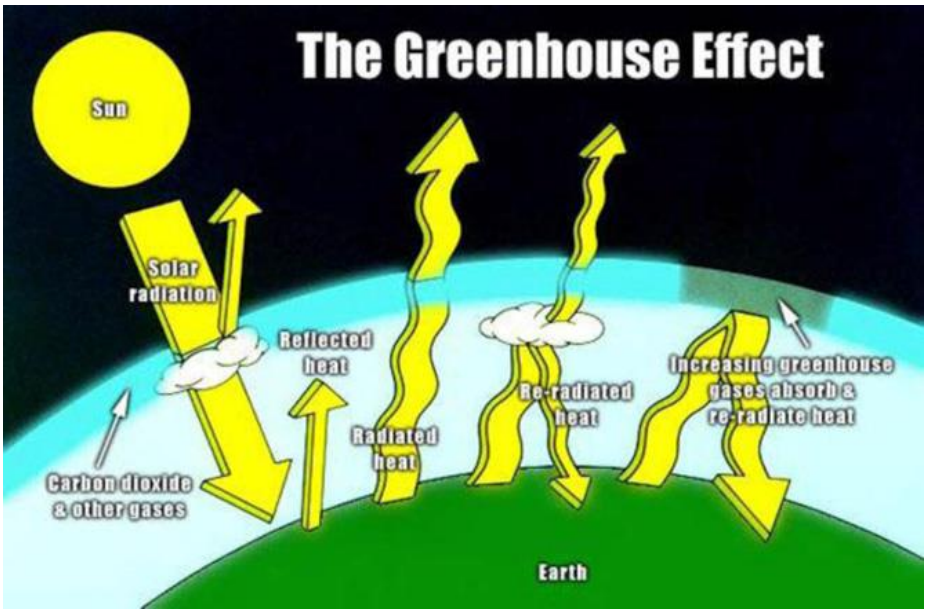

Figure 3: The greenhouse effect (source: Akodere et. al., 2013)

Among the consequences causing greenhouse effect, there are mainly the burning of fossil fuels, land use changes and deforestation caused mostly because of the day by day enlarging urban environments. In terms of fossil fuel usage it can be argued that most power plants worldwide still are based on fossil fuels, mostly coal. And in terms of land use changes it can be argued that worldwide every day recognizable acres of rain forest area are destroyed for cultivation and moreover vegetative lands and farm lands are occupied for urbanization practices.

Therefore, mean surface temperature of the Earth has increased about 0,8 ^{0}C since the early 20th century, with about the two thirds of the increase occurring since 1980. The resulting conditions are expected to vary region to region around the globe and also causing a global climate change. The effects of increasing global temperature include

a rise in sea levels, continuing retreat of glaciers and sea ice, heat waves, droughts, heavy rain falls and ocean acidification. Species extinction, damage of natural ecosystems and habitats and the lack of food security are other rings of this negative chain.

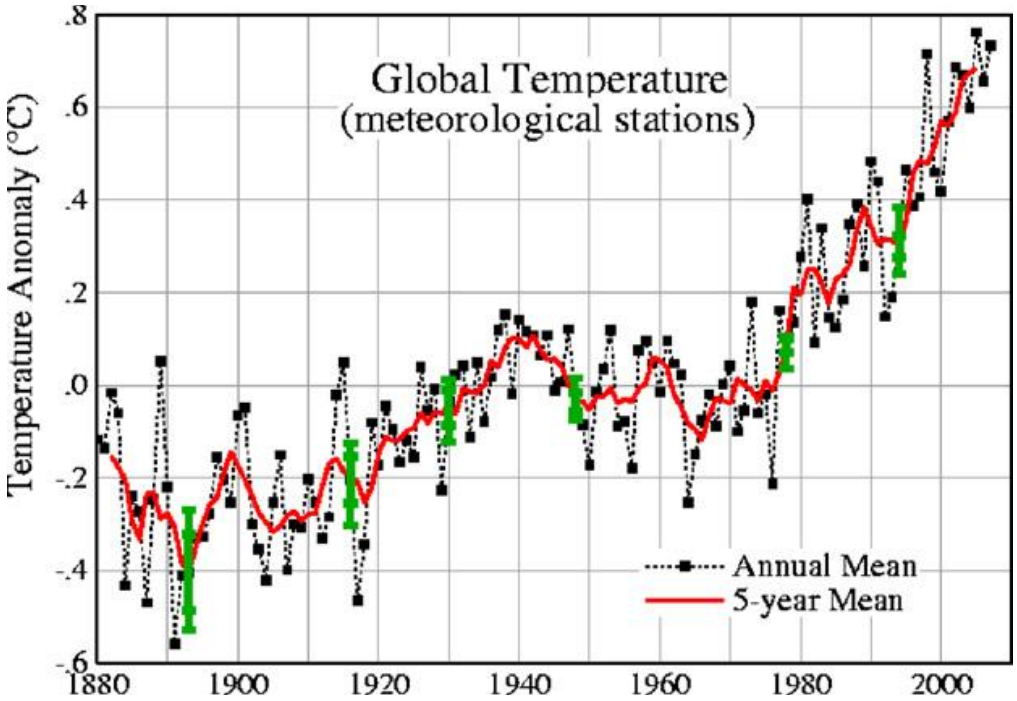

Figure 4: Global mean surface temperature between 1880 and 2007 recorded by NASA (source: Akodere et. al., 2013)

The Kyoto Protocol introduced at the third Earth Summit in 1992 to cut the carbon dioxide emissions by % 5 until 2010. As the climate change became no negligible, more scientists have begun to point out the human activities as the disastrous cause of climate changes. Therefore five primary documents were approved. These five primary documents were namely 'population size', 'gross domestic product per capita' (GDP), 'deforestation', 'energy density' and finally 'carbon density' (Duru, 2001 in Coşkun and Gençay, 2011). However the desired result was not obtained and a binding protocol was not created. Finally, at the 'Third Conference of the Parties' held in 1997

in Kyoto, a protocol was signed for the first time. But it could enter into force on February 16, 2005. Under Kyoto Protocol, extents of obligations for the countries were listed under Annex I and Annex II.

More than 190 countries have accepted the protocol so far but USA, having an economy based on the oil trade has not. Moreover the developing countries like India and China were not responsible for most of the Kyoto deadlines. Unfortunately China is nowadays second largest carbon dioxide emitter of the world.

Eventually, as the impact of human activities were recognized clearly starting from the 1980's to be the main cause of environmental problems worldwide in different institutional and non-institutional circumstances, a scientific concept was introduced as *ecological footprint,* receiving a lot of attention in environmentally based spheres. This concept recently became a common and reliable tool measuring the individuals', institutions', cities' or countries' ecological impact on the environment either.

As a measure of human demand on the Earth's ecosystems, ecological footprint analysis is world widely used indicator of environmental sustainability. As a comprehensive scientific tool aiming at bringing an ecological worldview within different scales, it is conspicuous that a concept has a serious concern and focus about individual's lifestyle, the consumption behaviour in particular.

Meanwhile, the fourth Earth Summit was held in Johannesburg in August 2002, and five areas were acknowledged by UN. These areas identified for particular attention were energy, biodiversity, water and sanitation, agriculture and health. Halving the

population in the world who lack basic sanitation by 2015, halting the loss of fish and forest stocks and reducing the agricultural and energy subsidies in the West were some significant achievements of the same Summit. However the environmentalists claimed that the encouragement of renewable energy sources like wind and solar power was once again discouraged by USA, Japan and the oil companies, for the sake of their own interests.

And the fifth Earth Summit, commonly known as Rio+20, was recently held once again in Rio, Brazil in 2012. The highlighted issues included topics such as alternative sources of energy, rising scarcity of water, the production of toxic components such as poisonous waste including radioactive chemicals. Reducing vehicle emissions, congestion in cities and the health problems caused by polluted air and smoke were also addressed.

As it is also obvious from the outcome of the fifth Earth Summit, day by day more and more concerned people and institutions including the international ones began to emphasize the importance of cities to be sustainable, environmentally responsive with the help of achieving various characteristics such as waste management, urban biodiversity, public transportation etc. These different dimensions of sustainable, ecologically based cities were discussed starting from the late 1980's within the umbrella of *sustainable urbanism* as a new concept.

A great acceleration of natural environment destruction has been experienced particularly after the Industrial Revolution. This process largely emerged as a result of the increasing urbanization. This rapid urbanization practices damage habitats,

consume resources, produce toxic chemicals, and increase global warming. It also neglects cultural and local dimensions of communities. As a result of the severe process of decay, the social, cultural and environmental roots of the urban communities have a severe depletion within the today's urban environments having the lack of relevant qualities.

Therefore, beginning from the late 1950's, *sustainable urbanism* as a new discourse has emerged within the framework of sustainability. Sustainable urbanism has been acknowledged for urban development and planning concerns mostly in developed countries. Thus, concepts such as quality of urban life, urban ecology, smart growth, alternative fuels and renewable energy, compact planning, urban agriculture, green buildings, green economy, waste management and so forth have been new focus areas of urban planning agendas. As an outcome, New Urbanism, Green City, Slow Cities (Citta Slow) movement, Ecological City, Sustainable City have emerged and broadened in many parts and regions of the world in 1980's. And among all these related concepts, Ecological City is one of the most prevailing and also promising movements within the sustainable urbanism discourse.

2.2 Understanding the Ecological City

With the knowledge of cities having a crucial role, Ecological City as a concept suggests that the implementation of ecological principles to urban planning, design and management is essential in order to be environmentally and economically sustainable. Based on the theoretical evaluation that will be displayed below as sub-sections, the main principles structuring Ecological City can be proposed to be categorized in five dimensions as follows:

- Sustainable Urban Form

- Sustainable Transportation
- Urban Ecology and Biodiversity
- Energy Use and Waste Management
- Ecological Citizenship

2.2.1 Sustainable Urban Form

Urban form generally encompasses a number of physical features and non-physical characteristics including size, shape, scale, density, land uses, building types, urban block layout and distribution of green space (Dempsey et al., 2010). There is an ongoing debate for more than two decades, beginning from the late 1980's, about the type of urban form which best facilitates sustainable development. According to Oktay (2001), there are those who emphasize the high density development and those who highlight garden city or garden suburban forms. The first view suggests that compact urban form with mix uses is essential for a city to prevent urban sprawl, to reduce car use and to obtain more land for urban open space, urban agriculture and forestry. Many planning theories like New Urbanism and Smart Growth have emerged that support higher density housing.

(i) Smart Growth

As an urban planning and design movement emerged in United States, this development model has a goal to obtain necessary connection between physical development and quality of urban life. With the existence of such a mission, Smart Growth aims to design new urban environments and enhance existing ones that are eye-catching, suitable, nonviolent and vigorous. For this reason the Smart Growth movement's keywords are as follows:

- Mix land uses

- Compact urban layout
- Range of housing choices and opportunities
- Walkable streets
- Communities with a high sense of place
- Public open and green spaces, parks, wetlands etc.
- Local communities
- Variety of transportation modes
- Cost effective and fair development
- Public participation in development decisions

As a movement having attention of 3 E's (environment, economy and equity) as the main objectives, it questions the necessity of spending increasing time in cars, being locked in traffic and noise and pollution released by transportation in cities. Thus the Smart Growth points out walkable communities in walkable neighbourhoods offering a range of pedestrians, cyclists, transit riders and drivers. To foster walkability and other sustainable modes of travel, the neighbourhoods must have mix land uses, must be built in a dense layout with safe and inviting pedestrianised corridors and also must achieve a variety of sustainable modes of transportation choices.

(ii) New Urbanism

As another urban planning movement firstly released in United States in the early 1980's, New Urbanism also evaluates urban layout as a core issue. In general, New Urbanism has a vision of creating diverse, liveable, walkable, dense, mixed use communities. Its aim is to reform many issues of real estate development and urban planning, from suburban infill to urban retrofits. It contains residential areas, work

places, shops, schools, public green and open spaces all within easy walking distance. Instead of more highways and roads, it encourages the use of car-free modes of transportation such as trains and light rail. Walkability, sustainability, quality of urban life, traditional neighbourhood, connectivity and mixed housing are among the main principles of New Urbanism. Two patterns are emerged in line with New Urbanism, Traditional Neighbourhood Design (TND) and Transit Oriented Design (TOD).

Traditional Neighbourhood Design (TND) is conceived by Andres Duany and Elizabeth Plate-Zyberk. It proposes a five minute walk for one's daily needs, and a three minute walk to a neighbourhood park. In other words, TND aims to design neighbourhoods in the format of early 20th century neighbourhoods. Those traditional urban environments were characterized by houses on small lots. In such neighbourhoods, there are walkable commercial areas with shops lining the sidewalk and public parks, green areas or squares. Dead end cul-de-sacs and culvi-linear streets are used to achieve pedestrian-oriented, walkable neighbourhoods. As a result, people prefer to walk or ride bicycle instead of using car. Thus, the car does not dominate the surrounding but still is accommodated with efficient circulation. In sum, TND has a considerable focus and emphasis on the neighbourhood's physical layout and the design of buildings and public spaces.

Transit Oriented Development (TOD) is the second major New Urbanism scheme, this scheme is developed by Peter Calthorpe. It is similar to the Traditional Neighbourhood (limited walking radius, open space at the centre), but differs in several key respects. The TOD presumes a major transit (rail or bus) connection at the heart of each community.

The European Commission was also pointing out the significance of more compact forms and urban containment. The commission hypothesised that with the existence of compact urban forms, urban sprawl can be reduced, agricultural and amenity land can be protected. Additionally, substitute modes of travel would be fortified, and public transportation modes would also be enhanced, with a variety of uses in much closer juxtaposition. Briefly the European Commission has attempted to argue that urban containment is essential for the sake of both environmental and quality of life benefits. The United Nations Human Settlements Programme has also addressed the compact urban growth to reduce greenhouse gas emissions caused by urban sprawl.

On the other hand, the second view suggests that high densities introduce congestion, crime and reduction of open space in the neighbourhood and they add that low density development can give the chance of a better quality of life, environment and facilities. Their ideas are mainly based on Ebenezer Howard's Garden City idea introduced 100 years ago (Oktay, 2001).

In the light of all these opposing suggestions and planning and design theories, it can be argued that the best solution can be found according to the local dynamics and characteristics of the urban environment. Sometimes garden suburban form and sometimes urban compactness achieving high densities can be proposed and sometimes the answer will be a mixture of both. However there is a hotly debated issue in relation to urban form nowadays: Do the residents of relatively high density urban developments or low density developments behave more environmentally conscious? In other words what is the influence of urban form on environmentally responsible travel behaviour?

There are many researches supporting that urban form is important to influence the residents to behave more environmentally responsive such as walking, cycling and using public transport rather than cars. According to Muniz and Galindo (2005), the urban form workouts a strong effect on the ecological footprint of transport. They add that results support compacity policies that allow for the supply of public transport and an appropriate mix of population and activity. In another research, McMillan (2007) investigated the influence of urban form on a child's travel mode to school. He suggests that the related research delivers sign that urban form is undeniably one factor to influence non-motorized travel behaviour.

2.2.2 Sustainable Transportation

Transportation is reported to account %27 of total worldwide energy consumption and particularly in developing countries it is based on fossil fuel burning, mainly oil as a finite resource. Consequently according to many researches, a considerable amount of the manmade carbon dioxide (CO2) in the globe's atmosphere arises from transport sector (automobiles and so forth). Centre for International Climate and Environmental Research in Oslo reported that %15 of the carbon dioxide (CO2) in the atmosphere is released from transport sector and the remaining %85 (of atmospheric CO2) originates from agriculture, industry and buildings. These pollutants released by transportation not only cause global warming because of the 'greenhouse effect', but they additionally degrade directly the natural resources including forests, farmlands and wetlands as the sources contributing to the ecology of urban environments. And because of the urban sprawl, urban open spaces are also wasted resulting in losses in ecological diversity.

There is an ever increasing need for more transportation both in developed and developing countries. This trend threatens the sustainability of cities both economically, environmentally and socially. According to the World Health Organization, in the year 2000, 1.26 million people passed away worldwide as a result of road traffic wounds. In almost all cities of both developed and developing countries, the existing road system is not able to efficiently move the enormous number of cars, resulting in traffic congestion. And enormous amounts of money are spent continuously to expand new roads that will be occupied with new cars immediately. Not only the money spent both for transportation infrastructure and owning and operating a car, but also the time spent in traffic congestion is also an unnecessary waste. Because the automobiles are the most polluting and most expensive transportation mode.

Besides the negative economic and environmental effects on sustainability of the cities, the transportation in a city is also one of the basic indicators of quality of urban life. The characteristics of transportation are highly influential on the urban life of residents. Noise, air pollution, efficient mobility within the city, all affects the life quality of urban residents including the children and elderly ones within different dimensions. Easy access to public transportation, the existence of pedestrianised urban environments with walking paths and bicycle routes, influence the social ties of urban residents and increase their quality of urban life standards as a whole.

Within these consequences, one of the basic concerns of ecological urban planning is to achieve sustainability in urban transportation by promoting walking, cycling, public transportation and innovative technologies that are less dependent on fossil fuels

increasing greenhouse gas emissions. Hence, urban design and planning movements focusing on the sustainability handle the urban transportation as a core issue. The most influential ones among these movements can be suggested to be Smart Growth, New Urbanism and Woonerf System. All these movements aim to deemphasize the existence of automobiles in order to increase more sustainable modes of transportation within the city such as walking, traffic calming, cycling and light railway trains and buses etc.

For instance, *woonerf system* which emerged firstly in Netherlands, is another movement that aims to decrease the dominance of cars in urban neighbourhoods. A Dutchman named Niek De Boer inspired by British architect and road engineer, began to design and construct the streets that gives the feeling of driving through a garden in 1960's. With resident participation, the woonerf design was soon accepted throughout the Netherlands. In 1976, the first set of design standards and guidelines were legalized and adopted. Later other European countries at the end of 1970's (Germany in 1976, England, Sweden and Denmark in 1977, France in 1979), Japan in 1979 and Israel in 1981 legalized the system.

Woonerf streets are places where the cars rather than pedestrians and cyclists feel like guests; therefore children can play comfortably in urban open environments. By integrating the sidewalks and roadways as if it is one surface, drivers moving through a woonerf street are made to feel like guests and are made to change their behaviour accordingly. In other words, with the help of a combination of traffic calming solutions that limits the vehicular traffic, a streetscape fostering the social interaction is achieved

while decreasing the negative impacts (noise, safety concerns, and greenhouse emissions) of the cars.

There are several principles found in most *woonerf* streets. Creating street gateways that enhance the neighbourhood identity, adding continuous curves to the travel lane in order to limit the vehicular traffic, using features (street furniture, plantings, play equipments) for traffic calming while providing pedestrianized environments, limiting the car parking space in order to prevent the street to be merely parking lots are the leading characteristics of these streets.

In line with these urban design and planning movements seeking to achieve more sustainable modes of travel among the urban dwellers, the further research investigating the dynamics of mobility behaviour has been increased. It is aimed to have appropriate policies and strategies about the sustainable modes of mobility behaviour with the help of using the information collected by the related research.

For instance, Hunecke et al (2007) made a research based on a survey of 1991 residents of three large German cities. Within the research attitudinal factors built on theory of planned behaviour, further mobility related attitude dimensions, sociodemographic, infrastructural characteristics and mobility behaviour were surveyed. It has been suggested that the results confirmed their expectations that the attitudinal variables are significant predictors for the use of private motorized modes, concluding that mobility-related attitudes are better determinants than values. Thus according to the findings of the research, the usage of private motorised modes highly depends on people's

perception of their ability to use public transportation. They add that in general, mobility behaviour is inclined by situational and personal factors.

It seems that while the related urban design and planning movements based on sustainable transportation have gained much more significance and priority among the urban management policies, the research about the dynamics of travel behaviour also needs to be paid attention and evaluated.

2.2.3 Urban Ecology and Biodiversity

Protecting and enhancing natural environment, biodiversity and food producing areas is another basic concern of ecological cities. The natural and semi natural green spaces provide multi-dimensional benefits. Beside environmental contributions, these areas in a city also achieve social and economic profits. In other words, the existence of urban green areas in a city influences all three dimensions of sustainability.

In terms of environmental benefits, first of all it is clear that urban greenery reduces the amount of CO2 and other greenhouse gas emissions causing global warming. It also cleans and cools the air. The particles causing air pollution and the noise released by mostly the vehicular traffic are all filtered achieving improved quality of life in cities. And vegetated areas cools the air resulting in reduced 'heat island effect' caused by asphalt, concrete surfaces and building materials. It is measured that air under a tree's canopy can be up to 10,0 ^{0}F cooler compared to full sun. Additionally storm water runoff is also prevented by the green spaces as they are permeable surfaces resulting in a natural recycle and sustained urban hydrology.

Green areas will also serve social and psychological benefits. They strengthen the social ties and the spirituality of urban residents. There is evidence that green spaces have significant role in residents' feelings of attachment towards the community, and their connections with other inhabitants (Kim and Kaplan, 2004). Children, young inhabitants and elderly people have chance to spend time outside resulting in social interaction. And there are researches providing evidence about positive connection between well-being, health and green space (De Vries et al., 2003; Takano et al., 2002; Tanaka et al., 1996). For instance in a UK based study of the psychological benefits gained by people using green spaces in the city of Sheffield, Dean et al. (2011) suggest that the findings demonstrated a positive association between species richness and psychological well-being. In another research, it has been argued that there has been evidence indicating that adults with high negative mood scores, as well as those with a higher rate of health complaints, are more likely to prefer favourite places dominated by vegetation than other favourite places (Korpela, 2003). There are also researches having findings about reduced crime rates in environments where the greenery exists nearby.

These areas have also economic benefits in line with the environmental and social benefits. As the air temperature is balanced, considerable energy savings are achieved. Less energy is consumed for cooling in summers as the plants cool the air. And less energy is consumed for heating in winters in urban built environments surrounded by greenery as the existing vegetation reduces the velocity of air over buildings ('wind break' effect); draughts are also removed and temperature differences are minimized between existing and incoming air. US data suggests that energy consumption of domestic buildings can be reduced up to % 20-40 by strategic positioning of plants

(Akbari et al., 1997,2001; Cameron et al., 2012; Huang et al., 1990). And as the roads and buildings against landslide and flood are protected, the cost of possible flooding damages will be prevented. The cost of health services is also reduced, as the green spaces positively influence the health and wellbeing of urban residents. Additionally, the property values can be increased when the property is nearby to a green space, especially in compact cities.

Within this framework, it seems that green spaces sustaining urban ecology and biodiversity is one of the key features of ecological city. Therefore both developed and developing countries have sought and still seek to find appropriate solutions and methods for preserving and enhancing urban green systems. Especially in some of the developed countries where the city policy and management is evaluated within an ecologically based point of view, the concept of 'green infrastructure' has been introduced. According to Tzoulas et al. (2007), green infrastructure can be determined to comprise of all natural, semi natural and artificial systems of multifunctional ecological systems within, around and between urban areas, at all scales.

It can be suggested that in general, green infrastructure in a city refers to all parks, public green spaces, green corridors, street trees, urban forests, farms, native spaces, wetlands, roof gardens, vertical greenings and private gardens. It preserves the integrity of habitat systems and may deliver the physical base for ecological networks (Tzoulas et al., 2007). So it can be further suggested that the layout of the green system is as much significant as the amount of the green spaces, because the needed integrity of habitat systems can be obtained if only the green layout is comprehensive, coherent and well organized. In other words, the main aim of a green infrastructure in a city is

to achieve a green network connectivity which is capable for the biodiversity of habitat systems. Such connectivity can be achieved by linking different size of green patches together.

Hence in an ecologically based city, such a green infrastructure sustaining biodiversity can be achieved with the help of a comprehensive green plan. Such a green plan is a tool of implementing a green system starting from building unit up to the city scale as if it is a network.

In a city having an adequate green infrastructure, all built environment as a whole is surrounded by natural, semi natural and/or man-made greenery within a system and without any fragmentations, resulting in biological integrity achieving biodiversity. The spaces constructing the green infrastructure as a system in an ecologically based city can be classified hierarchically as following.

Table 1: Types of green spaces constructing the green infrastructure

Level	**Type of Green Space**
Building	Private gardens, green roofs and vertical greenings
Neighbourhood	Neighbourhood parks, other public greenery, native lands, street trees
District	District parks and other public greenery, native spaces, green vehicular corridors, agricultural spaces
City	City parks and other public spaces, urban forests, wetlands, and other native spaces, farms, aquifers

Building: All greenery that is adjacent to a building is included within the building unit. In cities most of this greenery is mostly as private gardens. Gardens in a city are vastly varied in form and function. They may include a few square meters of multi-layered diverse vegetation, or even large areas of single dimension paving with no vegetation at all (Cameron et al., 2012). Housing type and density influences the size of gardens; greater housing density is linked to smaller garden sizes. Beside the gardens, green roofs and vertical greening on building facades can also have significant contributions on urban ecology.

Neighbourhood: The greenery of mass housings, neighbourhood parks and greeneries, fruit gardens, all native land situated at the neighbourhood level including remnant green pockets and other left green spaces due to the topographical, physical conditions, street trees and plantations are all included in neighbourhood scale. Within this level, street trees and plantations can be used as green corridors in order to achieve the needed integrity of green infrastructure.

District: Parks and other native or man made public greeneries (such as district forests, communal gardens etc.) serving to the city within a district level, agricultural spaces and all green corridors and patches along the vehicular lanes belong to the district unit. Green corridors in this scale can connect green patches of different scales together.

In each level, starting from building unit up to the city level, the green spaces need to be properly defined and interrelated in order to prevent the impact of habitat fragmentation. Preventing such a fragmentation and achieving the appropriate physical

conditions for the biological functions is the key forth cities to have an ecologically based green urban infrastructure and layout.

2.2.4 Energy Use and Waste Management

Energy Use

As the global warming and climate change concerns are threatening the world, energy use and carbon emissions of cities have become a serious challenge for making them more environmentally sustainable. The reason is briefly the growing concentration of greenhouse gases (GHG) in the atmosphere. Carbon dioxide (CO_2) is the most significant human-caused GHG, the other main greenhouse gases are methane, chlorofluorocarbons (CFCs), nitrous oxide. And the increase in CO_2 concentration is mainly because of fossil fuel use and land use changes including deforestation and urbanization practices. Due to the cities are places where the highest amount of energy consumptions and CO_2 emissions are taking place, it is vital to deal with the issues of reducing energy use and finding alternative renewable sources of energy in cities. Such that, according to UN Department of Economic and Social Affairs report, 'climate change' and 'energy' are core focuses, within the scope of sustainable development (UN, 2007).

Waste Management

As a result of the increase in the population of the world, rapid urbanization and changes in the way of life, there has been a huge quantity of waste being generated daily in cities. Cities demand large amounts of water and energy and release large quantities of waste. Usually, the greater the economic wealth and higher the percentage of urban population, larger is the amount of solid waste generated (Hassan, 2000).

The solid waste and wastewater generated in cities can be the reason of serious health hazards if not managed with the help of appropriate systems. It may pollute the air, soil and water. The air is polluted by means of waste burning, the soil is affected by direct waste contact and leachate and surface and groundwater are also contaminated as a result of leachate. And as the waste attracts flies, rats etc., the diseases can be easily spreaded. Additionally wastewater directly affects the water supplies of the cities, aquifers and marine life if not recycled properly. Briefly management of the waste generation has become one of the urgent concerns of sustainable urban development. And for ecologically based cities it can be suggested to be a must. Consequently within ecological cities, innovative infrastructure systems are operated in order to reduce, re-use and recycle solid waste and wastewater.

Solid Waste Management

In terms of solid waste management, ecologically based cities have properly determined policies operating well organised innovative systems for both solid waste and wastewater. In developed countries there are many cities implementing innovative waste management systems. However in most cities of developing and transition countries, waste management practices result in problems that impair human and animal wellbeing and ultimately results in economic, environmental and biological losses (Sharholy et al., 2008).

Innovative solid waste management systems both in industrialised and/or developing countries are mostly operated within four sections:

(i) Waste reduction

(ii) Collection and transportation

(iii) Landfilling

(iv) Transition waste to energy

(i) Waste reduction: Reducing the amount of waste which should be dealt, is the starting point of solid waste management. It can be argued that the whole process of the management in cities will not be effective and environmentally sound unless the waste reduction including waste recycling and reusing as the first step is appropriately operated. Agenda 21, emphasized in Chapter 21 that reducing wastes and increasing reusing and recycling should be firstly aimed in waste management. As the solid waste generation in developed countries contains more non-organic wastes than the developing countries (Singh et al., 2011), reducing the waste can be argued to be a more urgent concern in industrialized cities. The waste reduction step in general involves 'source separation', 'reusing' and 'recycling'.

- Source separation: It involves action of keeping different categories (glass, plastic, metal, paper, organic etc.) of waste separated.

- Reusing: It involves action of reusing the material in order to prevent it to be a waste. The reusing depends directly on the everyday household behaviour of the urban inhabitants.

- Recycling: This process involves the action of transforming the materials (plastic, glass, paper, metal, organics) into manufacturing of products of secondary uses. Both source separation and recycling almost %100 depend on the institutional situation of the city within a local or governmental level. Only the action of home

based composting that is a result of transforming the waste of household organics (remedies of fruits, vegetables, meals, lawn trimmings etc.) in the residential gardens may take place individually.

Beside officially operating the system for source separation in order to recycle the waste generated, this step as a whole additionally covers the issues of redesigning of products and packaging and enhancing the public awareness for household composting, reusing and green consumerism.

(ii) Collection and Transfer: This step is the largest cost element in most solid waste management systems. In industrialized countries, the implementation of waste collection and transfer is professionalised and institutionalized. In these countries, mostly the waste collection is performed by public employees or by firms under contract to the government or municipality managing the system. However in developing countries, the collection service is low. The land or place where the waste is carried, is neither properly determined nor controlled. Additionally in these countries, unregistered poor individuals have a considerable portion in waste collection and transfer. In developing countries including the cities of North Cyprus, rather than a 'transfer station' or 'transfer point', the place where the waste is transported is mostly an open landfilling site. The criteria for choosing such a place is almost being merely far away from the urban environments.

(iii) Landfilling: Landfilling area is a land where the waste is deposited. Most of the waste is landfilled globally. However the characteristics of waste management system

will determine if the landfilling is environmentally operated or not. Landfills are categorized in three types (Singh et al., 2011):

- Open dumps or open landfills: This is the mostly preferred non-engineered disposal type. It is often used in all developing countries. In cities of North Cyprus, the landfilling type is also mostly open landfilling. In open dumping process, solid wastes are disposed of in such a way that the environment is not protected. Dumped waste is vulnerable to open burning and is open to disease vectors. Disposal of waste in open dumps attracts birds, insects, rodents and as a result unhealthy, unhygienic conditions (Singh et al., 2011).

- Semi controlled or operated landfills: These fields are selected sites where the dumped waste is compacted. Than a daily a topsoil covering is provided. The collected waste is not segregated. This type of landfill is not also engineered so the management of the leachate discharge or emissions of landfill gases is not operated.

- Sanitary landfilling: Mostly the developed countries use these areas. Sanitary landfilling is a totally planned disposal type, which prevents damaging influences of uncontrolled dumping. The sanitary landfilling was introduced in England in 1900's. The area selected for sanitary landfilling is firstly prepared carefully for the dumping. Than waste is deposited in thin layers and compacted by heavy machinery; several layers are placed and compacted on top of each other to form a refuse cell. Each day, the compacted refuse cell is covered with a layer of soil to prevent odours and leachate. When the landfill is completed with the help of using a layer of clay or a synthetic liner, a final topsoil cover is placed, compacted and graded. Consequently, various

forms of vegetation may be planted. There are two major environmental concerns of sanitary landfills: the generation of leachate and greenhouse gases released. Proper site selection, preparation and management lessen the effects of wastes dumped and greenhouse gases released.

(iv) Transition waste to energy: Generating renewable energy from waste is one of the most innovative environmental processes and it has received acceptance and interest day by day for the urban management practices worldwide. There are three landfill renewable energy generation methods used in developed countries:

- Incineration: One of the most convenient methods of converting waste in landfills to renewable energy is incineration. This method means burning the waste for producing electricity with the help of boiling water and powering stream generators. Strict emission standards for operating this process is necessary in order to prevent the release of harmful gases such as heavy metals. Pyrolysis and thermal gasification are other two heat based methods to obtain renewable energy from landfilling sites.

- Mechanical processing: This method is mechanically processing waste to produce refuse derived fuel (RDF). It involves several steps for treating the waste including segregation, shredding etc. and finally almost %60 of the raw waste is converted into solid fuel (http://www.brighthub.com).

- Biogasification: This process is also named bio-methanisation. It includes biomass decomposition using anaerobic bacteria to generate biogas comprised of carbon dioxide (CO_2) and methane or natural gas (CH_4).A series of wells drilled into

the landfill help tap the natural gas. A biogas plant works on the same principle of conversion of waste into natural gas by the natural process of fermentation (Edelman et al., 2000).

Wastewater Management

In urban environments beside the management of solid waste, the wastewater should also be treated in order to prevent the possible environmental hazards. Wastewater in cities is the water collected from all buildings including residential, commercial and industrial ones and mostly storm water runoff is included. And if the wastewater that contains high levels of pollutants is discharged without any treatment, the potable water supplies of the city such as aquifers, ecosystems like wetlands, rivers and marine life may be polluted directly. Thus in ecologically based cities, strict regulations are developed regarding the wastewater discharge and according to these environmental legislations, there are innovative treatment methods operated for managing the wastewater. There are biological and non-biological methods for operating wastewater treatment plants.

2.3 A Review of International Cases

In this section, the international cases that can be defined as ecological cities with the help of their ecological efforts are discussed. There are several cities in different continents that can receive high scores in terms of the evaluation about the issues that make a city an ecological one. Freiburg and Copenhagen in Europe, Bogota in Latin America and Portland in the USA are chosen as ecological cases. The efforts of sustainable urbanism in these chosen cities cover not only the environmental sustainability attempts but also social aspects and attempts with citizens in mind. In other words beside the physical features such as sustainable urban form, sustainable

transportation etc., these cities are remarkable and therefore were subject to evaluation because of their citizens achieving the potential of being ecological citizens. Within this framework, the characteristics that make these cities ecological are highlighted as follows.

2.3.1 Evaluation Method

As the characteristics that make a city an ecological one can be evaluated within five dimensions described in above section of the chapter, the ecologically based, green cities chosen will be examined according to these features. The criterias that are selected to be evaluated for each dimension can be explained as following:

Sustainable urban form: Population density (person/km2), density of green spaces (parks, open spaces and other green spaces, m2/person), the characteristics of urban block layout (consideration of wind, sun and other natural features), urban size and shape are the criterias that are evaluated in terms of urban form.

Sustainable transportation: Length of public transport network (km/km2), length of cycle lanes (km/km2), stock of cars and motorcycles (vehicles/person), the existence of superior public transport networks are the criterias in terms of sustainable transportation.

Urban ecology and biodiversity: Distribution of green spaces within the urban layout, the existence of preserved green areas, green corridors, wetlands and street trees are the criterias in terms of ecology and biodiversity.

Energy use and waste management: Greenhouse gas emissions per capita, energy consumption per capita, share of renewable energy consumed by the city, energy consumption of residential buildings, share of waste recycled, water system leakages, dwellings connected to sewage system, municipal waste per capita (kg/inhabitant), annual water consumption per capita (m3/inhabitant) are the criterias in terms of energy use and waste management.

Ecological citizenship: share of people walking or cycling to work, share of people taking public transportation to work, share of people recycling and environmentally consuming, the existence of environmental governance (policies, regulations, and legislations), the existence of official and nongovernmental environmental campaigns.

2.3.2 Evaluation

Case 1: Copenhagen, Denmark

General description: The city of Copenhagen is the capital of Denmark with a population of approximately 542,000. This population is around one-tenth of Denmark's total population. As an area including the city, The Greater Copenhagen has a population of approximately 1.89 million, representing one-third of Denmark's entire population. The city of Copenhagen is a major regional centre of business, culture and science of the country. Important sectors include life sciences, shipping, research, development activities and information technology. It has a strategic location and comprehensive infrastructure with the largest airport of the Scandinavia. Although the city is a financial centre within the region, it has been recognized as one of the cities with a high level of quality of urban life and it is also considered one of the world's most ecologically based cities. The characteristics making the city ecological are evaluated below.

Sustainable urban form: Urban sustainability of the city is based on comprehensive and smart planning. Copenhagen's first municipal plan was the Finger Plan in 1947 which was inspired by Greater London Plan (1944). This plan serves like a Transit Oriented Development (TOD) where the development is focused around hubs of intra-urban rail services. It allowed the city to be channelled into five radial lines of corridors served by public transportation. Furthermore the plan proposed open recreational spaces called 'green wedges' between each finger. Such an implementation in the late 1940's has prevented the car usage to overwhelm the city within decades unlike the most cities in North America and developing countries of Asia.

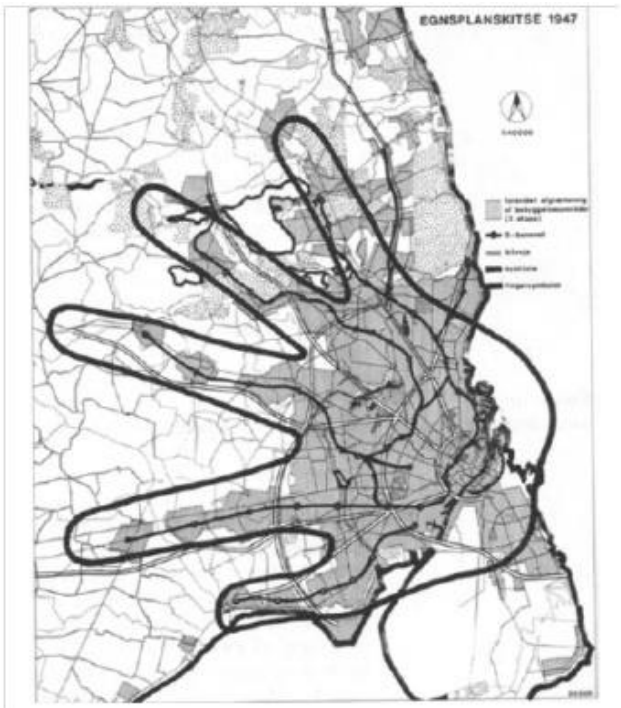

Figure 5: The Finger Plan (Knowles, 2012) source: http://www.musemcgill.wordpress.com

Sustainable transportation: Copenhagen has a broad public transportation system containing a metro, a suburban rail and bus networks such that all inhabitants live within 350 metres of public transport services. There are around 388 km of cycle

routes; the vast majority of major roads have cycle lanes in both directions. Cycling has been almost a Danish tradition for the inhabitants for over one hundred years. Additionally Copenhagen aims to raise the share of the inhabitants who frequently use bicycle to go to their place of work or education from the current %36 to %50 by 2015. Furthermore the City Council continues to reduce road capacity by only allowing pedestrians, cyclists and buses to use shopping streets and some main arteries into the city.

Figure 6: Bus lane designed accurately to achieve a comprehensive public transportation network within the city (personal archive)

Urban ecology and biodiversity: Copenhagen is one of the greenest cities of Europe with its small and big parks and other green spaces. Even the cemeteries are organised to be used for recreational purposes within the city. Almost %80 of the residents live in the city with a proxy of 300 metres to a park or recreational area. And it is official municipality policy in Copenhagen that all citizens by 2015 must be able to reach a park on foot in less than 15 minutes. For this purpose, 14 small 'pocket parks' and

3,000 tree plantations for creating greener streets will be established. According to the green land use policies, there is also an ongoing redevelopment of brownfield sites. The vast majority of new developments were situated on these brownfield sites during the current decade.

Figure 7: An urban park having a natural pond in the centre of Copenhagen (personal archive)

Energy use and waste management: In Copenhagen, there is a comprehensive effort for more than 40 years for both reducing energy consumption and also making the energy use more renewable energy based. In general, Denmark as the whole country has a policy that seeks to reduce its dependence on coal and oil. Renewable energy accounts for %17 of total energy consumption in 2008 and for %27 of electricity consumption. Wind power has a significant share as a renewable energy source in Denmark. Danish government aims to make %50 of electricity consumption and %30 of total consumption with wind power by 2030. Moreover, despite the buildings in the city are among the most energy efficient ones across the globe, there is an ongoing

process with the help of regulations for retrofitting them to be more energy efficient. Such that buildings are subject to strict insulation standards. Regulations require the construction of new buildings and renovation of existing buildings to meet energy conservation criteria. Energy labelling is mandatory throughout Denmark (http://siemens.com).

In terms of waste management in the city, it can be commented that there is a well working system. In general, %55 of all waste is recycled, the proportion for household waste is %24, and much of the rest is incinerated in plants connected to the district heating system. And there is an effort for making the waste management more comprehensive. For this purpose, Waste Management Plan 2012 has been prepared.

Figure 8: Outdoor and indoor recycling bins that can effortlessly be observed in Copenhagen (personal archive)

Ecological citizenship: Because of the existence of all these policies and related implementations such as waste management system, public transportation network etc., the citizens using these more ecologically based options within their daily lives, have great significance in the city.

In the city, although the share is above the average, there are ongoing efficient governmental and non-governmental efforts and campaigns to increase environmental awareness and ecologically based lifestyles. For instance free Climate Check service which helps Copenhageners to reduce carbon emissions in their homes has a plan envisaging to educate a new generation of environmentally aware citizens through projects in schools. Beside the campaigns, there are also regulations such as high car taxes to motivate the citizens for more ecologically based living. For instance despite the high level of income, car ownership in Denmark is much lower than in many other European countries, because of high car taxes that make the country the most expensive place in Europe for buying a new car. Within these circumstances, there is a considerable share among the residents who use the bicycles instead of cars for going to work or school (%36) and the municipality has an aim of increasing the amount up to %50 by 2015.

Figure 9: Copenhageners mostly with their children, using bicycle daily for going to school, work and so forth (personal archive)

As the related policies and campaigns are efficient, it can be suggested that as a result, there is a high level of awareness and concern among the Copenhageners. Obviously, the opposite can also be suggested. Such that as there has been a commitment for environmental issues among the residents that dates back to oil crisis of 1970's, there is a well-developed environmental governance resulting in a well-developed sustainable urban environment in the city.

Case 2: Freiburg, Germany

General description: Freiburg is approximately 900 year old University City. It situated in the far southwest corner of Germany, within 155 km2 of land. Lying at the foot of the Black Forest, since 1457 Freiburg has been a 'university-city'. It has a population about 230,000 inhabitants. The city is known for its high level of quality of urban life, innovative environmental applications and also extensive use of solar energy and other renewable sources. The progress has its origins in the past. Recently, Freiburg had been a rather conservative catholic city. Around 1975, massive ecologically based protests have emerged. Based on the successful opposition to nuclear power and the early approval of sustainable energy sources, regional networks of environmentalists emerged. Significant ecological institutions like the Institute of Ecology, Friends of the Earth, the Greens Party and today's environmental and energy companies have their origins in these initial ecological struggles. They have been making the needed political pressure to accomplish ecological process. So Freiburg, managed to embrace a local concept of energy supply in order to preserve the climate. The reduction of consumption of energy, water and other natural resources were also included in the programme. The use of new energy technologies and renewable energy

sources were the further issues. The work of dedicated residents in the city is the reason of these encouraging successes.

Sustainable urban form: The urban planning in Freiburg has sought to keep the development compact while allowing population growth. This compact urban development policy allows for more landscape conservation areas and green spaces. Such that in the early 2000's, a land use plan as the first municipal land use plan in Germany was prepared to prioritise landscape protection over the development areas. In the new neighbourhoods of Vauban and Riesefeld for example, the houses are four to five story apartment buildings instead of single family ones. In the Riesefeld district, commercial uses and offices are located on the ground floor of the buildings within walking distances, allowing residents easy access, on foot or bicycle to their daily needs.

Sustainable transportation: The city is very rich in terms of sustainable, environmentally friendly modes of transportation. %70 of all traffic routes in the city are distances covered by environmentally friendly modes such as public transport, cycling or walking. %70 of all residents lives within 500 metres of a tram stop, and the trains appear every 7,5 minutes during rush hours. The public transport within the city is convenient, fast, reliable and most of all cheap. Besides the public transport, there is 400 km of cycle paths in the city, including bike friendly streets and bike paths.

Besides its compact urban layout that makes Freiburg a city of 'short distances' with strong neighbourhood centers, the sustainable transportation within the city is organised with the help of comprehensive plans and policies. In 1969, Freiburg devised

its first integrated traffic management plan and cycle path network. This plan is updated every 10 years. And with the help of related policies, traffic calming and parking space management have been operated and also car sharing is encouraged.

Figure 10: A light railway tram in Freiburg (source: http://ecotippingpoints.org)

Urban ecology and biodiversity: Freiburg has a communal forest, covering over %40 of the municipal territory. About %44 of the forest is operated environmentally for economic purposes. Besides the 5000 hectares of forest, Freiburg has over 600 hectares of parks and 160 playgrounds providing biodiversity. There are additionally 3800 small gardens on the periphery of the city which are also the source of fresh fruits and vegetables.

Energy use and waste management: As a result of the powerful protests against the plan to build a nuclear power plant in the town of Whyl, 30 km away, Freiburg has sought to become a model of sustainable energy development. And 'energy saving', 'efficient technology' and 'renewable energies' are the three basic dynamics of the

city's energy policies. For instance in terms of renewable energies, Freiburg is considered to be the solar capital. Such that Freiburg has the world's first football stadium with its own solar power plant and the world's first self-sustaining solar energy building. Also by 2030, it has been targeted to cut CO2 emissions by %40 and to be carbon neutral by 2050 (http://ecotippingpoints.org).

In terms of waste management, Freiburg condensed its annual waste disposal from 140,000 tons in 1988 to 50,000 tons in 2000.The waste is recycled and reused within the city. Each household and apartment building is installed with three bins: one for paper, one for organic waste and one for non-recyclables. And the separately collected waste disposal is processed for recycling, reusing and also is treated to be burned for energy. But before the waste disposal and then waste reusing, recycling and incineration, waste prevention is one of the main targets of waste management policy of the city.

Figure 11: Recycling bins used for separately collection of indoor waste disposal (source: http://www.ea-swmc.org)

Ecological citizenship: One of the main dynamics of Freiburg as a 'green capital' is its residents who can be defined as ecological citizens with their environmentally responsive lifestyles. First of all, making the city more environmentally based would not be possible, if the residents did not stand against the no environmental attempts. Such that the attempt of establishing a nuclear power plant in 1970's was the issue that fired the environmentalism within the city and finally environmentalists within a regional network has become a political pressure. Important ecological institutions like the Institute of Ecology, Friends of the Earth, the Greens Party and today's environmental and energy companies have also their roots in these initial ecological conflicts. Such that environmental sciences and management have 12,000 employees (almost %3 of all people in employment) in 2000 business entities across Freiburg. All these institutions and residents have been generating the needed political pressure to achieve ecological process. Besides becoming a political pressure, the residents are also mostly the strong supporters of the related legislations and implementations with the help of their ecological attitudes and behaviours achieving environmentally based lifestyles. They are the ones using bicycle and public transportation for going to work or for shopping either, or being responsive for consuming more environmentally based etc. As a result of this, for instance the contribution of cycling and public transportation to the volume of the city's traffic increases year by year, starting from 1980's. And the private car density in Freiburg is only 423 vehicles per 1000 persons, extremely low compared to other major German cities. Also Freiburg has an approximately 420 km long network of cycle tracks and lanes and over 9000 bicycle parking racks. Briefly with the help of these committed residents, nowadays Freiburg is one of the greenest cities across Europe.

Case 3: Bogota, Colombia

General description: Bogota is the capital and largest city of Colombia in South America. It has a population of approximately 7.5 million inhabitants. Bogota is 9th biggest city of the world. It has an area of 1,587 km2, and the population density is 4,087 inhabitants/km2. With an average GDP of 8400 USD per capita, it is the financial center of the country. The city has recently become one of the precedents of ecologically operated cities especially with the efforts of former mayors Antanas Mockus (1995-1997) and Enrique Penalosa (1998-2001). Before Penalosa, Mockus worked to improve the morality of the urban citizenry in order to improve citizenship.

After him, Penalosa had a focus of promoting the public transportation, public spaces, bike lanes, childcare facilities, libraries, schools, community centers, pedestrianized streets, parks and green spaces. The social justice is also targeted besides all these physical improvements where there were strict discrepancies between north and south regions of the city in terms of poverty and quality of urban life issues. As a result of the several significant implementations based on well-organized plans and policies, new schools were built and many were refurbished, more than one thousand parks and playgrounds were established or improved, central and neighbourhood libraries and also more than 90 nurseries for children were built within three years (1998-2001). Briefly the two mayors turned one of the most dangerous and unliveable cities in the world into a model of urban development for 21st century.

Sustainable urban form: Bogota's traditional street arrangement is based on a gridal layout. The current types of roads run perpendicular to the hills. The city can be defined to be a densely sprawling one. Within the last three decades, there has been

acceleration in terms of housing industry and it has mostly resulted with the construction of relatively dense built environments on the peripheral areas of the city. Although the administration has paid a serious attention to build new public spaces and renovate the existing ones, there have been critics that the public spaces including the greeneries are underestimated and ignored in new urban development sites.

Sustainable transportation: Sustainable transportation is one of the key features of the city. Bogota has a network of 329 km of bike lanes that allow approximately 185,000 people to circulate every day. After the construction of the bike paths, bicycle use has been increased by 5 times in the city. Bogota has undertaken serious urban works in order to encourage the use of bikes to go to work, school etc., thus reducing car and bus traffic. Dating back in late 1990's, the bus system is upgraded and cars are restricted in the city in order to establish a more sustainable transport system. And in terms of public transport, the city has no metro but instead TransMilenio (BRT), as a rapid bus transit system. More than 1000 buses carry 1.6 million passengers per day throughout the city. BRT was adapted from a system in Curitiba, and similar bus networks. In Bogota, vehicle traffic is highly reduced with the help of all these policies and implementations emphasizing the use of car free options of transportation. In addition on car free Sundays (Ciclovia programme), the city is now using public streets as a large open park. On these days, more than 70 km of streets are closed to cars, attracting thousands of cyclists, runners and pedestrians to the city centre. This idea has been copied by different cities of the world including London and New York.

Urban ecology and biodiversity: With an amount of approximately 107 m2/person, Bogota has fairly abundant green spaces, as a result of its comprehensive land use

policies that target to enhance and protect the green spaces and prevent the urban sprawl. There are many parks and open green spaces ranging from small neighbourhood parks with benches up to large parks with lakes throughout the entire city. The comprehensive existence of these green areas improves the biodiversity and ecological functioning of plant and animal species. However the city needs more green spaces especially in low income areas and in new urban developments.

Energy use and waste management: Bogota's electricity consumption is relatively low. With an estimated amount of 40 kg of CO2 per person, carbon emission is also low. %70 of the industry within the city has converted to natural gas. Moreover %80 of the city's electricity production is from hydropower. And the vehicles operating on natural gas in Colombia as a whole have risen up to 300,000 in 2002. TransMilenio (BRT) system also operates with natural gas. But in general renewable energy policies and energy strategies are not comprehensive.

In terms of waste management, Bogota ranks above the average. The city generates relatively low amount of waste and it manages to collect and dispose almost %100 of the city's waste. However waste management policies are still insufficient.

Ecological citizenship: The city has a relatively low level of public participation. Local government aims to increase public participation and environmental awareness among the citizens. However, the level of public interest for the implementations such as sustainable transportation, car free Sundays etc. has been relatively high. Thus, it can be suggested that the appropriate policies and related implementations have encouraged the adoption of ecologically based lifestyles among the residents. Such

that, although the reason that motivates the inhabitants has not been their level of environmental awareness and concern but instead mostly their fiscal incentives, they were somehow adopted to live ecologically responsive with the help of these improved urban environment. So it is a proper example that the related environmental campaigns and educational programmes aiming to adopt ecological citizenship can be strongly supported by establishing a convenient physical environment.

Case 4: Portland, USA

General description: Portland is a city situated in United States (US) state of Oregon. With a population of 583,776, it has a commission based government headed by a mayor and four other commissioners. It is the last city in United States with a 'commission style' of government. Portland is referred to be one of the most sustainable and environment friendly cities in the United States. It has the highest percentage of bike commuters in the nation, according to the US Census Bureau; the most green buildings per capita, as rated by the Leadership in Energy and Environmental Design (LEED). The toughest anti-sprawl regulations in the nation and also the first official plan from an American city for reducing greenhouse gas emissions also belong to Portland.

Sustainable urban form: Portland has five pattern areas. These are Central City, Industrial District, Western Neighbourhoods, Inner Neighbourhoods and Eastern Neighbourhoods. The Inner Neighbourhoods have a relatively compact grid layout including main commercial districts. Western Neighbourhoods have a pattern shaped by the areas' hilly terrain and other natural features. Eastern Neighbourhoods has diverse mix of urban and more rural forms. The Central City Neighbourhoods are most

densely urbanized region with its tall buildings and Industrial Districts are mostly located in riverfront areas.

Figure 12: Portland's urban pattern (source: http://www.portlandoregon.gov)

As a city having five distinctive patterns, Portland is the first among the nation that makes the Urban Growth Boundary (UGB) a key element for its land use planning and management. First established in 1979, UGB has a goal to prevent the urban sprawl, minimize public service costs, and protect natural resources and public open spaces.

Sustainable transportation: Within the city, there is a wide range of sustainable modes of transportation services such as biking, taking transit, buses, carpooling or walking, as alternatives to the automobile. The city is ranked among the top 10 most walkable cities in the nation in terms of walkability. Additionally, it is also famous with its more than 500 km of bikeways and with being the first US city to implement car sharing. And as a result of promoting a transit oriented development, light rail transit system and bus services within the city operate to connect the districts to each other as an

integrated web, including the airport. However, according to a poll conducted in 2008, % 65 of the residents who work outside the home, still drive alone to go to work. And Portland's current policy as a city aims to dramatically increase the number of trips made by non-single occupancy vehicles such as taking transit, biking, walking or carpooling in order to achieve a reduction in per capita daily vehicle miles travelled by % 30 by 2030 (City of Portland, Bureau of Transportation Annual Report, 2008-09). It is aimed that in 2030, the ratio of residents who drive alone for going to work will decrease to % 25 as a result.

Urban ecology and biodiversity: Parks, natural areas, playgrounds, street trees and community gardens are integrated and well connected within the city, providing bio-diversity for wildlife habitats. The city's parks and recreation facilities were honoured with the gold medal for the Best Park System in the Nation in 2011. There are 1.2 million trees in Portland's parks, gardens and natural areas. Approximately 7700 acres of natural areas, 150 miles of trails connecting people to nature and 47 community gardens located throughout the city. The community gardens of the city are operated with the help of the Community Gardens Program, achieving opportunities for the physical and social benefits of the people and neighbourhoods since 1975 (http://www.portlandoregon.gov). It should be added that the land use policies aiming to reduce the urban sprawl seems to be one of the main reasons that the city is green and ecologically based.

Energy use and waste management: In terms of energy management, the city aims both to achieve energy efficiency and to use sustainable modes of energy instead of fossil fuels. Such that wind power is a significant energy for the whole state and

Oregon produces more than 2000 mw from the wind. Additionally city management involves related environmentally-friendly regulations starting from the building level. Portland is the first city in US to create a Green Investment Fund, a grant based fund given to commercial, industrial or residential projects demonstrating innovative green technologies and practices. Moreover the city hosts the most LEED certified buildings per capita in the nation. One of these certified buildings is Portland Convention Center. And Portlanders can choose renewable energy sources as an option for their electricity. By paying a bit more each month, clean energy sources from wind, solar and bio mass are provided.

In terms of waste management, the city management firstly aims the waste reduction and recycling before the waste collection. Recycling has been adopted as a state policy since 1980's. By the late 1980's the city has adopted an effective recycling system. Within this system, papers (newspapers, magazines, cardboard boxes, cartons etc.), plastics, metals, glass items and used motor oil are collected separately by private sector companies. Portland's commercial recycling rate for 2004 was %52. According to the Bureau of Planning and Sustainability, the city of Portland has a goal to raise the rate of recycling to %75 by 2015.

Ecological citizenship: As a result of living in one of the most environmentally responsible cities of the US, many residents take advantage of adopting ecologically based lifestyles within a wide spectrum in their daily lives. The citizens of Portland seems to be a dynamic component for the city within the process of being green and environmentally responsive. For instance Portland has the nation's highest percentage of bicycle commuters, while much of the population of the US depends on cars as their

primary means of transportation. They, not only encourage the city government with their green lifestyles but also continuously involve in progressive green programs to make their city cleaner, fresher and more sustainable. As another example, through the help of Portland State University, college students use education and innovative ideas to positively influence green programs. In a time where locally sourced organic food reigns high in the culinary world, students at the university have proposed ways to grow organic food on their own campus. This sustainable practice highlights the eco-friendly mentality of the younger generation of Portlanders (http://www.greenanswers.com). Briefly it can be argued that residents with their values, attitudes and behaviours implementing ecologically based lifestyles keep the rings of the chain together within the eco-friendly city in terms of sustainable city management.

2.3.3 Conclusion of the Review

According to the international cases evaluated in the previous sub-section, it is obvious that the role of ecological citizens is both the reason and result of the sustainability efforts of the cities which can be defined as ecologically responsive. For instance, in Freiburg, it can be suggested that without the affective protests against the nuclear power plant, the city would never have the appropriate conditions to feed the roots of the environmental policy and management and as a result to become the green capital of the Europe. Additionally, the same residents have been and still are the participants of the related implementations as ecologically responsive inhabitants. Such that they are the ones choosing to ride a bike rather than a car for going to work, or prefering to buy green products, or paying green taxes etc.

In the case of Bogota, the city had a successful transformation especially as a result of one of the previous mayors, in terms of becoming almost the greenest city of poor Latin America. However, again within such an example where the effort has come from the top rather than the bottom, the role of the residents that value all these implementations and thus prefer to use the ecologically based options within their daily lives is crucial. Because the whole history of sustainability attempts would be diminished and incomplete, if the related implementations have not been supported by the residents. Therefore, further investigation is necessary to understand the dynamics of ecologically responsive living.

Chapter 3

ECOLOGICAL CITIZENSHIP AS THE NEW DIMENSION OF SUSTAINABLE URBANISM

3.1 Understanding the Concept of 'Ecological Citizenship'

As Seyfang (2007) highlights, ecological citizenship as a term is an under-researched area and is a hot topic. As a developing concept, the content, meaning and definition change within the language of greening the citizenship. Even the terms referring, vary according to the researchers' point of view. 'Environmental citizenship', 'sustainable citizenship', 'green citizenship' are other several terms that are frequently used within the discourse.

Within this study 'ecological citizenship' will be regarded as the term referring to ecologically based citizenship and for most of the related literature this term is interchangeably used with 'environmental citizenship' and 'green citizenship' except for 'sustainability citizenship'. As the words imply, 'sustainability citizenship' covers the responsibility of social and economic issues for constituting full spectrum of sustainable development.

Another distinctive objection comes from Andrew Dobson about the term 'environmental citizenship'. Andrew Dobson, is one of the founders of this innovative terminology. He makes a clear distinction between ecological and environmental citizenship. Dobson (2007) suggests that the ecological citizenship is a radically new

sort of citizenship but environmental citizenship is a traditional form of citizenship which takes environmental issues seriously. He further claims that ecological citizenship is a virtue based version of citizenship that is non-reciprocal, non-contractual and non-territorial. Additionally he places his suggestions about ecological citizenship in relation to a justice-based account (Seyfang, 2007). Seyfang (2007) adds that based on private and public practices to lessen the ecological impacts of our daily lives on other individuals, Dobson uses ecological footprint metaphor as a touchstone for understanding the obligations of ecological citizens. Further, Hayward (2006) argues that according to Dobson, ecological citizenship involves duties (obligations in other words) of citizenship whereas environmental citizenship tends to concentrate on rights.

Without proposing any distinction between environmental and ecological citizenship as Dobson makes, there are other theoricians who has a republican or liberal point of view either. What are the points that make these two perspectives distinctive from each other?

First of all, it can be recognized that the role of rights that is attached to the meaning of the term differs from each other. Such that historically, liberal citizenship has emphasized the rights of citizens- the rights to vote, the right to social security entitlements. Responsibilities, duties and obligations have a place in liberal citizenship, but do not play a primary role. On the other hand, republican citizenship focuses on the duties, responsibilities, and obligations of citizens to the collective. Again, while republican citizens have rights, these are less important to the republican than are responsibilities or duties (Dobson, 2007).

Another easily distinguished dissimilarity between the two is the definition of these responsibilities as duties and obligations. According to the liberal perspective, the main burden of an ecological or environmental citizen is just to obey the environmental laws, if there is any. One of these academicians, Bell (2004) within a liberal account claims that an ecological citizen both has rights and duties. He suggests that an ecological citizen has two types of rights. First procedural rights to participate in policy making and decision making about the environment and second he adds, the liberal ecological citizen will have personal rights that allow him to make choices in his everyday life about how he affects the environment. He might choose to use building isolated or to recycle newspaper in order to conserve and not to pollute the planet. However he might select to do none of these things. The liberal environmental citizen might choose not to be an 'ecological' citizen.

According to Bell (2004), an ecological citizen's duty is to obey just environmental laws. For example if there is a just law that enacts an eco-tax on petrol, he or she has a responsibility to pay the tax. Another main duty of liberal environmental citizen is to further endorse environmentally just institutions across globe.

However, within republican perspective, an ecological citizen significantly has the responsibility of forcing the society and also the sovereign policies (regulations, laws and legislations) towards a sustainable society and towards a green state. An ecological citizen might achieve this sort of process with his or her actions and activities within both private and public sphere. Hence it is apparent that according to the republican point of view, the priority and much more significance are given and attached to the

individual's ecological behaviours, actions and everyday practices based on ecological values and virtues.

Within these consequences, the level of freedom that is given to the residents as citizens in terms of choosing and constituting their lifestyles also differs among green republican and liberal theories. Such that if a citizen is living in a green republican state, he or she probably will have several more strictly defined environmental obligations and duties as his or her responsibility. On the other hand, within a liberal policy territory, he or she has the right to choose not to be a green or ecological citizen. Because a liberal ecological citizen does not have any responsibility to perform environmental activities, he or she will only obey the existing regulations and laws etc. This suggestion brings us to the point that such green republican views have much more close relation with (voluntarily performed) environmental actions and practices.

Briefly within this background, it can be advocated that, traditional citizenship could be liberal or either republican but ecological citizenship seems to be more republican than liberal, because of the significant requirement of working towards a sustainable society in the circumstances of 21st century. Such that, if there was no need for achieving the behavioural change among the contemporary citizens and if there was no necessity of forcing the greening of the sovereign states, ecological citizenship would certainly be merely an ecologically based notion of liberal citizenship. But an ecological notion of liberal citizenship that has a focus on rights rather than duties, will not be sufficient to bring us to the point where ecologically based lifestyles are achieved by the behavioural change of individuals. For instance Barry (2006) argues

that a republican understanding would be that what is needed is the creation or cultivation of such citizenly virtues and behavioural changes.

Among all these discrepancies, there are also similarities of these two views. It is obvious that almost both views suggest and point out state-based, political (liberal or republican) solutions as the main mechanism for making the promotion of ecological citizenship. However, the issue of determining the appropriate sphere of ecological citizenship as another discussion topic opens new insights about the significance of environmental actions and practices in and around home and bounces clues about the necessity of civil solutions either.

In other words, there are different suggestions about the dominant sphere (public or private) where ecological citizenship is or should be experienced. Several researchers argue that ecological citizenship is performed within the public sphere as a kind of political activity (Gustavsson and Elander, 2013; Spaargaren and Oosterveer, 2010). As the main duty of a liberal ecological citizen is to promote environmentally just institutions across the globe (Bell, 2004), many of the liberal views have also much more close relation to the argument indicating the public sphere rather than private sphere. According to them, basic duties are performed in public sphere and several ecological duties such as everyday activities and practices in and around home (recycling, sustainable transportation etc.) within the private sphere can only be performed if chosen.

There are also republican views pointing out the public sphere. For instance although the prominence of private sphere for the modern societies is considered, Barry (2006)

argues that civil resistance which is a kind of political involvement is an essential obligation. However Dobson (2007) claims that ecological citizenship is a citizenship of the private sphere as well as the public sphere. The ones such as Dobson who underline the significance of personal duties within the private sphere achieving the behaviour change can also be suggested to be much closer for the search of finding civil solutions within the ecological citizenship debate.

On that ground, it can further be suggested that ecological citizenship is a citizenship of the private sphere more than the public sphere. Because as Barry (2006) argues, for the majority of individuals in modern Western society, it is the private not the public/political sphere where their energies are spent and, equally significant he continues private sphere is the place where they are actively encouraged to find fulfilment. Hence focusing on the personal duties as obligations firstly in and around home within the private sphere seems to be more eligible and effective for the path towards sustainable societies and greening the states.

In that point, there are several objections suggesting that to emphasize the individual actions in and around home can be the reason of overlooking and undermining the social context including socio-economic and political structures (Spaargaren and Mol, 2008). On the contrary within the democratic political systems (where almost the whole ecological citizenship debate generates), it is more convenient and reasonable way to have a goal of achieving the lifestyle change among the ordinary individuals.

If we evaluate the historical background of sovereign political systems, it can be easily recognized that it was the vast majority of ordinary people of the communities coming

together and forcing the change. So, if we target to create a new sort of citizenship, as Dobson suggests, we cannot make it possible without shaping the lives of the ordinary individuals. Then urban dwellers coming together and making more and more political bounds day by day will create the politics giving chance to live as ecological citizens in green states.

Otherwise within the democratic states, it can be perilous and even useless to force them with compulsory work of legislations and laws. Because merely focusing on to make a political ground within state-based solutions for defining a new form or a new notion of citizenship can cause us to obtain a weak structure having no strong base of democratic participation and public approval.

This suggestion would not be misunderstood that related laws and legislations are insignificant or redundant. On the contrary, they are one of the main dynamics of the whole process. However, achieving the individuals' contribution and participation and at least making the proposed green political structure familiar and harmonious with the lifestyle change within their daily lives, can make the greening of the states more concrete and strong.

Based on this approach, a concrete behavioural change is eligible in order to achieve communities perceiving and recognizing their individual environmental activities as duties and obligations for the conservation of the universe against global warming and so on. They are just requested to do their bit to protect the universe and to reduce their impact on the environment (Melo-Escrihuela, 2008).

Within these circumstances in this research, ecological citizenship can be proposed to be more republican than liberal, can be proposed to have a focus on duties more than rights and can be proposed to be experienced first of all in private spheres before the public sphere as a non-territorial, non-reciprocal, non-contractual account.

Therefore, what are these activities and actions in and around home as the duties, responsibilities of an ecological citizen? How can we define the ecological practices, activities of a contemporary, modern citizen making him/her an ecological one in an urban environment? What are the characteristics of these activities and actions as duties and obligations?

Although it diverges according to the focus of the researchers, briefly it can be argued that these activities constructing the ecological citizenship can be grouped in six behavioural categories.

- *Energy saving:* keeping heating low to save energy, using double glazed windows for buildings, using energy efficient appliances and whitegoods, reducing hot water temperature, using more clothes instead of more heating, switching lights off in unused rooms, reducing heat in unused rooms, using high efficiency bulbs, using building isolated, making control/inspection/service of indoor heating system regularly etc.

- *Water conservation:* using a shower instead of a bath, turning tap off when soaping up, turning tap off when washing dishes, turning tap off when cleaning teeth, using plants that need less water, reducing the number of baths/showers, reducing toilet

flushes etc., using a sprinkler less in garden, preferring dishwasher rather than washing with hands etc.

- *Waste management:* recycling plastic bottles, composting garden waste, recycling cans, recycling glass, recycling newspaper, reusing glass, donating furniture and clothes to charity, reusing paper, reducing battery usage, composting kitchen waste etc.

- *Public participation:* involving in environmental decision making process, involving in environmental campaigns, being an environmental activist etc.

- *Sustainable transportation:* using public transportation instead of car, walking in short distances, carpooling, using bicycle rather than car etc.

- *Green consumption:* buying locally produced foods, using own bag for shopping, buying recycled toilet paper, less packaging, buying organic products, avoiding aerosols and toxic detergents, buying recycled writing paper, buying from a local store etc.

3.2 Environmental Behaviour

Within this context, further questions emerged about investigating the nature, structure and constructs of environmental action within the ecological citizenship debate. According to the theoretical analysis exhibited within this research, environmental behaviour in and around home, is the primary element of ecological citizenship. On that ground, scientific work has been ongoing for at least since late 1970's to examine and survey environmental behaviour.

For constituting the needed strategies for the behavioural change, it seems that it is a must to define and conceptualize environmental action. Therefore for achieving this needed change, individual actions have gained priority and significance by sustainable urban development strategies and policies (Barr and Gilg, 2006). Such that, like many Western countries, the British Government also claims that behaviour change is essential (Department for Environment Food and Rural Affairs Report, 2005). The report further argues that information alone does not lead to behaviour change or close the so-called 'attitude-behaviour' gap.

On that ground, the researchers evaluated environmental behaviour within diverse points of view. There are the ones achieving a socio-psychological perspective concerning the psychological determinants of the environmental behaviour. Additionally there is also a noticeable amount of scientific work focusing on the socio-cultural dimensions.

Barr and Gilg (2006) states that, as a model of environmental behaviour, the most important and most valuable model within the related literature by far, is the Theory of Planned Behaviour (TPB).

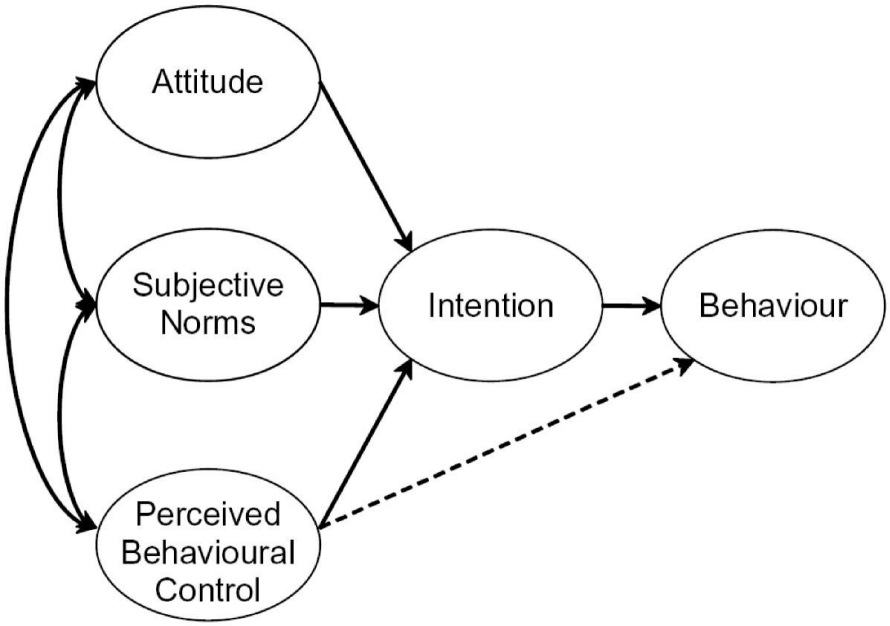

Figure 13: The TPB by Fishbein and Ajzen (1975)

The TPB points out two major predictors for conceptualizing social behaviour. These are 'intention to act' and 'perceived behavioural control' (or 'how able a human being perceive to make action'). Intensions are perceived as the outcome of a mixture of subjective norms and attitudes towards the environmental action. Ajzen (1991) argues that value formulations are found to be only partly successful in dealing with these relations, as expected.

The researchers have generated this theory for examining the environmental behaviour. Although the TPB achieved the fundamental intention-behaviour relation theoretically, in the meantime there have been discussions that other influences are absent. This has led the researchers to seek adaptations for the TPB, in order to find the impact of other main determinants.

Among these scientists there are Carrus, Passofora and Bonnes (2008) who suggested the existence of psychological predictors that have not been sufficiently considered in

this research field. They have underlined the existence and significance of the factors such as 'emotions' and 'past behaviour' and argued that these variables were not adequately addressed within the environmental behaviour studies. They proposed the Model of Goal-directed Behaviour (MGB), as an addition to the TPB. They additionally argued that this proposed model corporates 'past behaviour' and 'anticipated emotions', besides the TPB constituents. Further, a discrepancy between 'desire' and 'intension' as determinants fascinating human deliberate action was also defined by MGB (Figure 14).

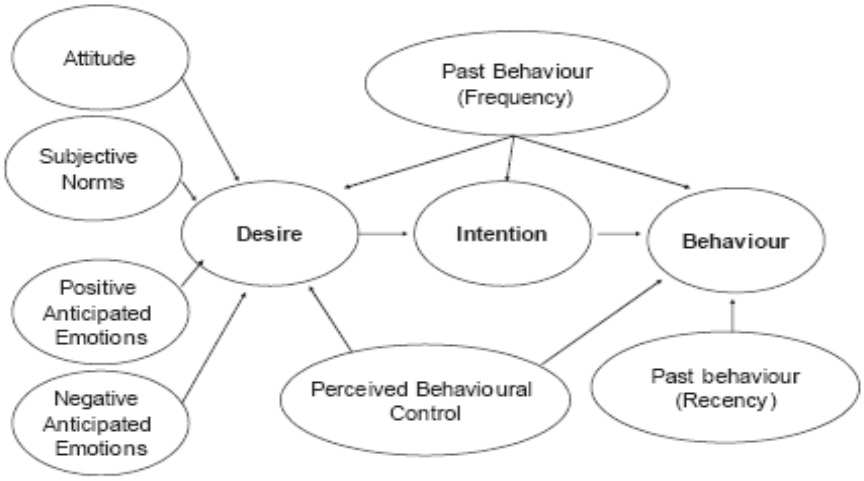

Figure 14: The Model of Goal-directed Behaviour (MGB) by Perugini and Bagozzi (2001, 2004)

On the other hand, there are researchers having a socio-cultural perspective. This type of researchers emphasizes the values as predictors of environmental behaviour. As a new view in relation to environmental issues, fundamentally dissimilar questions have been asked by this kind of research. According to them, value is a significant root for environmental attitudes. Such that, two individuals can be equally worried about environment, because of deeply different reasons (Schultz and Zelezny, 1999).

Rokeach (1973) argues that values tend to be single, stable beliefs, which are used as standards to evaluate action and attitudes. Within an individual's belief system, values are a primary concern. They are the basis for evaluative beliefs, and other linkages among beliefs. Rokeach additionally argues that values are conceptualized as significant life goals or standards which operate as guiding principles in a person's life.

Values are separate from attitudes or beliefs because they operate as an organized system and are typically viewed as predictors of attitudes and behaviours (Olson & Zanna, 1994). With the help of large scale cross-cultural surveys, ten value types considered within four value categories were identified by Schwartz (1994). These four value categories are 'self-transcendence', 'self-enhancement', 'openness' and 'tradition'. Ten value types are 'universalism' and 'benevolence' (which are categorized within self-transcendence), 'power' and 'achievement' (which are categorized within self-enhancement), 'self-direction', 'stimulation' and 'hedonism' (which are categorized within openness) and 'tradition', 'conformity' and 'security' (which are categorized within tradition).

Table 2: Value-items from Schwartz (1994) values instrument

SELF-TRANSCENDENCE	SELF-ENHANCEMENT	OPENNESS	TRADITION
Universalism	**Power**	**Self-direction**	**Tradition**
Protecting the environment	Social power	Creativity	Devout
A world of beauty	Authority	Curious	Respect for tradition
Unity with nature	Wealth	Freedom	Humble
Broad-minded	Preserving my public image	Choosing own goals	Moderate
Social justice	Social recognition	Independent	Accepting portion in life
Wisdom			Detachment
Equality	**Achievement**	**Stimulation**	
A world at peace	Successful	Daring	**Conformity**
Inner harmony	Capable	A varied life	Politeness
	Ambitious	An exciting life	Honouring parents and elders
Benevolence	Influential		Obedient
Helpful	Intelligent	**Hedonism**	Self-discipline
Honest	Self-respect	Pleasure	
Forgiving		Enjoying life	**Security**
Loyal			Clean
Responsible			National security
True-friendship			Social order
A spiritual life			Family security
Mature love			Sense of belonging
Meaning in life			Reciprocation of favours
			Healthy

According to the related literature analysed, it can be recognized that there is another keyword that must be considered in relation to environmental behaviour: environmental attitudes. One of the most quoted researches within the environmental behaviour studies, Stern and Dietz (1994) defines environmental attitudes as the result of a person's more general set of values. This suggestion is designed in their Value Belief-Norm (VBN) Theory. VBN Theory is an extension of Schwartz's (1977) Norm-Activation Theory of Altruism to explain environmental attitudes and behaviour (Stern, 2000; Stern, Dietz & Kalof, 1993; Stern & Dietz, 1994).

Norm Activation Theory was originally an explanation of altruistic behaviour but has been extended to environmental behaviour (Guagnano, Stern & Dietz, 1995; Schultz & Zelezny, 1999; Wiidegren, 1998). This theory suggests that the activation of moral norm is a significant precursor to environmental behaviour. In other words, according to this theory, when the human being notices environmental situations that impend something the individual values (nature, other humans' wellbeing, one's own wellbeing), this activation takes place. As also indicated, VBN Theory proposes that an awareness of harmful consequences of environmental problems to a value or valued object are the reason of concerns about specific environmental issues (Schultz, 2001).

Additionally it has been claimed that Schwartz's (1977) Norm Activation Theory knobs environmental concern merely as an 'altruistic value orientation' (Stern, Dietz & Kalof, 1993). According to these scientists, there are three forms of environmental concern: 'egoistic', 'social altruistic' and 'biospheric'. In other words, Stern and his colleagues state that the individual, other individuals or all other living things are the reasons of a person to experience a particular environmental concern.

Egoistic environmental attitudes have a primary concern about the consequence that environmental damage may have on the individual. Thus, the environment should be protected because the individual does not want to swim in a polluted sea, or does not want to breathe polluted air.

Social-altruistic environmental attitudes have a primary concern about individual benefits or individual objectives. Preserving the nature is significant since it might achieve extensive costs on others.

Biospheric attitudes are based on beliefs about essential value of the nature. Individuals must protect natural environment since all of us, including plants and animals are a complete entity within the nature and all species have a right to survive (Kempton et al., 1995).

Beside the suggestion of three dissimilar environmental value orientations, VBN Theory is the combination of three different theories: Norm-Activation Theory, the Theory of Personal Values and Dunlop and Van Liere's New Environmental Paradigm (NEP).

For measuring the environmental attitudes and worldview, New Environmental Paradigm (NEP) has become one of the earliest and most noticeable theories within years. It was constructed to elucidate the contrasts between the anthropocentric Dominant Social Paradigm (DSP). DSP were prevalent in North America prior to the emergence of the contemporary environmental movement as a new environmental paradigm (Ogunbode, 2013). In other words, Dominant Social Paradigm (DSP) is the contrasting paradigm to the NEP that emphasizes traditional American values of individualism and self-interest rejecting proenvironmental actions (Amburgey & Thoman, 2011).

It was originally based on a scale of 12 items which was then revised and a scale with 15 items was developed (Dunlop et al., 2000). Table 3 displays these 15 items. The revised scale was structured to tap five hypothesized facets. Three items were considered to tap each of these five hypothesized facets of an ecological worldview: the reality of limits to growth (1,6,11), antianthropocentrism (2,7,12), the fragility of

nature's balance (3,8,13), rejection of exemptionalism (4,9,14) and the possibility of an ecological crisis (5, 10, 15).

Table 3: Revised NEP Items (Dunlop et al., 2000)

The reality of limits to growth (1,6,11):
1.We are approaching the limit of the number of people the earth can support
6. The earth has plenty of natural resources if we only learn how to develop them
11. The earth is like a spaceship with very limited room and resources
Antianthropocentrism (2,7,12):
2. Humans have the right to modify the natural environment to suit their needs
7. Plants and animals have as much right as humans to exist.
12. Humans were meant to rule the rest of nature.
The fragility of nature's balance (3,8,13):
3.When humans interfere with nature it often produces disastrous consequences
8. The balance of nature is strong enough to cope with the impact of modern industrial nations
13. The balance of nature is very delicate and easily upset
Rejection of exemptionalism (4,9,14):
4. Human ingenuity will insure that we do NOT make the earth unliveable
9. Despite our special abilities, humans are still subject to the laws of nature
14. Humans will eventually learn enough about how nature works to be able to control it.
The possibility of an ecological crisis (5,10,15):
5. Humans are severely abusing the environment
10. The so-called ecological crisis facing humankind has been exaggerated
15. If things continue on their present course, we will soon experience a major ecological catastrophe

In line with the VBN theory, for many years scientific studies have focused on the individual's value orientations and have sought to find a direct link between values

and attitudes. Schultz and Zelezny (1999) argue that either two or three distinct value orientations and motives have been acknowledged by the majority of these studies.

Unlike Stern and Dietz (1994), two of the scientists who recommend two motives instead of three, is Thompson and Barton (1994). They projected two environmental attitudes in relation to environmental problems and issues: *ecocentric and anthropocentric*.

Within this point of view, egoistic and social altruistic dimensions would be combined into a single dimension. Such that the individual is the primary concern of the relation and a single profile of *anthropocentric* persons who value the nature because of its involvement to the quality of human life is identified.

In contrast to this anthropocentric view, there is one another substitute motive. Such that the individual and the environment are on equal terms, forming a unit that can be referred to as an *ecocentric* perception of the relation (Amerigo et al., 2007).

Briefly according to Thompson and Barton (1994), anthropocentric persons value the nature because of its input to the quality of human life, and ecocentric persons value nature itself including its all valued things (plants, animals, marine life etc.).

Thompson and Barton (1994) indicated that anthropocentric motives are similar to Stern et al.'s (1993) egoistic and social altruistic values, whereas ecocentric motives are similar to biospheric values. They developed a 25 item examined by 5 point Likert type frequency scale to measure anthropocentric and ecocentric attitudes of adults. The

associations between scales and a measure of general apathy toward environmental issues and self-reported conserving behaviours were also measured.

The results exhibited that persons, who were more ecocentric tended to state less apathy about ecological concerns, were more likely to have conservation behaviour, more belonged to environmental organizations and gave more open-ended ecocentric reasons for their concern about the nature. On the other hand, individuals who were more anthropocentric tended to express more environmental apathy and were less likely to have a conserving behaviour (Eryiğit A., 2010).

It can be suggested that there are substantial amount of research supporting the impact of values on environmental concern. For instance, Schultz and Zelezny (1999) aim to measure environmental attitudes across a diverse set of English and Spanish speaking countries to examine the relationship between the attitudes and values. According to the research, results found support for the distinction between different types of environmental attitudes. Scores on the NEP (New Environmental Paradigm) scale and the ecocentrism scale were predicted by universalism (positively), power (negatively), and tradition (negatively). In contrast, anthropocentric concerns were significantly related to benevolence (negatively), power (positively), tradition (positively), and security (positively). They have suggested that, these findings support the value basis theory of environmental attitudes.

In another research, the determinants of waste recycling as a category of environmental behaviour have been examined (Barr, Gilg and Ford, 2001). They have claimed that waste recycling can be determined more or less in three categories as displayed below.

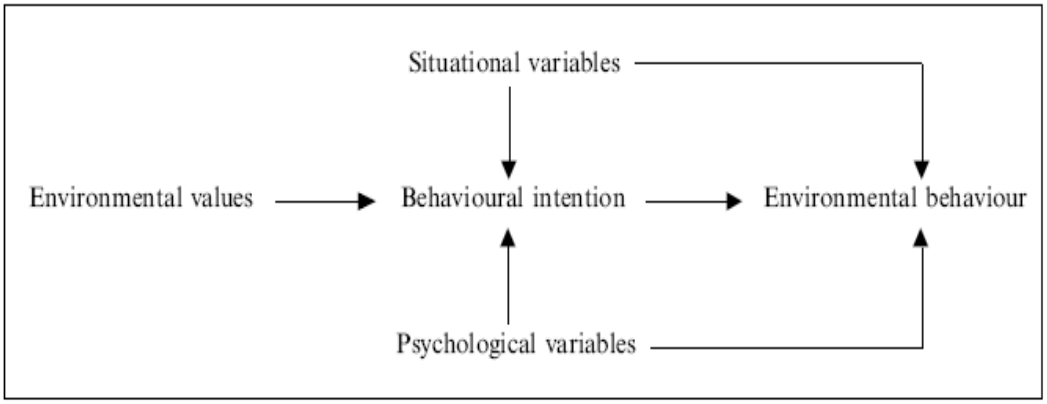

Figure 15: Environmental Behaviour (Barr, Gilg and Ford, 2001)

Environmental values and attitudes: Researchers have argued that the persons having more positive environmental values and attitudes are more tend to have higher scores of recycling actions. These 'attitudes' are normally measured on Likert-response scales in questionnaire surveys. Examples of these attitude scales include the 'ecological attitude-knowledge' scale (Maloney and Ward, 1973; Maloney et al, 1975), the 'environmental concern' scale (Weigel and Weigel, 1978), Thompson and Barton's (1994) 'ecocentric-anthropocentric' scale, and, the often quoted Dunlop and Van Liere's 'new environmental paradigm' (NEP, 1978;2000).

Situational variables: They are identified as a person's private circumstances at a given time, characterised by entry to or information and experience of environmental action.

Psychological variables: They are perceptions and private qualities of the human being. It is suggested that altruistic tendencies, intrinsic motives or rather enjoyment of that behaviour, perceptual factors, subjective norms are all related with environmental behaviour.

Additionally Hansla et al., (2007) suggest that different people become engaged in environmental issues and perform environmental behaviour because they believe in and are concerned about adverse consequences of environmental problems for themselves (egoistic beliefs and concerns), others (social altruistic beliefs and concerns), or the biosphere (biospheric beliefs and concerns). They suggest that their study within the research provides empirical support for that egoistic, social-altruistic, and biospheric environmental concerns are related to corresponding awareness-of-consequences beliefs, and that both the beliefs and environmental concerns are related to the three value types power, benevolence, and universalism.

According to the same research, the results showed that benevolence is related to social-altruistic awareness-of-consequences beliefs and environmental concerns, whereas universalism is related to biospheric awareness-of-consequences beliefs and concern. Furthermore, the results showed that power was positively related to egoistic awareness-of-consequences beliefs and concern.

In brief, according to the present theoretical evaluation achieved, environmental behaviour appears to be a concept with diverse predictors. It has been and is still examined and evaluated according to scientists' diverse views. For this research, environmental behaviour will be theorized as displayed in Figure 16.

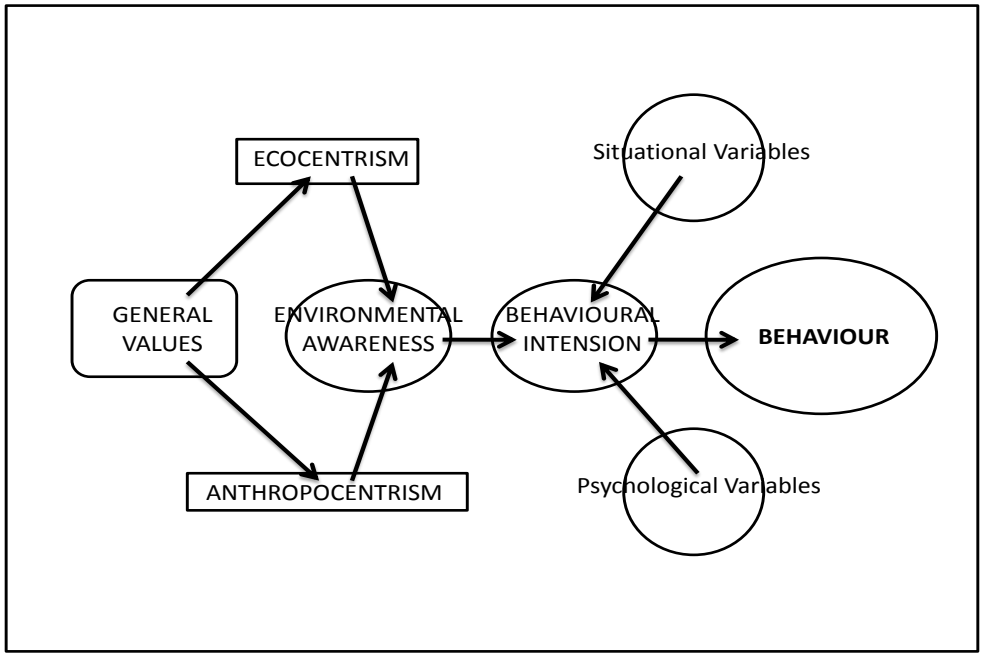

Figure 16: Conceptual Framework of the Survey

This proposed model is assumed to be the combination of Ajzen's (1991) Theory of Planned Behaviour (TPB) and Stern and Dietz's (1994) Value Belief-Norm Theory (VBN). According to this proposed model, there are general values based on Schwartz's Social Value Instrument (1994) that influence the environmental attitudes. Based on Thompson and Barton (1994), these environmental attitudes are either anthropocentric or ecocentric. These environmental attitudes influence the environmental awareness. As a result of the problem awareness, the individual intends to perform environmental behaviour. There are two more factors influencing the behavioural intension: situational variables and psychological variables.

As Barr, Gilg and Ford (2001) also stated, situational variables can be defined to be a person's private circumstances at a given time, characterised by entry to or information and experience of environmental action. The physical context surrounding the individual and the availability of environmental technology etc. are all situational

variables. In addition, psychological variables are perceptions and private qualities of the human being such as subjective norms.

Based on the conceptual framework of the survey, within the research, environmental (ecocentric and anthropocentric) attitudes as one of the variables of environmental action, environmental awareness as another determinant and environmental behaviour itself (within three categories) will be examined and evaluated.

Chapter 4

SURVEY STUDY: MEASURING THE POTENTIAL FOR ECOLOGICAL CITIZENSHIP AMONG FAMAGUSTA RESIDENTS

4.1 The Case of Famagusta

4.1.1 Natural Characteristics of the City

Famagusta, as the second largest city of North Cyprus, with a de facto population of approximately 69,000 inhabitants (TRNC 2011 Population and Dwelling Census), is a coastal city which is located at the eastern part of the island in the eastern Mediterranean sea with a dominant Mediterranean climate.

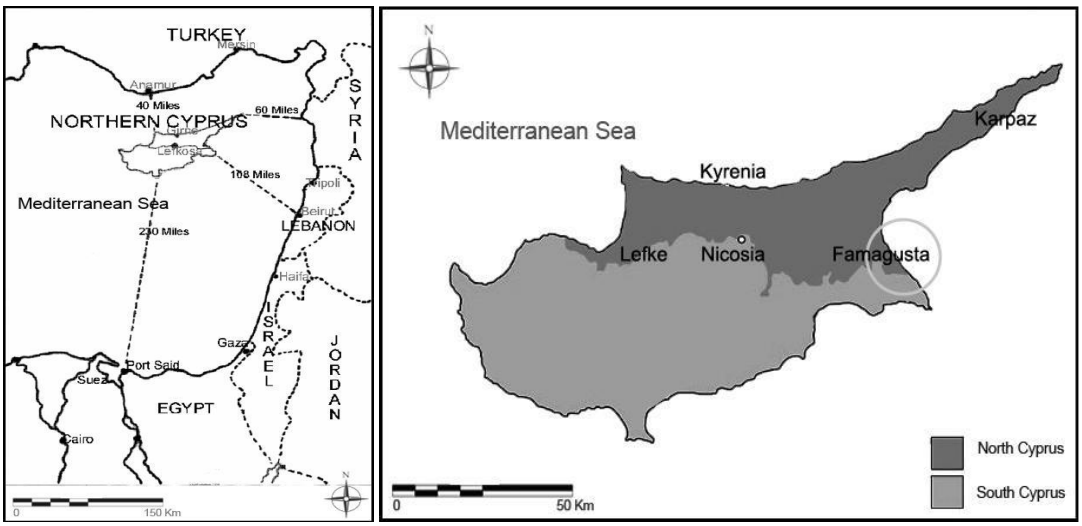

Figure 17: Location of Cyprus and Famagusta

Topography: The most prominent feature of the topography of the city is laying on a ridge extending north and south parallel to the sea. This ridge descends towards the

sea on the east and towards the plain of Mesaoria on the west. Another important physical feature of the city is the sandy beaches located in the northern and southern coastline.

Soil structure: The main soil type is red ground on rocky kafkalla. This rocky layer is not suitable for plantations. According to the information received from the Department of Geology and Mining, in the city center and in Lala Mustafa Paşa district and around, the soil structure is secondary limestone, which is also called flat kafkalla. The soil characteristics of the areas where the Eastern Mediterranean University is located, is vegetative soil. The Tuzla district and also new development areas of the university has marshy alluvial soil structure. This soil type which is a loose and unconsolidated soil, is not convenient for agriculture and construction of building either.

Water resources: There are deficiencies in terms of water resources in Famagusta, same as the whole Cyprus Island in general. The city has severe shortages of drinking water. However compared to other regions of TRNC, Famagusta is very advantageous in terms of existing natural wetlands. All natural wetlands in TRNC is located in and around Famagusta. In addition to natural wetlands, there are lakes, and permanent or seasonal damns within the region. Within the boundaries of Famagusta municipality the existing wetlands start on the east coast from the north of Famagusta city and continue along the south of Tuzla village up to Karakol district. The wetlands have been divided into four main areas.

Figure 18: Gülseren-Yenişehir wetland within the territory of Karakol district (personal archive)

There are several entry points to the wetland areas. The northern entry is at Tuzla-Glapsides through an asphalt road and at Glapsides 2 through an asphalt road with a car park. The southern boundary has two approach points. The Gülseren-Yenişehir entry is via developed in situ area of Famagusta city. The Ayluga area entry is via developed in situ area of Famagusta city which extends towards the agricultural area. All these entry roads are asphalt roads, which are used both by locals, military and tourists. And outside the municipal boundaries, there are natural wetlands around the region in Yeniboğaziçi, Bafra village and Mehmetçik village.

4.1.2 Architectural /Urban Characteristics of the City

Famagusta has developed throughout seven particular periods including the early periods (648-1192), the Lusignan (1192-1489), the Venetian (1489-1571), the Ottoman (1571-1878), the British (1878-1960), the Greek-Turkish(1960-1974) and the Turkish period after the division in 1974.

It was initially founded in 300 BC on the old settlement of Arsinoe and remained a small fishing village for a while. Later as a result of evacuation of Salamis, the surviving inhabitants moved to the site of today's city and gradually it turned to a small commercial port. Different conquerors has ruled the city and developed it in various ways at particular periods. In Lusignan period (1192-1489) Famagusta, originally a small fishing village, grew in size and importance, developing into an important trading center between the East and the West. Many religious and public buildings - some of which still survive today- were constructed, including the fine cathedral of St Nicholas which dominates what was one of the largest and richest squares of Europe (Önal, Ş., Dağlı, U., Doratlı N., 1999).

After the Lusignans, Venetians (1489-1571) has transformed Famagusta into a military base, a fortified city with the walls and the moat having the Sea Gate and the Land Gate. During the Ottoman period (1571-1878), in the first two decades following the conquest, population was transformed from Anatolia, and non-Muslim population was forced to move out of the Walled city. Additionally the commercial activity of the island shifted to Larnaca. As a result, Famagusta lost its significance as a city and became a small town with a small population made up of exiles and soldiers. During the British period (1878-1960), Famagusta port regained significance and the city also expanded towards the south, outside the Walled City. At this period the inhabitants of two ethnic groups – Turks and Greeks – were living together but they were settled separately in different districts; Turks were accommodated inside the Walled City while Greeks settled in Varosha (Maraş) district (Doratli, N., Hoskara, S., Zafer, N., Ozgurun, A., 2003). The British also constructed an administrative center between the walls and the Varosha (Maraş) district, as part of their colonial experience. In 1960,

the British left the island and the Republic of Cyprus was founded. Under the Republic of Cyprus, with the flourishing Varosha as a tourist center, especially in 1969-1970, Famagusta became one of the world's best known tourist centres.

However after the year 1974, as the island separated into two distinct regions (Turkish population in the north and the Greeks in the south), Famagusta lost its significance once again. As a result, major income generating activities, tourism and commerce ceased. On the other hand, since Varosha was closed to inhabitation, the Walled City gained importance and faced with growth tendencies.

Figure 19: The Walled City of Famagusta (source: http://emu.edu.tr)

The city was a significant regional centre of trade and tourism before 1974 and thereafter, it experienced a significant recession period followed by severe decline in tourism and commerce functions until the early 1980's. Eastern Mediterranean University (EMU) which was founded in 1979, has created a new dynamism and a new momentum within the city. With nearly 14,000 students from 67 different countries, EMU has been a significant factor in the overall economic and social structure of the city over the last three decades. Today, Famagusta accommodates a

full diversity of residents, including the local Turkish Cypriots, immigrants who have come from the southern part of the island and different parts of Turkey since 1974, and university staff and students from many countries (Oktay 2005). EMU plays a significant role in the socio-economic life of the city.

While supporting increase in the commercial functions, EMU has been one of the main reasons for rapid and unsustainable urban development. The university has caused uncontrollable and hasty urban development in the form of multi-storey housing, inappropriate additions to existing houses, and incompatible land uses scattered throughout the city (Oktay et al. 2012). Additionally, the uncertain status of Varosha region (an area evacuated after 1974 by United Nations demarcation decision) has caused a cease in terms of development and construction functions in nearby quarters of the city. As a result, the city as a whole has a linear urban development with a scattered urban pattern lacking the effective use of urban open and green spaces and a town centre.

Figure 20: A traditional street in the Walled City of Famagusta (source: personal archive)

4.1.3 Cultural Characteristics of the City

As the historical summary made within the previous section also proves, Famagusta has a rich and diverse cultural background achieving an adequate and positive relation both with natural and built environment. As a community that has not experienced the Industrial Revolution directly, that cut the organic relation of the mankind with the nature, the Cypriots were very sensitive to the natural environment and had an environmentally responsive lifestyle.

However today's Famagusta can be defined as a city that loosened its ties with its rich cultural, environmental and social structures. Such that, the development tendencies (which are evaluated within the former sub-section) are one of the characteristics that affected the social structure of Famagusta residents negatively. Although the concept of local community with close relationship to each other, high sense of place and sensitivity to environmental values was a significant aspect in traditional Cypriot towns, in the new settlements, it is observed that the perception of local community and environmentally based living is not supported. This new unsustainable lifestyle is revealed with situations like highly amounts of car per household (Mean=2,04) and relatively high preferences of newly developed peri-urban quarters with low density and single function, in a scattered urban layout (Oktay, 2010).

However, traditional Cypriot settlement is a very significant evidence that Cypriots, Famagusta city in particular, recently had an organic, harmonious relation with the natural environment. When the vernacular houses and urban pattern are evaluated, it can be grasped that the climatic considerations and local characteristics are highly taken into account. For instance Oktay, (2001) argued that, 'the houses in towns and

villages were grouped together to shade each other from the midday sun. The well-defined open to sky courtyards of the houses formed climatically comfortable spaces for the dwellers. Satisfying the climatic needs, these spaces were efficiently used as 'outdoor rooms' for varied purposes. As the climate is appropriate, the upper terraces of the houses were used for drying food and airing the clothes as well'. The geometrical forms, scale and external colour of the buildings, site planning, and orientation of the buildings, indoor and outdoor landscaping and building construction materials were also decided according to the climatic and local characteristics.

Beside the climatic conditions, social ties as one of the main dynamics of Cypriot lifestyle were not ignored within the vernacular settlements. As the physical environment were convenient, the social ties of the dwellers were strengthened. Such that not only the courtyards and defined transitional spaces but also the streets in vernacular settlements encourage and enhance the socializing.

Another significant sign that the Turkish Cypriots once had environmentally responsive living is the traditional 'Cypriot cuisine'. The traditional food is based on naturally grown and harvested local fruits and vegetables. 'Mulihiya' is one of these famous meals that is made of the leaves of mulihiya plant. This plant is dried after harvesting and is cooked with meat. Additionally lemonades are freshly made of citrus products (lemon or mandarin), homemade desserts mostly produced with fresh fruits were offered to guests at the balconies, in the verandas, patios, courtyards and gardens of the houses in hot summer days. Stone outdoor oven -which is made of local construction material- is another important feature of Cypriot cuisine. Unique meals such as kebaps and homemade bakery products are cooked in these traditional ovens.

Handicrafts is also very characteristics among traditional Cypriot living. Baskets and flattish wicker baskets that are made of grass and roots of some plants are still in use at houses.

Figure 21: A traditional Cypriot kitchen with handmade meal, yogurt and bread

Briefly there are significant evidences that Cypriots, Famagusta dwellers in particular cannot be suggested to be a post-industrialized community like western communities having seriously broken ties with the nature itself. On the contrary, mostly as an agrarian one, Cypriots have many advantages of still achieving a sustainable, environmentally responsive lifestyle. However, before evaluating the findings of the user survey focusing on the possible potential and dynamics of 'ecological citizenship' in Famagusta, it is necessary to investigate the existing physical environment which is a situational variable effecting the environmental behaviour. Therefore, it will be eligible to evaluate Famagusta as a city in terms of each dimension of 'Ecological City' defined in Chapter 2 in order to have a further understanding about the facts of the city's current physical circumstances. This evaluation may be used to obtain convenient interpretations.

4.1.4 Evaluation of the City of Famagusta based on the dimensions of 'Ecological City'

Sustainable urban form: As the city experienced a rich historical background, the urban form of the city shaped according to this multi-dimensional impacts. The urban development can be suggested to be within the Walled City until the Ottoman era (1571-1878). Towards the end of this period, this region according to archives, were much more developed than the Walled City itself. This tendency continued until the end of British era. Following the war in 1974, because of the complicated and uncertain political circumstances, dramatically changes occurred in the island. These changes influenced the urban form dynamics and the overall physical environment of Famagusta as well. However these changes were not rapid and negative as it was after the year 1986. In the year 1986, more or less settled economic and social structure of Famagusta was subject to a completely different impact. The transformation of the High Institute of Technology to a university, Eastern Mediterranean University (EMU) caused much more negative impacts as the city was unprepared (without any master plan and necessary regulations) to accommodate the increasing number of students and the academic staff.

Consequently, the city began to have a vertical development of multi-storey buildings rather than the horizontal expansion with one or two storey residential buildings as it was before 1986. Additionally, because of the location of EMU, the development began to be towards North and North-west rather than South and South-east, as an accelerating sprawl with mostly villa type housing development. Briefly, this new development tendencies without a master plan, loosened the city's traditional identity of compact and organic urban pattern serving with mix of uses. On the contrary, the

newly developed urban pattern of the city is incoherent and haphazard with lots of derelict and unused left over spaces. Moreover traditional family and kinship patterns that led to lively and well-connected neighbourhoods have therefore broken down and social life has been deteriorated (Oktay, 2005).

Sustainable transportation: According to the information obtained from the municipal authorities (personal conversation, on 29,04,2013 Monday), there is a total of one bus and two minibuses serving for municipal public transportation in the city. The vehicles of municipality carry passengers from Varosha (Maraş) region to directly Famagusta Hospital and from Mutluyaka village (which is connected to the city as the 16th quarter) to schools in the city within certain hours. Also there are buses of private businesses working for Ministry of Education and they are available within the city but they serve only for middle school and high school students from home to school and from school to home within certain hours. EMU has also buses and they provide access to the university for only university students. Briefly there is neither municipal nor private owned transportation facility providing access within the whole city, including all quarters. Out of town (to Nicosia, Kyrenia, etc.), public transport services by bus can be provided only by private businesses. However, there was tram service from 1905 until 1952to Nicosia (Lefkoşa) and Morphou (Güzelyurt). The railroad was completed during the British colonial administration within a few phases and this railroad was used by the tram that was working with stream power for running within a total of about 4 hours until Morphou (Güzelyurt) station (Figure 15).

Figure 22: The first locomotive to be imported into Cyprus for government railroad (personal archive)

Urban ecology and biodiversity: Existing green areas within the city are almost like green spots without any appropriate integrity that is necessary for flora and fauna's ecological activity achieving biodiversity. Because due to the current legislation (Fasil 96), rather than a comprehensive master plan, one of every 10 plots is kept as green area, resulting in scattered small green pieces within the city. These spaces are not only scattered, but also mostly have the lack of qualified hardscape and softscape material and infrastructure such as lightning etc. Another significant inadequacy of the urban landscaping is the lack of street trees and plantations, unfortunately in an urban environment which has more than 300 sunny days per year. Natural green areas such as the existing wetlands also need to be planned and managed for sustaining the biodiversity within the city.

According to Asilsoy (2000), approximately %30 of the total green area amount as m2 is active recreational areas (such as parks and playgrounds or sport fields), %25 is passive recreational areas such as urban forests and the remaining %45 is empty plots as left over spaces. The moat of the Walled City, 14,5 hectares of forest land around Ayluga wetland, 3,2 hectares of military land and 3 hectares of preserved land around the Glapsides wetland is excluded.

It can be suggested that especially within the last five years, municipality's urban landscape implementations accelerated. Instead of a few newly created parks, there are small scale improvements in terms of upgrading the existing active green spaces. For instance, Anıt Park which can serve the whole city because of its location, has been also recently refurbished. New landscaping is also noticeable in vehicular intersections and roundabouts. However, these studies are far from giving Famagusta an identity of being a 'green city' because they are not a product of urban landscape planning involved as a part of a comprehensive master plan.

Figure 23: Famagusta City Park, one of the newly created parks in Baykal district

Energy use and waste management: In terms of energy management, all residences and buildings of private sector and public within the municipal boundaries, as well as in all North Cyprus (excluding several personal implementations of renewable energy), use the energy produced by Teknecik Power Plant and/or Kalecik Power Plant of AKSA Energy. These plants entirely depend on 'fuel oil' which is a fossil fuel for generating electricity.

In terms of solid waste management, according to information obtained from the municipal authorities (personal interview, 12/05/2013) solid waste is collected twice a week and construction waste is collected once a week by the municipal team. The waste collected is stored without any waste reduction step including source separation, reusing or recycling process, in a field on the south western edge of the city. The operation of landfilling site is carried out by a company instead of the municipal team. The collected waste is buried with soil in the landfilling site without any additional

process. According to the information obtained from the authorities, due to the location of the site, from the waste buried, there is not the possibility of methane gas production over time. It can be argued that the category of landfilling in Famagusta is semi controlled or operated landfill.

And wastewater collection is operated with the help of the sewage system having a capacity of 4100 m3/day, consists of a pipe line with a total amount of 60 km. The collected liquid waste will be treated in the plant constructed near the Ayluga wetland with the help of activated sludge system. Activated sludge system is a biological method that is operated with the help of bacteria. The sludge produced by the bacteria is discharged when the treatment is completed.

Ecological citizenship: As it can be understood from the characteristics discussed above, Famagusta city has severe problems in terms of achieving ecologically responsive, sustainable urban environments. And it can be suggested that ecological citizenship could not become a priority for any sort of discussion within sustainability effort of the city, because of the existence of these physical problems.

Therefore, it is the main subject of this thesis to investigate the dimensions and the existing potential of ecological citizenship among the inhabitants. However it can easily be argued that probably there may not be any potential of ecological citizenship among the Famagusta residents; because, as it is obvious from the international cases, ecologically responsive residents are both the reason and result of ecologically responsive environments. And the outcome would be different if there was any adequate potential of environmentally based living in the city.

Within this context, it can be added that there were dramatically changes in their physical, social, economic and political circumstances starting from the 1960's, having highly negative impacts on not only their physical environments but also on their unique traditions and lifestyle, which is well known with environmentally based living. These negative impacts would not give appropriate circumstances both physically and socially for behaving environmentally or at least environmental issues would not become a priority within their daily lives. And as more than 40 years passed, there is new socio-cultural characteristics that should be investigated and evaluated, if there is still any potential of being ecologically based.

As all these sort of questions emerged about the issue of ecological citizenship within the city, a user survey is prepared (within the framework of the related literature review) to investigate residents' environmental awareness, environmental attitudes and behaviours within different dimensions.

4.2 The Famagusta Area Study (FAS)

The necessity of developing and operating policy strategies for implementing ecologically responsive citizens as an urgent priority for the Famagusta city is much more obvious when the present dynamics and characteristics of Famagusta city are evaluated as above.

This was also one of the important outcomes of a comprehensive survey research 'Famagusta Area Study' (FAS). FAS has proved the existence of significant problems about several characteristics which can be suggested to be the main components of an ecological city. FAS has a research model, partially based on the Detroit Area Study

main model, emphasizing the importance of using existing information during this needed policy deliberation/plan making process (Figure 24).

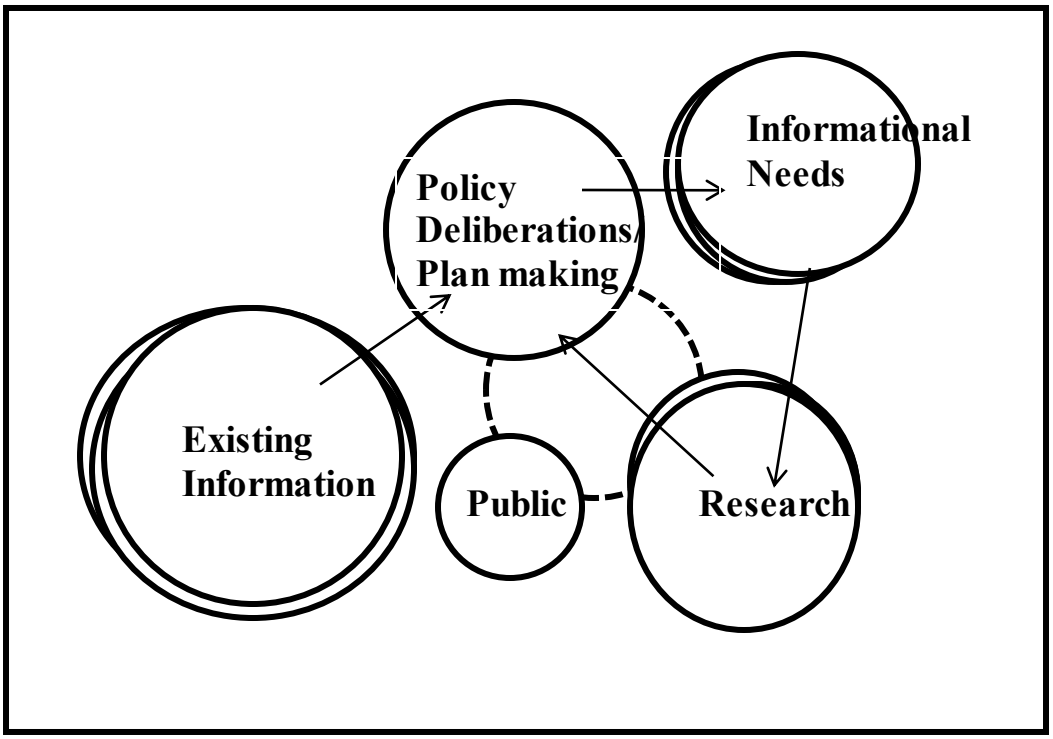

Figure 24: FAS research model after Detroit Area Study (DAS)

The Famagusta Area Study (FAS) is a survey study directed by Prof. Dr. Derya Oktay and pursued under the auspices of the Urban Research and Development Center (URDC) at EMU, as partner of Detroit Area Study which is directed at the University of Michigan. The aim of the project was measuring the quality of urban life in Famagusta city. This survey was conducted in 2007 through objective and subjective measures with the help of face to face interviews.

As a comprehensive study which aims to measure the quality of urban life, this survey study involved several characteristics which are the same as the ones that define an ecologically based city. Hence it can be argued that in terms of the present research,

findings of the Famagusta Area Study (FAS) is strongly useful to be evaluated in order to recognize the existing situation of the Famagusta citizens as a case study and to determine the appropriate framework of the measures. The characteristics measured in the Famagusta Area Study (FAS) which can also be suggested to be the main components of an ecologically based city (see Chapter 2) are '*public transportation'*, '*environment around living place'* and '*parks/green spaces and playgrounds'*. Several questions are also asked to the participants in order to measure environmental awareness in relation to Famagusta city and in general.

Environment around the living place: The existence of trees and greenery within the physical environment around the living place and neighbourhood is one of the main characteristics influencing the quality of urban life measures. According to the findings of FAS, %59 is dissatisfied with the existence of trees and greenery around their living place and neighbourhood. In terms of the maintenance of environment nearby the neighbourhood they are living, the share of the participants satisfied (%35), dissatisfied (%34) or having no suggestion (%31) is almost equal.

Parks/green spaces and playgrounds within the city: According to the findings of FAS, people in Famagusta city are more likely to be dissatisfied than satisfied with recreational parks/green spaces within the city. %51 of the respondents does not believe that Famagusta is a green city. And %86 of the respondents suggests that they prefer to have green parks in the city. Also %56 of the respondents replied that they did not spend time in any park within the last one year. The age and gender of the respondents are measured to be an insignificant factor for using the green areas. And in terms of playgrounds, %62 suggests that there is no playground around their living

place for the children to play. %60 is dissatisfied with the existing playgrounds. And %52 is dissatisfied with the recreational areas of the city in general. And %60 believes that spending time in parks is an indicator of quality of urban life. According to the findings people in the city prefer to spend time in picnic areas as a recreational facility. %65 responses that they go to picnic areas at least once in a year.

Public transportation: FAS proved that in terms of transportation issues, %58 of the respondents is dissatisfied with the transportation system of the city in general. %72 suggests that they do not have public transportation facility within the region they live. Only %11 believes that they would not be satisfied if there was public transportation network within their region; the rest says that they would be satisfied. And %71 believes that going somewhere without the public transportation network is difficult. Additionally %86 of the respondents suggests that a well-organized public transportation network increases the quality of life standards.

Briefly the Famagusta Area Study (FAS) has several findings indicating that Famagusta city inhabitants are dissatisfied about the issues such as 'public transportation', 'environment around living place' and 'parks/green spaces and playgrounds within the city', which are also several significant characteristics of an ecologically based city. But the responses about the expectations in relation to the same issues seem not to be parallel or in other words relevant with these findings. For instance the percentage of the people prefering the house types that are more or less car dependent (type 2 and 3) is more than the percentage preferring the type 1 that is central and has easy access with public transportation. Additionally although the respondents are dissatisfied with the transportation system of the city in general, %72

is found to be satisfied with the transportation mode (mostly private car) that is used to go to work/school. The share (%40) of the respondents who believes that the quality of urban life measures will be better in the future is also another finding leading us towards new questions about the level of awareness in relation to ecologically based living. These findings can give us some significant clues that there is a lack of environmental awareness among the dwellers. Oktay (2010) argues that these findings point out the necessity of policies targeting to enhance the environmental awareness of the Famagusta city inhabitants. Oktay (2010) further suggests that a strategy of 'lifelong education' for enhancing environmental awareness of the citizens will be eligible to be operated.

4.3 Research Model

As the significance of ecological citizens for the sustainability efforts of the cities are recognised and well understood, especially the cities that can be characterized to be ecological ones have begun to operate policy strategies for adopting and enhancing ecological citizenship among their dwellers. Developing and operating policy strategies for implementing ecologically responsive citizens is also an urgent priority for the Famagusta city. The necessity of policies for implementing ecologically responsive citizens for the Famagusta city is much more obvious when the results of Famagusta Area Study (FAS) are evaluated. Thus, the existing research model of the FAS is interpreted in order to develop a comprehensive framework for this study.

As all policies and related plans have to be based on the appropriate and scientific information about the public as the target, there is a necessity to obtain the existing information about the citizens' values, environmental attitudes and behaviours in the city. At the end, this information may be used for determining the related

environmental policies and may further be used as a scientific tool for all Turkish Cypriot settlements. Within this circumstances a research model is obtained after the FAS as following (Figure 25).

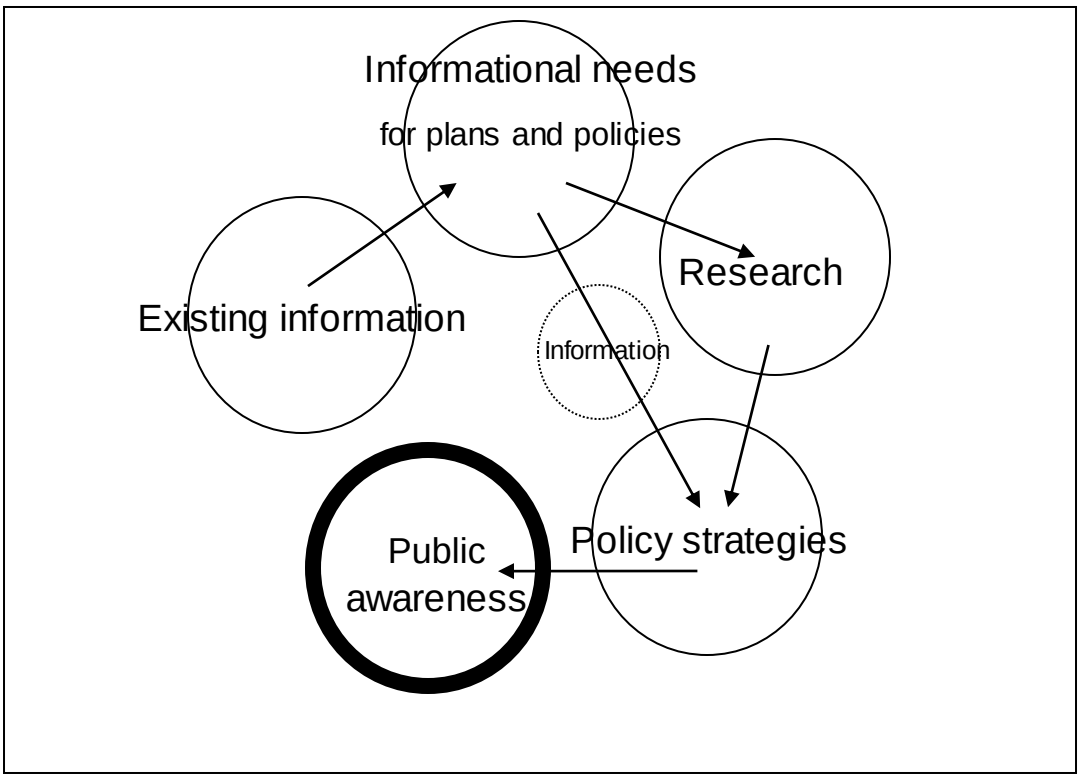

Figure 25: Research Model after the Famagusta Area Study (FAS)

4.4 User Survey Method

4.4.1 Sampling Approach

A random sample of 165 residents between 16 and 75 years old within the territory of Famagusta municipality including all 16 quarters, was chosen for the user survey. The number of participants from each of the 16 quarters was decided according to the ratio of the quarter's population to the city's whole population. The quarters' name, the quantity and the ratio of participants chosen from each one are shown in Table 4. The

respondents were selected randomly in each sample area for filling out a questionnaire form.

Table 4: The quantity and percentage of participants among Famagusta quarters

Quarter	Quantity	Percentage (%)
Anadolu	8	4,8
Baykal	13	7,9
Canbulat	9	5,5
Çanakkale	11	6,7
Dumlupınar	14	8,5
Harika	2	1,2
Karakol	19	11,5
Lala Mustafa Paşa	11	6,7
Mutluyaka	5	3
Namık Kemal	5	3
Pertev Paşa	5	3
Piyale Paşa	6	3,6
Sakarya	29	17,6
Suriçi	9	5,5
Tuzla	8	4,8
Zafer	11	6,7
Total	**165**	**100**

The administration and application of field study was carried out with the help of the firm 'The Management Centre of the Mediterranean' which is a fully resourced support centre. It has a team of highly qualified technical and administrative staff working full-time and also a pool of associate experts of consultants working project basis. The field study was undertaken starting from second week of April 2013 until the first week of June 2013, in a time period of seven weeks (10 April-03 June 2013) with the help of 4 pollsters.

4.4.2 User Survey Design and Measures

The questionnaire included a set of questions which tap under four important titles (See Appendix A). After participants were briefly informed about the research, environmental awareness about general environmental issues were measured in the first part of the questionnaire's first section. Awareness about environmental problems of Famagusta in particular, is measured in the second part of the first section.

Ecocentric and anthropocentric attitudes are examined in the second section in order to provide data for the existing value orientations.

In the third section, environmental behaviour was examined in three categories: energy saving, water conservation and green consumption.

In the fourth section, socio-demographic data was collected in order to obtain information about the issues such as age, gender, education, financial situation, and housing type etc. of the respondents.

In the last section, observations such as 'quarter's characteristics' and 'the type of the house that the respondent is living' etc., were recorded.

Table 5: User survey's characteristics

Basic Components	Indicator
Environmental awareness	• Awareness about environmental problems in general such as global warming, deforestation, ozone depletion • Awareness about environmental problems of Famagusta in particular
Environmental attitudes	• Ecocentric attitudes and anthropocentric attitudes
Environmental behaviours	• Environmental behaviours in three categories: -Energy saving -Water conservation -Green consumerism
Socio-demographic data	• Age, marital status, nationality etc.

Findings of the survey were analysed and interpreted through the use of SPSS programme. These four main titles of the user survey are as follows:

Environmental Awareness

Environmental concern is assumed to derive from corresponding value orientations. According to A. Hansla et al., (2007), it refers to an attitude towards environmental issues and is related to environmental awareness. According to another researcher,

environmental concern refers to a sympathetic perspective toward the environment (Hungerford & Volk, 1990).

Items were used in the user survey to measure the level of environmental awareness about two main topics. Eight items (including several sub headings) were used to collect data about environmental problems in general such as global warming, deforestation, ozone depletion and then three main items were used to measure the level of environmental awareness about environmental problems of Famagusta in particular. These three items have also several subheadings. These items were designed to provide information about respondents' general consciousness about environmental issues and to provide data about how they perceive these global and local environmental issues.

Environmental Attitudes

According to Thompson and Barton (1994) there are two motives in relation to environmental problems and issues: ecocentric and anthropocentric.

Anthropocentric Attitudes: Egoistic and social altruistic dimensions merge into a single dimension in which the human being is the center of the relation and a single profile of anthropocentric individuals who value the natural environment because of its contribution to the quality of human life is identified.

Ecocentric Attitudes: In contrast to this anthropocentric view, there is another alternative motive in which the individual and the environment are on equal terms,

forming a unit that can be referred to as an ecocentric perception of the relation (Amerigo et al., 2007).

Briefly, anthropocentric individuals value the natural environment because of its contribution to the quality of human life, and ecocentric individuals value nature itself including its all valued things (plants, animals, marine life etc.).

The environmental attitudes were measured with the help of Dunlop and Van Liere's New Environmental Paradigm (NEP) scale including 15 items (see Table 3). These NEP scale items are used to measure the ecocentric and anthropocentric attitudes. According to the NEP scale design, one of the statement refers to an ecocentric attitude and one another refers to an anthropocentric attitude. In total, eight items refer to ecocentric attitude and the rest seven items refer to anthropocentric attitude. Likert type five point scale (strongly disagree to strongly agree) is used to record the participants' responses for each item.

Environmental Behaviour

Environmental behaviour was measured in three categories as energy saving, water conservation and green consumption, with the help of 15 items (see Appendix A). Five items were used for each environmental behaviour category in order to understand how often the respondents are experiencing these environmental behaviours in and around home in their daily lives. Five point frequency scale (from never to always) was used to record the participants' responses for each item.

Socio-demographic Data

Respondents' socio-demographic characteristics such as age, marital status, nationality were obtained with the help of 10 items.

4.5 Findings

4.5.1 Findings about Socio-demographic Data

Socio-demographic data includes characteristics about participants' gender, education, occupation, nationality, marital status, household financial situation and the period passed in Famagusta.

Gender

%37,6 of the 165 participants were female and %62,4 were male. According to the results of gender in 2006 Census (as the findings of Census 2011 is not published), the ratio is %54 male, %48 female in Famagusta. As the participants are randomly selected, the ratio differs.

Table 6: Participants' gender profile (%)

	Frequency	Percent (%)
Female	62	37,6
Male	103	62,4
Total	165	100

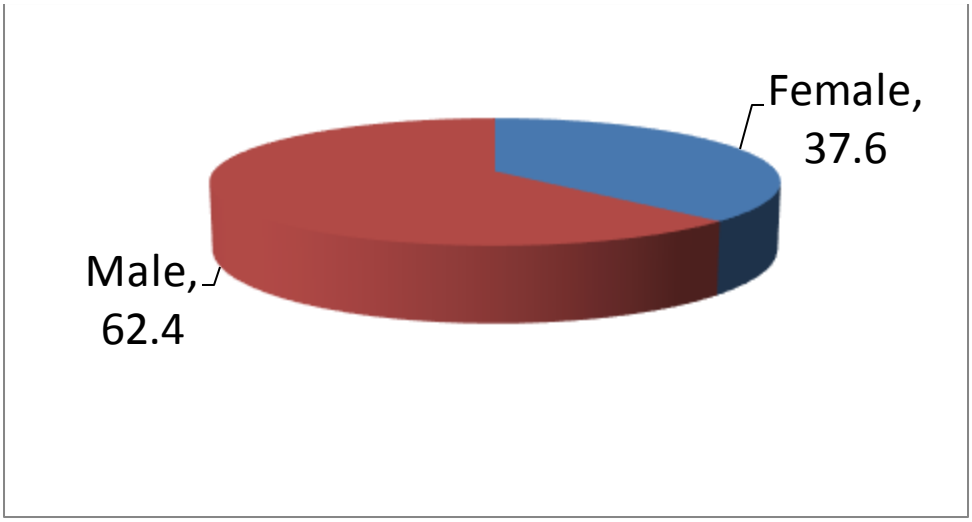

Figure 26: Participants' gender profile (%)

Age

%30,9 of the questionnaire participants had an age of 26-40. %28,5 were between 16-25 years old and %24,8 were between 41-55 years old. The rest %9,7 were between 56-65 years old and %6,1 had an age of 66-75.

Table 7: Participants' age profile (%)

	Frequency	Percent (%)
16-25	47	28,5
26-40	51	30,9
41-55	41	24,8
56-65	16	9,7
66-75	10	6,1
Total	165	100

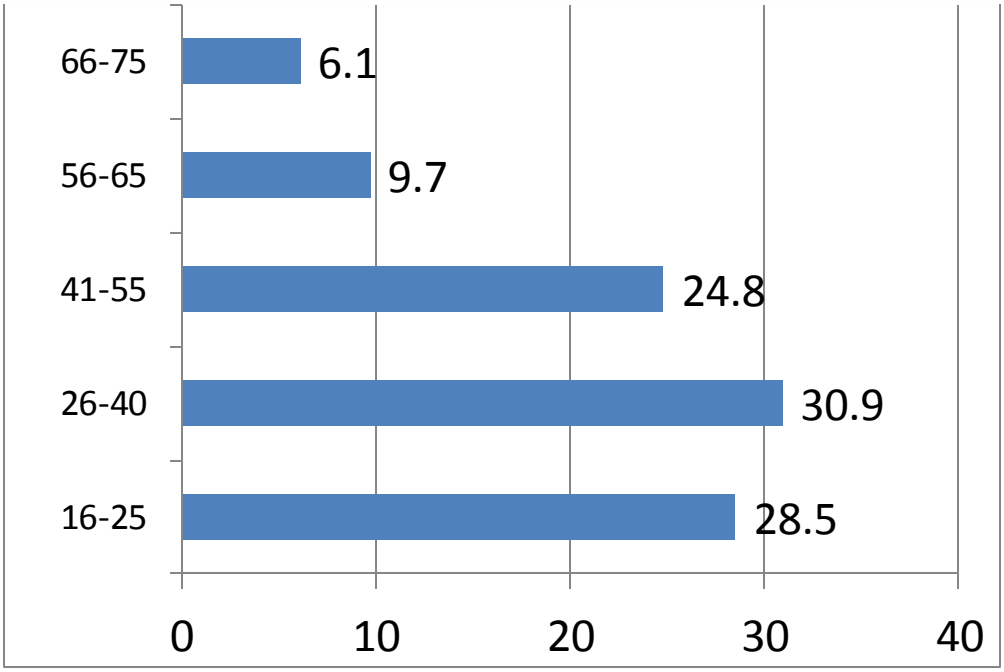

Figure 27: Participants' age profile (%)

Education

The largest portion (%48,5) among the participants had a high-school degree. %16,4 had a university degree, %13,3 had a secondary school degree, %12,7 had a primary school degree and %7,9 had a master or Ph.D. degree. There was a portion of %1,2 without a degree of education.

Table 8: Participants' education profile (%)

	Frequency	Percent (%)
None	2	1,2
Primary school degree	21	12,7
Secondary school degree	22	13,3
High school degree	80	48,5
University degree	27	16,4
Postgraduate degree	13	7,9
Total	165	100

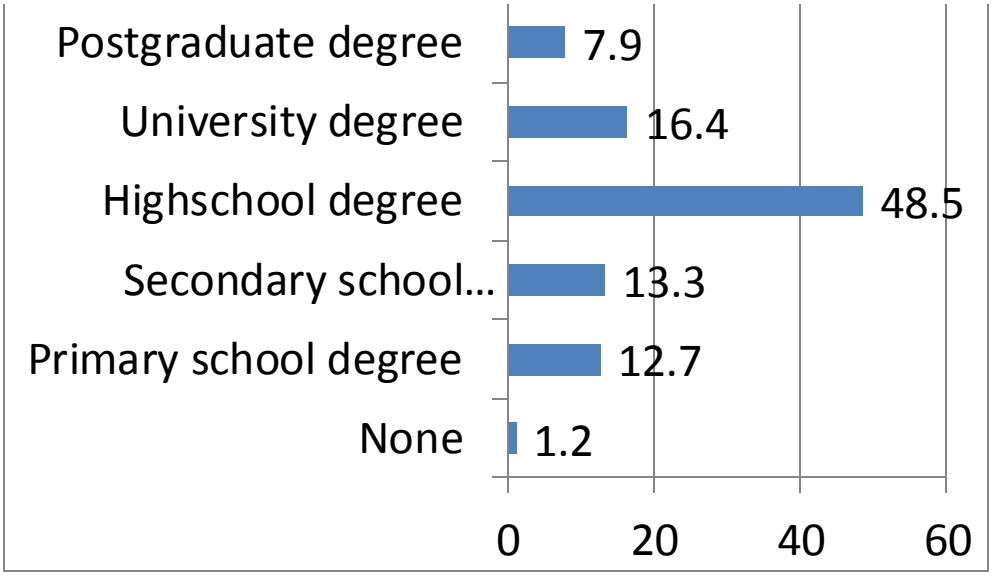

Figure 28: Participants' education profile (%)

Occupation

%21,2 of the questionnaire participants were student. %16,4 were worker, %15,8 were employee, %12,7 were retired, %12,1 were self-employed and %7,9 were officer. There were also small portions of employer, academician, housewife and unemployed.

Table 9: Participants' occupation profile (%)

	Frequency	Percent (%)
Student	35	21,2
Officer	13	7,9
Worker	27	16,4
Employer	6	3,6
Employee	26	15,8
Academician	1	0,6
Self employed	20	12,1
Retired	21	12,7
Housewife	10	6,1
Unemployed	6	3,6
Total	165	100

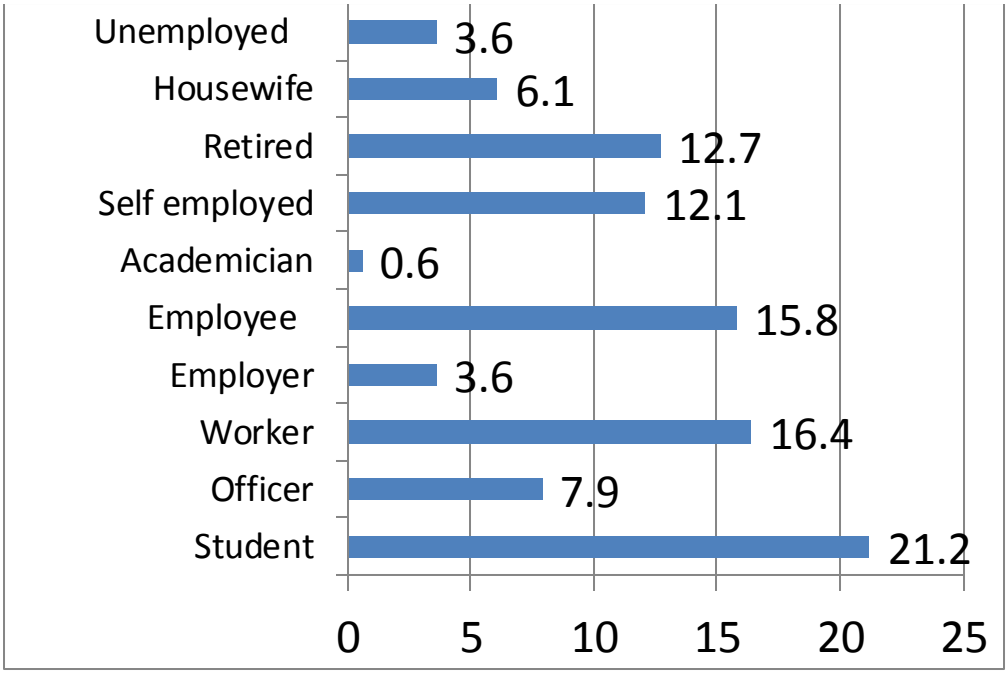

Figure 29: Participants' occupation profile (%)

Nationality

%63 of the respondents were born and raised in Cyprus. %31,5 were from Turkey and the rest %5,5 were from other countries.

Table 10: Participants' nationality profile (%)

	Frequency	Percent (%)
Cyprus	104	63
Turkey	52	31,5
Other nationality	9	5,5
Total	165	100

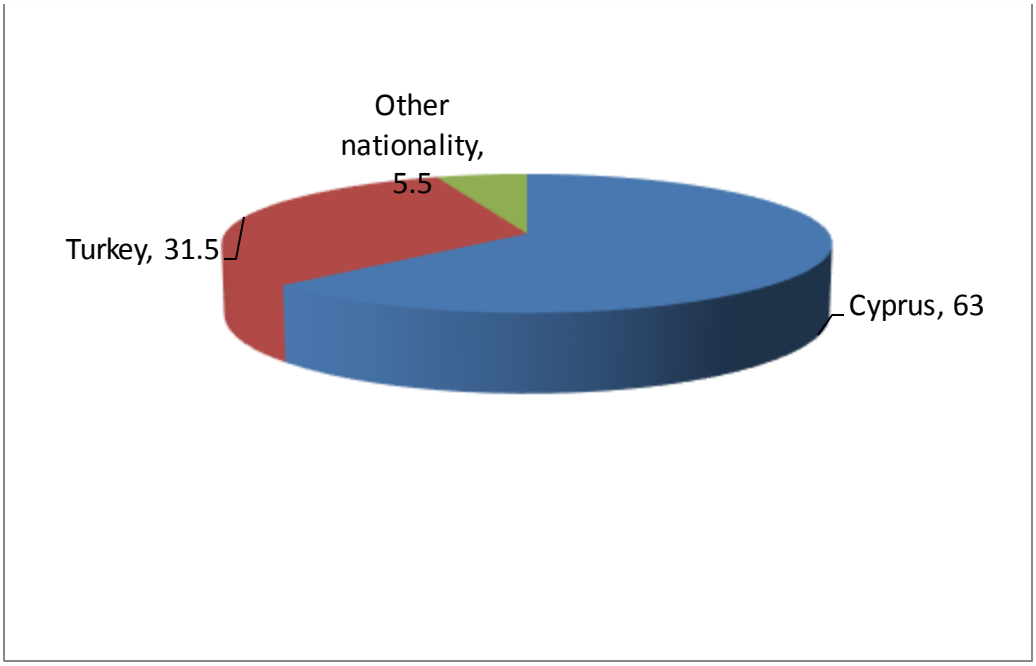

Figure 30: Participants' nationality profile (%)

Marital Status

%53,9 of the respondents were married, %39,4 were single and the rest %6,7 were divorced or widowed.

Table 11: Participants' marital status profile (%)

	Frequency	Percent (%)
Single	65	39,4
Married	89	53,9
Divorced or widowed	11	6,7
Total	165	100

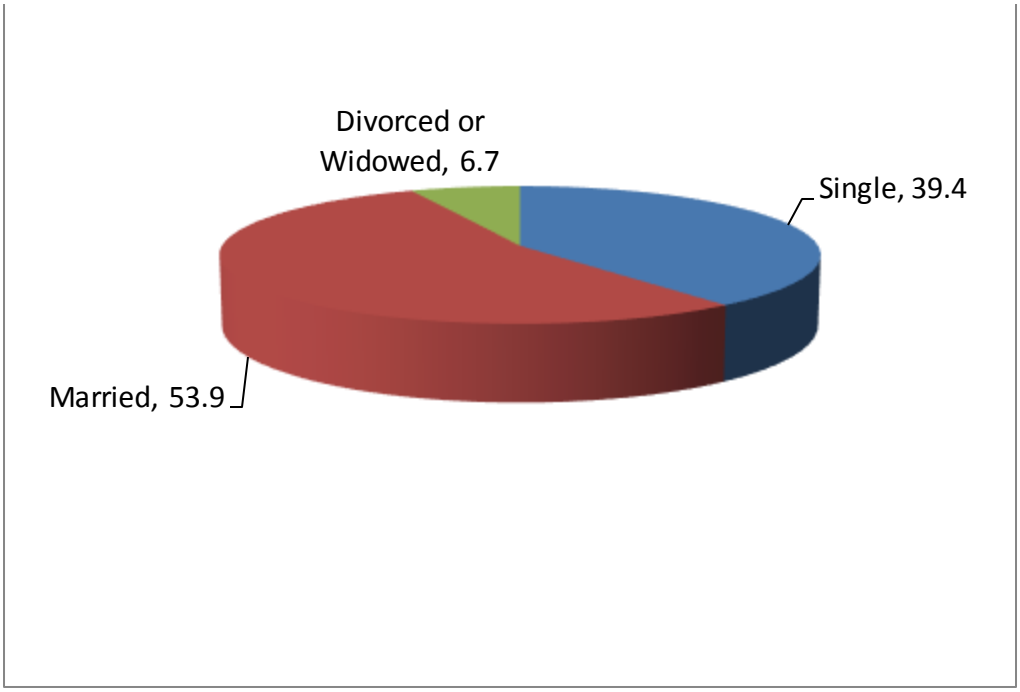

Figure 31: Participants' marital status profile (%)

Household Financial Situation

%42,4 of the respondents had a monthly household income of 1200-2499 TL, %28,5 had a monthly household income of 2500-3999 TL. %12,7 refused to answer and %8,5 had a monthly household income of 600-1199 TL.

Table 12: Participants' household financial situation profile (%)

	Frequency	Percent (%)
600-1199TL	14	8,5
1200-2499TL	70	42,4
2500-3999TL	47	28,5
4000-5999TL	9	5,5
6000TL +	4	2,4
Refuse to answer	21	12,7
Total	165	100

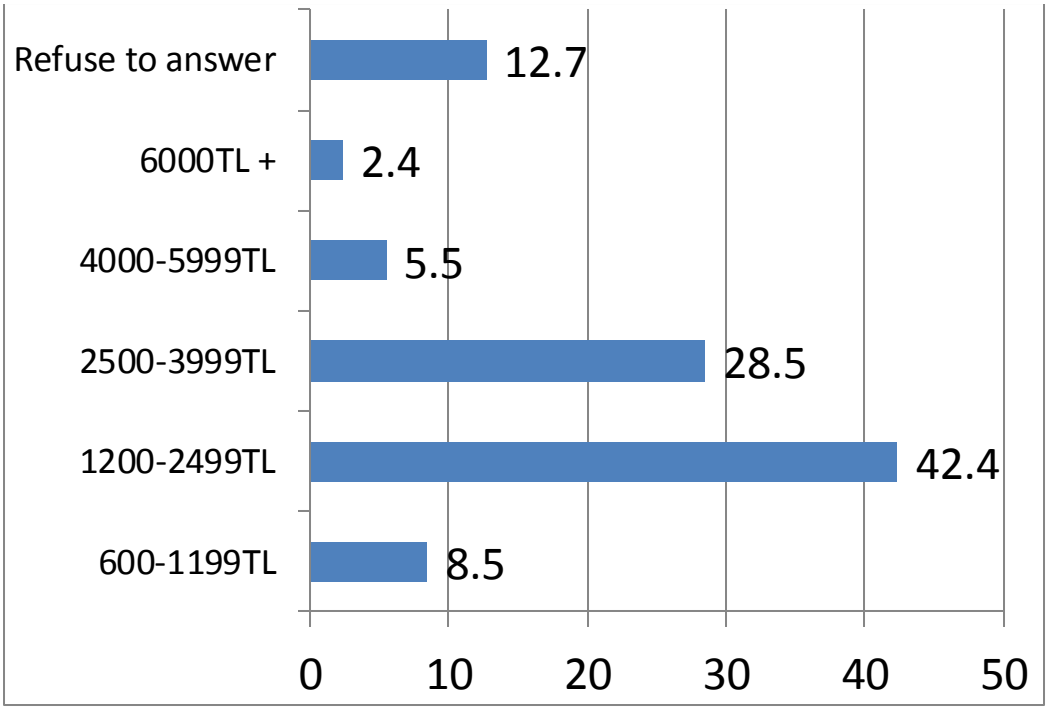

Figure 32: Participants' household financial situation profile (%)

Period of Habitation in Famagusta

%58,8 of the questionnaire participants lived for more than 20 years in Famagusta. %15,8 had a 11-20 years and %12,1 had a 6-10 years of time duration in Famagusta. And %11,5 lived in Famagusta for 1-5 years and %1,8 lived for less than one year.

Table 13: Participants' time duration in Famagusta (%)

	Frequency	Percent
Less than 1 year	3	1,8
1-5 years	19	11,5
6-10 years	20	12,1
11-20 years	26	15,8
20 +	97	58,8
Total	165	100

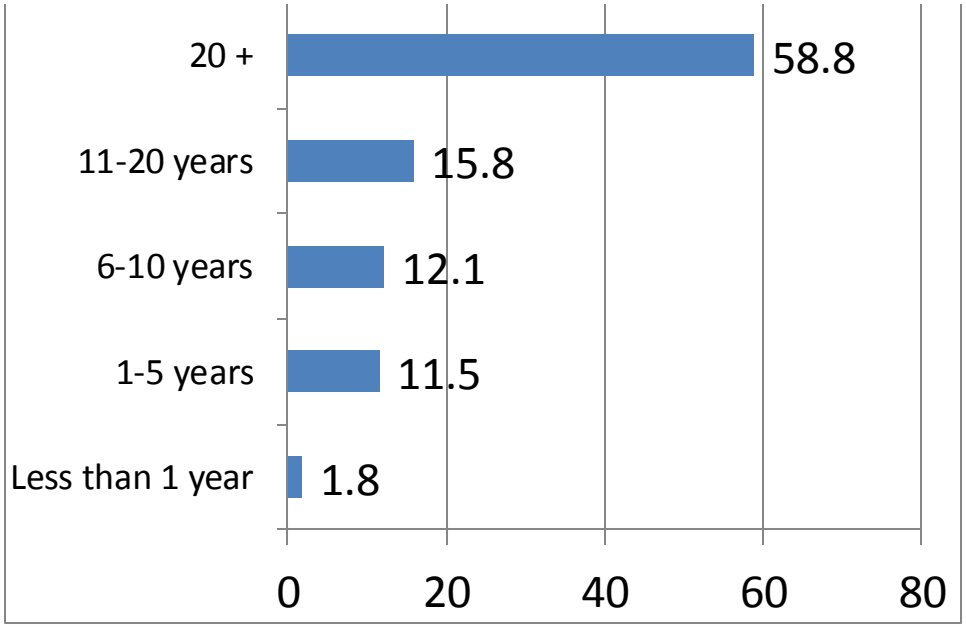

Figure 33: Participants' time duration in Famagusta (%)

4.5.2 Findings about 'Environmental Awareness'

In first part of this section, there are respondents' findings of 'environmental awareness and concern about general issues'.

4.5.2.1 Environmental Awareness about General Environmental Issues

The most important three issues for the world today

When '*which three of these issues are the most important for the world today?*' was asked, respondents replied 'health care' (%73,3), 'the economy' (%55,5) and 'education' (%52,3) as the leading three issues. 'The environment' as an issue was the least important item according to the respondents for the world today.

Table 14: Participants' responses about 'three issues that are the most important for the world today' (%)

	Frequency	Percent (%)
Health care	121	73,3
Education	85	52,3
Crime	46	28,3
The environment	42	25,8
The economy	90	55,5
Terrorism	60	37
Poverty	42	25,9
Unsure	9	3

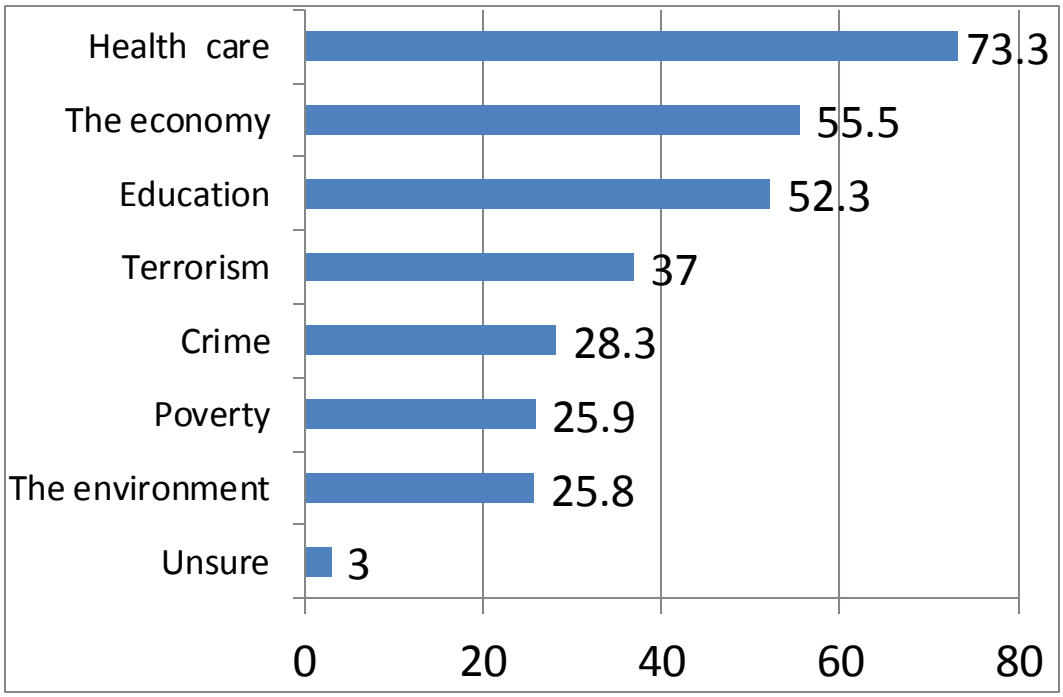

Figure 34: Participants' responses about 'three issues that are the most important for the world today' (%)

The most important three environmental problems for North Cyprus

When '*Which three problems, do you think are the most important for North Cyprus?*' was asked, the respondents replied 'water shortage' (%61,7), 'chemicals and pesticides' (%57) and 'air, water and/or soil pollution' (%50,4).

Table 15: Participants' responses about 'the most important three environmental problems for North Cyprus' (%)

	Frequency	Percent (%)
Chemicals and pesticides	94	57
Water shortage	101	61,7
Air, water and/or soil pollution	82	50,4
Lack of physical plans and legislations	60	36,9
Waste management	27	7,4
Climate change	25	15,5
Genetically modified foods	36	22,3
Using up our natural resources	28	17,3
Lack of environmental education	32	19,8
Unsure	4	2,4
Total	489	

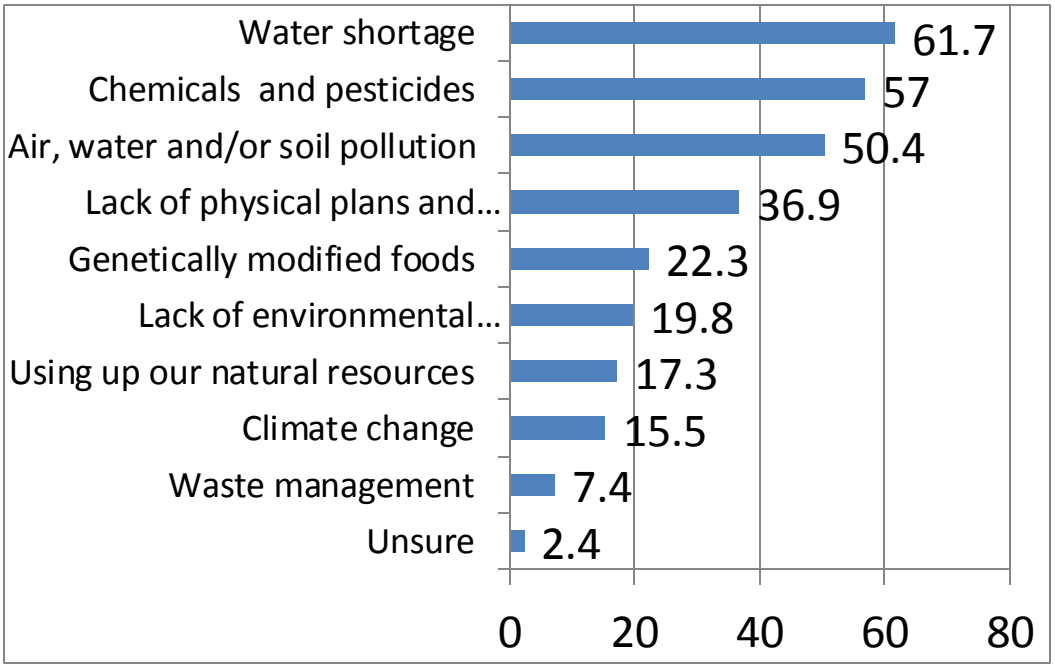

Figure 35: Participants' responses about 'the most important three environmental problems for North Cyprus' (%)

The level of knowledge about the causes of environmental problems in general

When '*how much informed do you feel yourself about the causes of these sorts of environmental problems above?*' was asked to the respondents, %40,6 replied informed and %10,3 replied 'very informed'. And %27,9 suggested that they were

'unsure'. According to the findings %21,2 in total, replied 'uninformed' or 'very uninformed'.

Table 16: The level of knowledge about the causes of these sorts of environmental problems above (%)

	Frequency	Percent (%)
VERY UNINFORMED	3	1,8
UNINFORMED	32	19,4
UNSURE	46	27,9
INFORMED	67	40,6
VERY INFORMED	17	10,3
Total	165	100

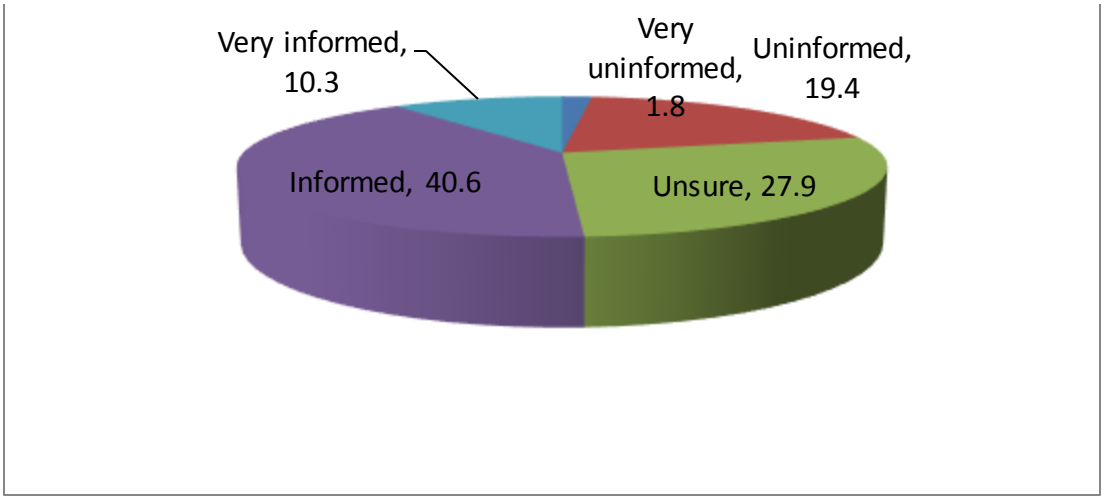

Figure 36: The level of knowledge about the causes of these sorts of environmental problems above (%)

The level of knowledge about the solutions to the general environmental problems

When '*how much informed do you feel yourself about solutions to these sorts of environmental problems above?*' was asked to the respondents, %35,2 replied 'informed' and %9,1 replied 'very informed'. %32,7 suggested that they were unsure and %20,6 replied 'uninformed'. Only %2,4 suggested 'very uninformed'.

Table 17: The level of knowledge about solutions to these sorts of environmental problems above (%)

	Frequency	Percent (%)
VERY UNINFORMED	4	2,4
UNINFORMED	34	20,6
UNSURE	54	32,7
INFORMED	58	35,2
VERY INFORMED	15	9,1
Total	165	100

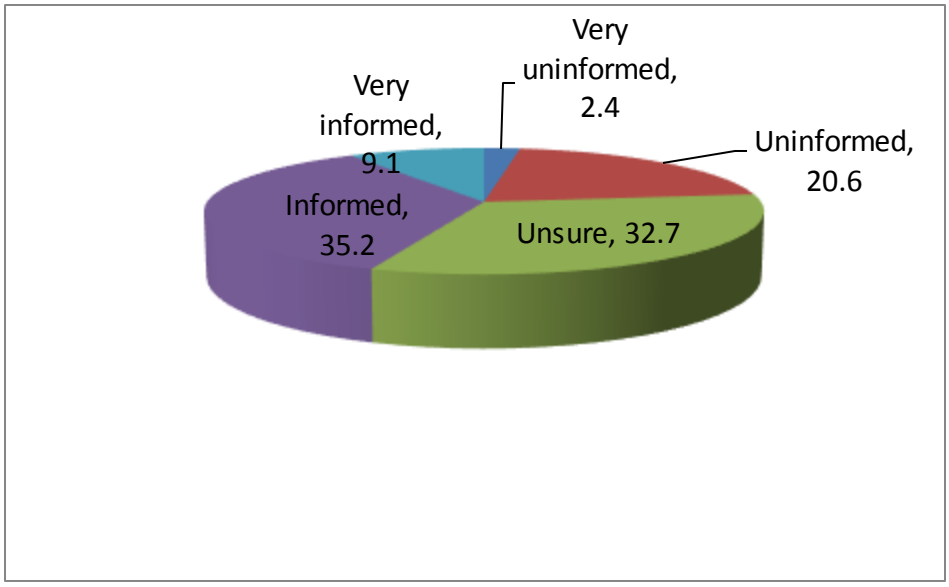

Figure 37: The level of knowledge about solutions to these sorts of environmental problems above (%)

The level of willingness to pay much higher prices in order to protect the environment

When '*how willing would you be to pay much higher prices in order to protect the environment?*' was asked, %38,2 replied 'unwilling' and %10,3 replied 'very unwilling'. And %21,8 suggested that they were 'unsure'. The rest %29,7 in total were 'willing' or 'very willing' to pay much higher taxes in order to protect the environment.

Table 18: The level of willingness to pay much higher prices in order to protect the environment (%)

	Frequency	Percent (%)
VERY UNWILLING	17	10,3
UNWILLING	63	38,2
UNSURE	36	21,8
WILLING	32	19,4
VERY WILLING	17	10,3
Total	165	100

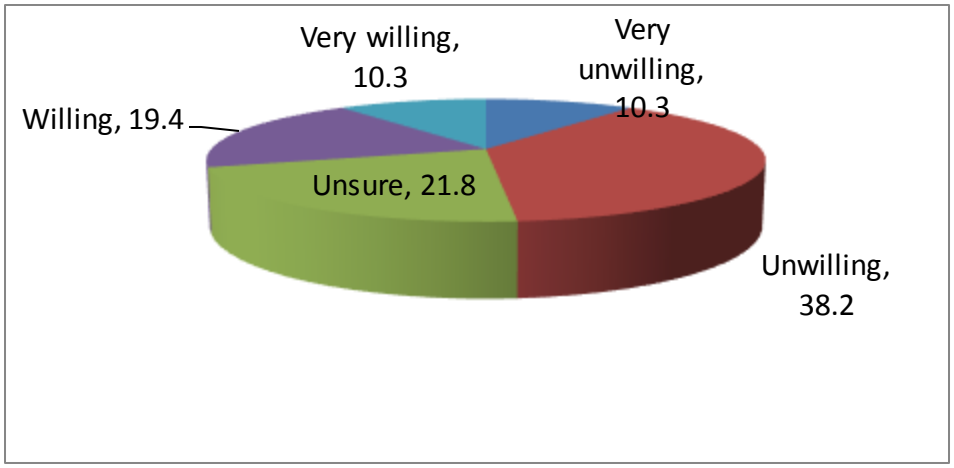

Figure 38: The level of willingness to pay much higher prices in order to protect the environment (%)

Eight Statements about Environmental Issues

After these five questions, eight more statements were readed to the respondents in order to examine and to have further opinion about their environmental concern. According to the findings (Figure 39),

%36,4 disagreed and % 11,5 strongly disagreed with the statement *'It is just too difficult for someone like me to do much about the environment'*. %22,4 agreed and %10,9 strongly agreed. %18,8 were unsure.

%45,5 agreed and %17,6 strongly agreed with the statement *'I do what is right for the environment, even when it costs more money or more time*'. % 17 disagreed and %1,2 strongly disagreed. %18,8 were unsure.

When the statement *'There are more important things to do in life than protect the environment*' was asked, %35,2 disagreed, %9,1 strongly disagreed, %24,2 agreed, %10,3 strongly agreed and %21,2 were unsure.

When the statement '*There is no point in doing what I can for the environment unless others do the same'* was asked, %35,2 agreed, %18,8 strongly agreed, %25,5 disagreed and %9,7 strongly disagreed. %10,9 were unsure.

Additionally %32,1 disagreed, %6,1 strongly disagreed with the statement *'I find it hard to know whether the way I live is helpful or harmful to the environment'*. % 26,1 agreed and % 3,6 strongly agreed. And %32,1 were unsure.

When the statement *'Environmental problems have a direct effect on my everyday life'* was asked, % 38,8 agreed, %18,8 strongly agreed, % 12,7 disagreed and % 5,5 strongly disagreed. %24,2 of the questionnaire participants were unsure.

And %31,5 agreed, %8,5 strongly agreed with the statement *'From time to time, I discuss on what I can do for the environment in my daily life with my friends and relatives'.* % 34,5 disagreed, % 9,1 strongly disagreed. % 16,4 were unsure.

When the statement *'Most of the people around me have environmentally responsive behaviors in their daily lives'* was asked to the participants, %40,6 disagreed, %10,3 strongly disagreed. Only %18,2 agreed and %6,1 strongly agreed. %24,8 were unsure.

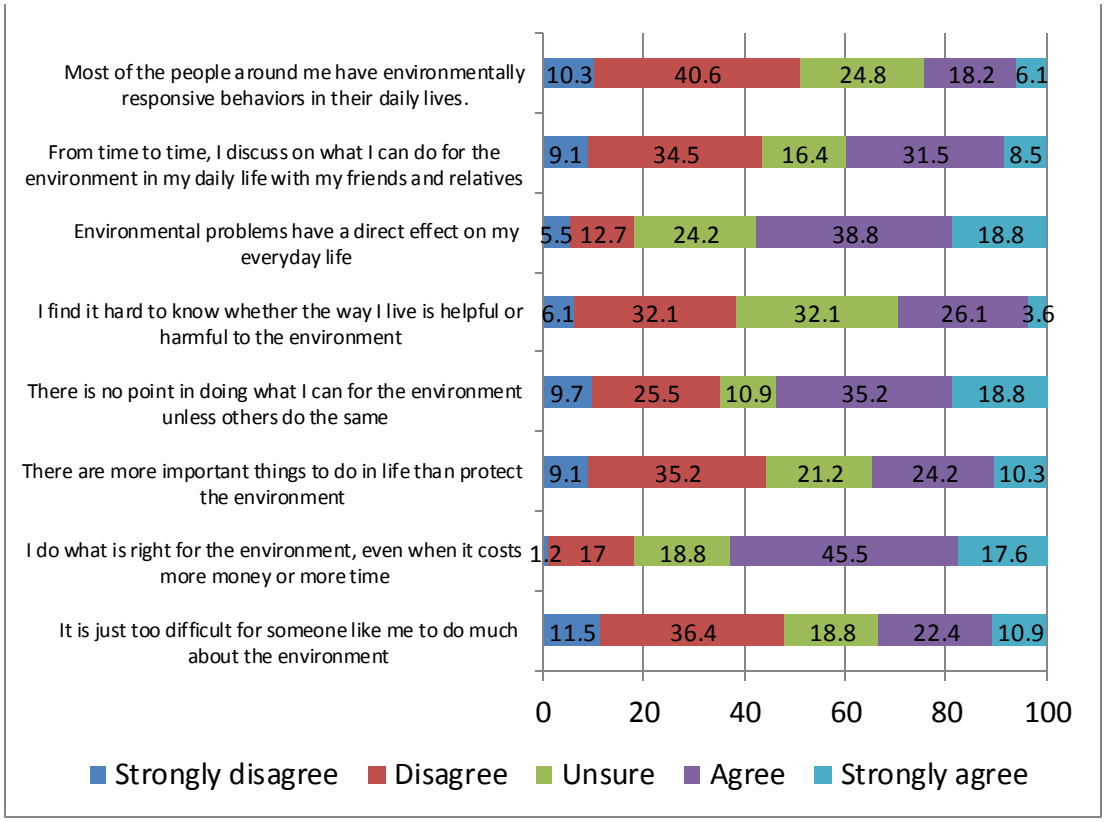

Figure 39: Responses of participants about environmental issues (%)

Global Warming and Climate Change

When the respondents' opinion about *'the rise in the world's temperature caused by global warming and climate change'* was examined, %77 replied that it was 'extremely dangerous' and %10,3 replied that it was 'somewhat dangerous'. Only %6,1 suggested that it was 'not very dangerous' and %6,7 were unsure.

Table 19: Responses about 'the rise in the world's temperature caused by global warming and climate change' (%)

	Frequency	Percent (%)
extremely dangerous	127	77
somewhat dangerous	17	10,3
unsure	11	6,7
not very dangerous	10	6,1
Total	165	100

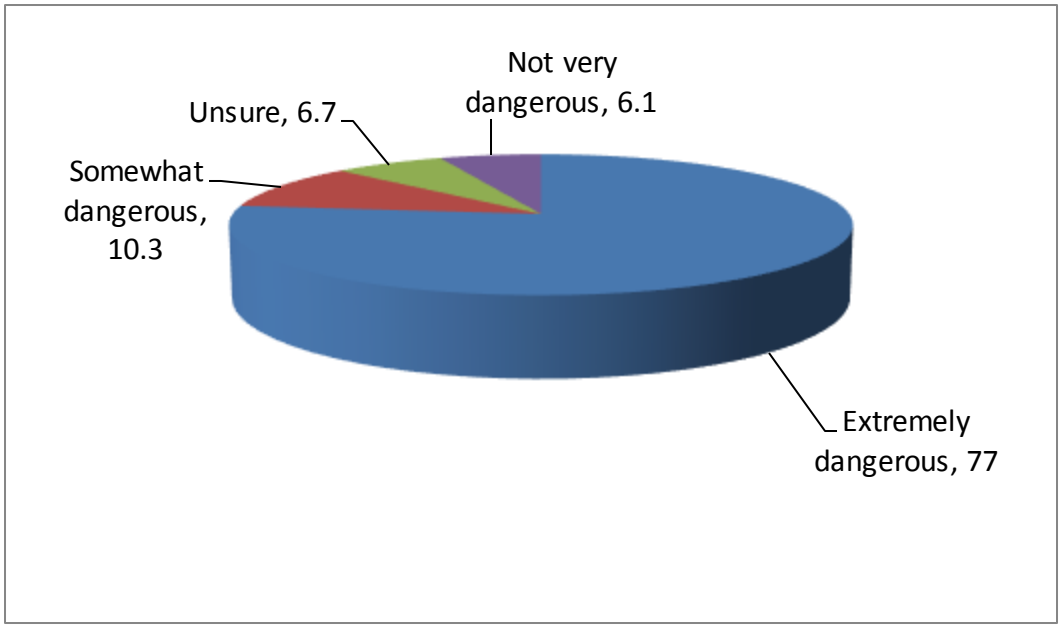

Figure 40: Responses about 'the rise in the world's temperature caused by global warming and climate change' (%)

Membership of any Environmental Group

The last question of first section's first part was *'Are you a member of any group whose main aim is to preserve or protect the environment?*'. %95,8 of the respondents replied 'no'.

Table 20: Membership of any environmental group (%)

	Frequency	Percent (%)
Yes	7	4,2
No	158	95,8
Total	165	100

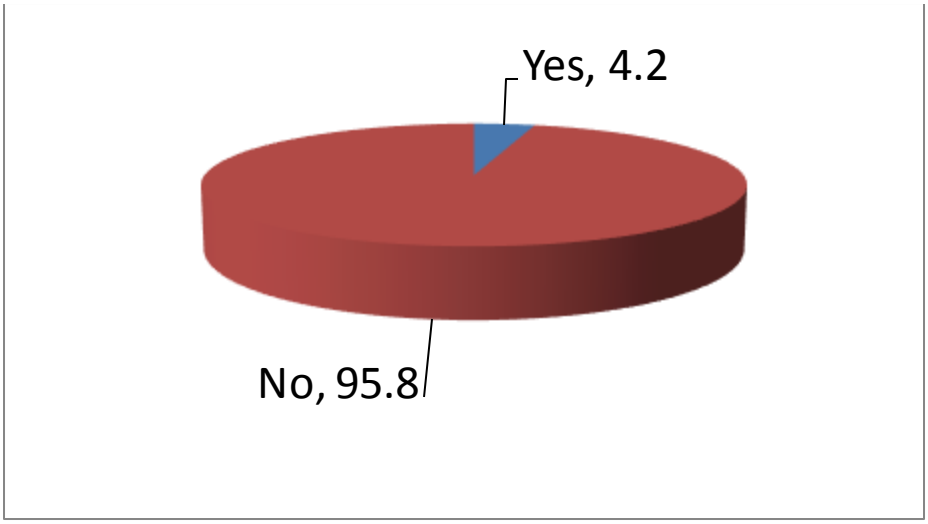

Figure 41: Membership of any environmental group (%)

4.5.2.2 Environmental Awareness about Famagusta

Within this subsection there were respondents' findings of 'environmental awareness and concern' about Famagusta. Firstly several statements were asked to respondents about environmental issues of Famagusta in order to examine to what extent they agree or disagree.

When '*I think that Famagusta city is quite sufficient in terms of regular sidewalks and pedestrian areas'* was readed, %54,5 suggested 'disagree' or 'strongly disagree', %24,8 suggested 'agree' and %8,5 suggested 'strongly agree'. And %12,1 were unsure.

Table 21: The participants' responses about sufficiency of regular sidewalks and pedestrian areas (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	34	20,6
DISAGREE	56	33,9
UNSURE	20	12,1
AGREE	41	24,8
STRONGLY AGREE	14	8,5
Total	165	100

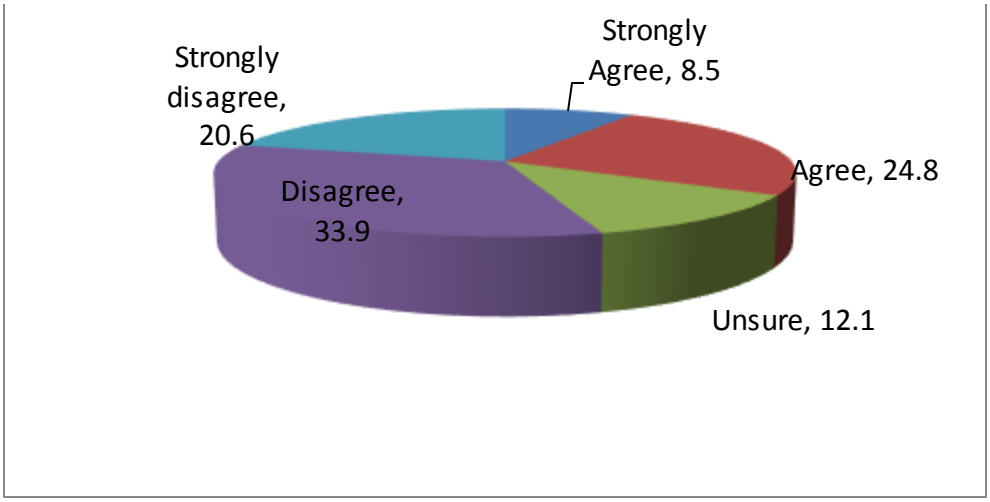

Figure 42: The participants' responses about sufficiency of regular sidewalks and pedestrian areas (%)

After the first question, three more statements were asked only to the respondents who replied 'strongly disagree' or 'disagree'. Therefore *'I would be walking to work/school if I had regular sidewalks, green streets and attractive pedestrian areas in my neighbourhood'* was asked to 90 respondents because 75 respondents replied 'unsure', 'agree' or 'strongly agree' to the first question. Among these 90 respondents, %76,6 replied 'agree' or 'strongly agree'. Only %11,1 disagreed or strongly disagreed. %12,2 were unsure.

Table 22: The participants' responses about 'I would be walking to work/school if I had regular sidewalks, green streets and attractive pedestrian areas in my neighbourhood' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	3	3,3
DISAGREE	7	7,8
UNSURE	11	12,2
AGREE	39	43,3
STRONGLY AGREE	30	33,3
Total	90	100

Then, *'I would go shopping by walking if I had regular sidewalks, green streets and attractive pedestrian areas in my neighborhood'* was readed to these 90 participants. %82,2 in total replied 'agree' or 'strongly agree'. Only %11,1 disagreed and %3,3 strongly disagreed. %3,3 were unsure.

Table 23: The participants' responses about 'I would go shopping by walking if I had regular sidewalks, green streets and attractive pedestrian areas in my neighborhood' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	3	3,3
DISAGREE	10	11,1
UNSURE	3	3,3
AGREE	46	51,1
STRONGLY AGREE	28	31,1
Total	90	100

Finally, *'I would walk as a sport activity if I had regular sidewalks, green streets and attractive pedestrian areas in my neighborhood' wa*s asked to the participants who disagreed or strongly disagreed with the first statement *'Famagusta is quite sufficient in terms of regular sidewalks and pedestrian areas'*. %81,2 replied 'agree' or 'strongly agree'. And %12,2 replied 'disagree' or 'strongly disagree'. %6,7 were unsure.

Table 24: The participants' responses about 'I would walk as a sport activity if I had regular sidewalks, green streets and attractive pedestrian areas in my neighborhood' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	2	2,2
DISAGREE	9	10
UNSURE	6	6,7
AGREE	41	45,6
STRONGLY AGREE	32	35,6
Total	90	100

When '*There are safe and comfortable urban open spaces where the children can play in my neighborhood'* was asked, %58,2 'disagreed' or 'strongly disagreed', %29,1 agreed and %8,5 'strongly agreed'. %4,2 were unsure.

Table 25: The participants' responses about 'There are safe and comfortable urban open spaces where the children can play in my neighborhood' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	36	21,8
DISAGREE	60	36,4
UNSURE	7	4,2
AGREE	48	29,1
STRONGLY AGREE	14	8,5
Total	165	100

When *'I think that urban environments in Famagusta is quite sufficient in terms of bicycle use facilities'* was readed, %82,4 'disagreed' or 'strongly disagreed'. Only %10,3 'agreed' or 'strongly agreed'. %7,3 were unsure.

Table 26: The participants' responses about 'I think that urban environments in Famagusta is quite sufficient in terms of bicycle use facilities' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	63	38,2
DISAGREE	73	44,2
UNSURE	12	7,3
AGREE	14	8,5
STRONGLY AGREE	3	1,8
Total	165	100

And %72,7 replied 'disagree' or 'strongly disagree' to the statement *'I think that Famagusta is quite sufficient in terms of public transport facilities'*. %15,7 replied 'agree' or 'strongly agree'. %11,5 were unsure.

Table 27: The participants' responses about 'I think that Famagusta is quite sufficient in terms of public transport facilities' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	52	31,5
DISAGREE	68	41,2
UNSURE	19	11,5
AGREE	20	12,1
STRONGLY AGREE	6	3,6
Total	165	100

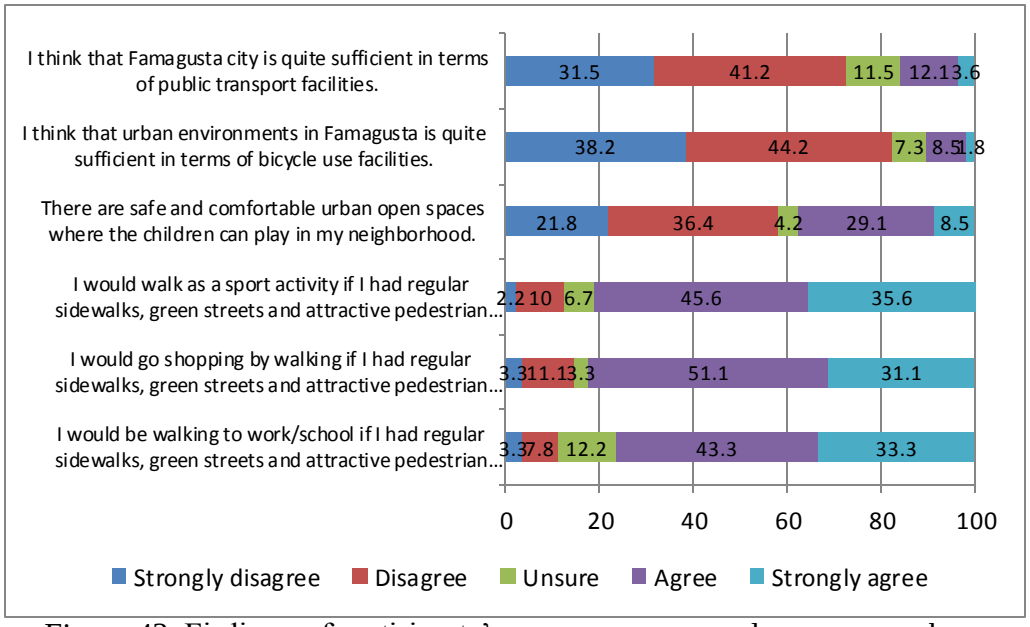

Figure 43: Findings of participants' responses to several statements about environmental issues of Famagusta (%)

When '*Do you have any public transport service in your neighborhood*?' was asked, %72,1 replied 'no' and %27,9 replied 'yes'.

Table 28:The participants' responses about 'Do you have any public transport service in your neighborhood? (%)

	Frequency	Percent (%)
Yes	46	27,9
No	119	72,1
Total	165	100

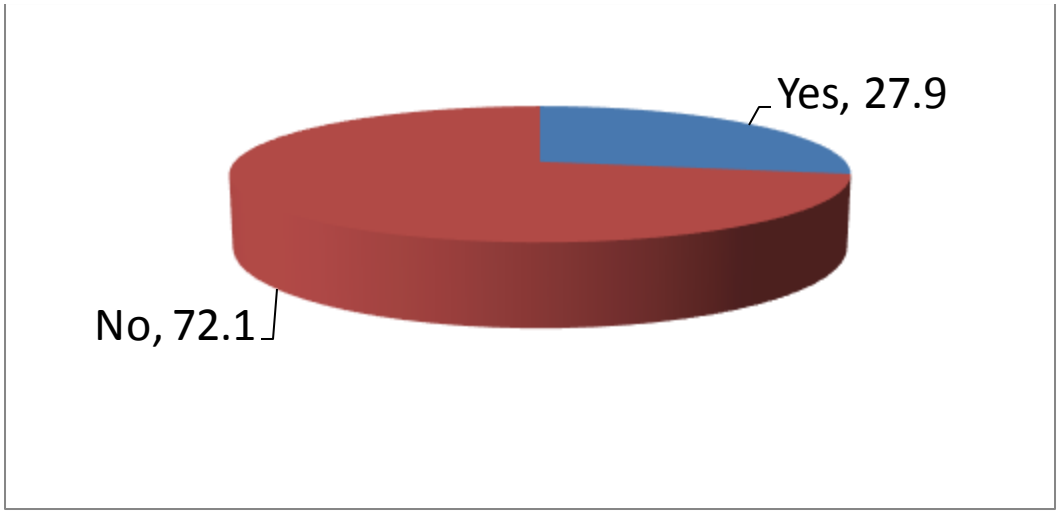

Figure 44: The participants' responses about 'Do you have any public transport service in your neighborhood? (%)

Then one more statement was readed merely to the respondents who replied 'no'. So, *'I would definitely use public transport services if I had the chance in my neighborhoord'* was readed to 119 individuals in total. %71,4 replied 'agree' or 'strongly agree'. Only %10 replied 'disagree' or 'strongly disagree'. %18,5 were unsure.

Table 29: The participants' responses about 'I would definitely use public transport services if I had the chance in my neighborhoord' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	6	5
DISAGREE	6	5
UNSURE	22	18,5
AGREE	47	39,5
STRONGLY AGREE	38	31,9
Total	119	100

When '*I think that the quantity and the distribution of urban green spaces is quite sufficient within the Famagusta'* was asked, %65,4 'disagreed' or 'strongly disagreed'. %21,9 'agreed' or 'strongly agreed'. %12,7 were unsure.

Table 30: The participants' responses about the quantity and the distribution of urban green spaces within the Famagusta city (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	36	21,8
DISAGREE	72	43,6
UNSURE	21	12,7
AGREE	26	15,8
STRONGLY AGREE	10	6,1
Total	165	100

And %66,1 of the respondents replied 'disagree' or 'strongly disagree' when the statement '*I think that urban street trees are quite sufficient within the Famagusta'* was asked. %20,6 replied 'agree' or 'strongly agree' and %13,3 were unsure.

Table 31: The participants' responses about urban street trees within the Famagusta city' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	34	20,6
DISAGREE	75	45,5
UNSURE	22	13,3
AGREE	26	15,8
STRONGLY AGREE	8	4,8
Total	165	100

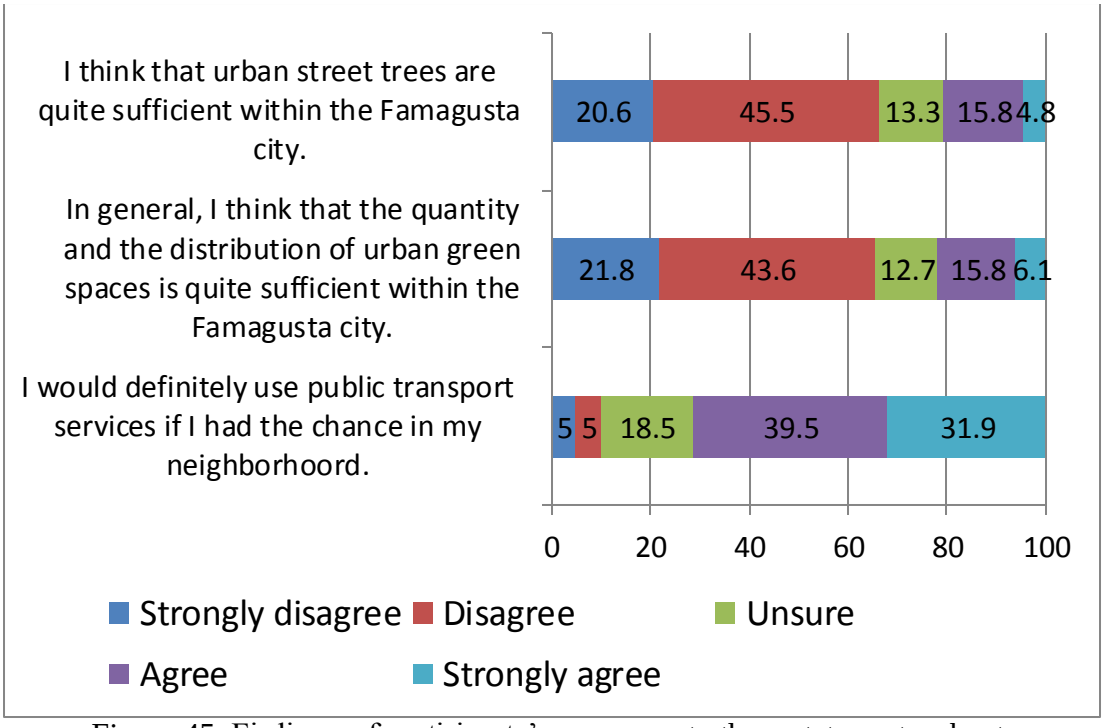

Figure 45: Findings of participants' responses to three statements about environmental issues (street trees etc) of Famagusta (%)

When '*Do you have any park, playground, sport field etc in your neighborhood*?' was asked, %54,5 said 'no', %45,5 said 'yes'.

Table 32: The participants' responses about 'Do you have any park, playground, sport field etc in your neighborhood?' (%)

	Frequency	Percent (%)
Yes	75	45,5
No	90	54,5
Total	165	100

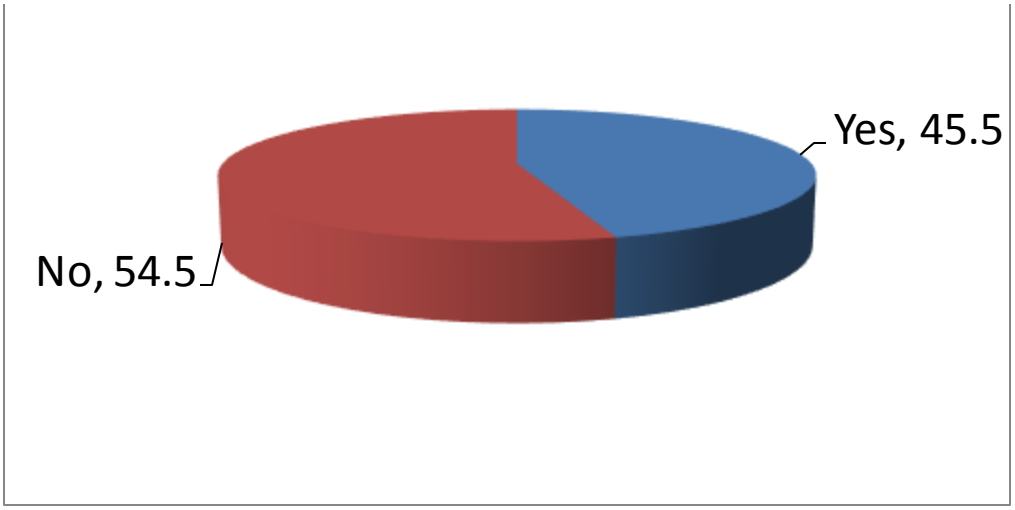

Figure 46: The participants' responses about 'Do you have any park, playground, sport field etc in your neighborhood?' (%)

One more statement that is *'I would definitely use if there was a park, playground, sport field etc in my neighborhood'*, was readed merely to the participants who suggested 'no'. %78,8 agreed or strongly agreed with the statement. %2,2 disagreed or strongly disagreed. %18,9 were unsure.

Table 33: The participants' responses about 'I would definitely use if there was a park, playground, sport field etc in my neighborhood' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	1	1,1
DISAGREE	1	1,1
UNSURE	17	18,9
AGREE	40	44,4
STRONGLY AGREE	31	34,4
Total	90	100

And %41,2 'disagreed' or 'strongly disagreed' with the statement '*I think that Famagusta municipality is quite sufficient in terms of waste (solid and liquid) management*'. %33,3 agreed or strongly agreed. %25,5 were unsure.

Table 34: The participants' responses about 'I think that Famagusta municipality is quite sufficient in terms of waste (solid and liquid) management' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	23	13,9
DISAGREE	45	27,3
UNSURE	42	25,5
AGREE	38	23
STRONGLY AGREE	17	10,3
Total	165	100

Additionally, %74 'agreed' or 'strongly agreed' with the statement *'I would be separately littering the solid waste (plastic, paper, glass, metal etc) if I had the chance to recycle in my own household*'. Merely %15,2 disagreed or strongly disagreed. %10,9 were unsure.

Table 35: The participants' responses about 'I would be separately littering the solid waste (plastic, paper, glass, metal etc) if I had the chance to recycle in my own household' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	11	6,7
DISAGREE	14	8,5
UNSURE	18	10,9
AGREE	75	45,5
STRONGLY AGREE	47	28,5
Total	165	100

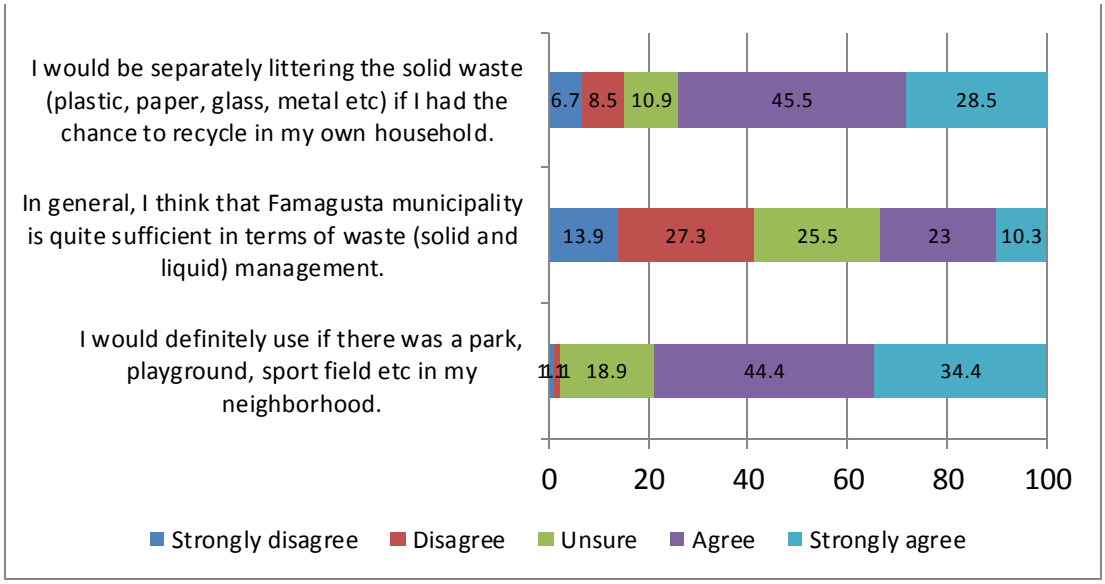

Figure 47: Findings of participants' responses to three more statements about environmental issues (waste management etc) of Famagusta (%)

%60 of the respondents replied 'yes' and %40 replied 'no' to the question '*Did you visit a friend by walking?'*.

Table 36: The participants' responses about 'Did you visit a friend by walking?' (%)

	Frequency	Percent (%)
Yes	99	60
No	66	40
Total	165	100

%50,3 replied 'yes' and %49,7 replied 'no' to the question '*Did you go shopping by walking?'*.

Table 37: The participants' responses about 'Did you go shopping by walking?' (%)

	Frequency	Percent (%)
Yes	83	50,3
No	82	49,7
Total	165	100

%78,8 replied 'no' and %21,2 replied 'yes' when '*Did you go to work by walking?*' was asked.

Table 38: The participants' responses about 'Did you go to work by walking?' (%)

	Frequency	Percent (%)
Yes	35	21,2
No	130	78,8
Total	165	100

%59,4 said 'no' and %40,6 said 'yes' to the question '*Did you walk as a sport activity?'*.

Table 39: The participants' responses about 'Did you walk as a sport activity?' (%)

	Frequency	Percent (%)
Yes	67	40,6
No	98	59,4
Total	165	100

And %93,3 replied 'no' and %3,7 replied 'yes' to the question '*Did you use public transport service?'*

Table 40: The participants' responses about 'Did you use public transport service?' (%)

	Frequency	Percent (%)
Yes	11	6,7
No	154	93,3
Total	165	100

Finally, %90,3 replied 'no' and %9,7 'yes' to the question **'***Did you use bicycle for going somewhere?'*.

Table 41: The participants' responses about 'Did you use bicycle for going somewhere?' (%)

	Frequency	Percent (%)
Yes	16	9,7
No	149	90,3
Total	165	100

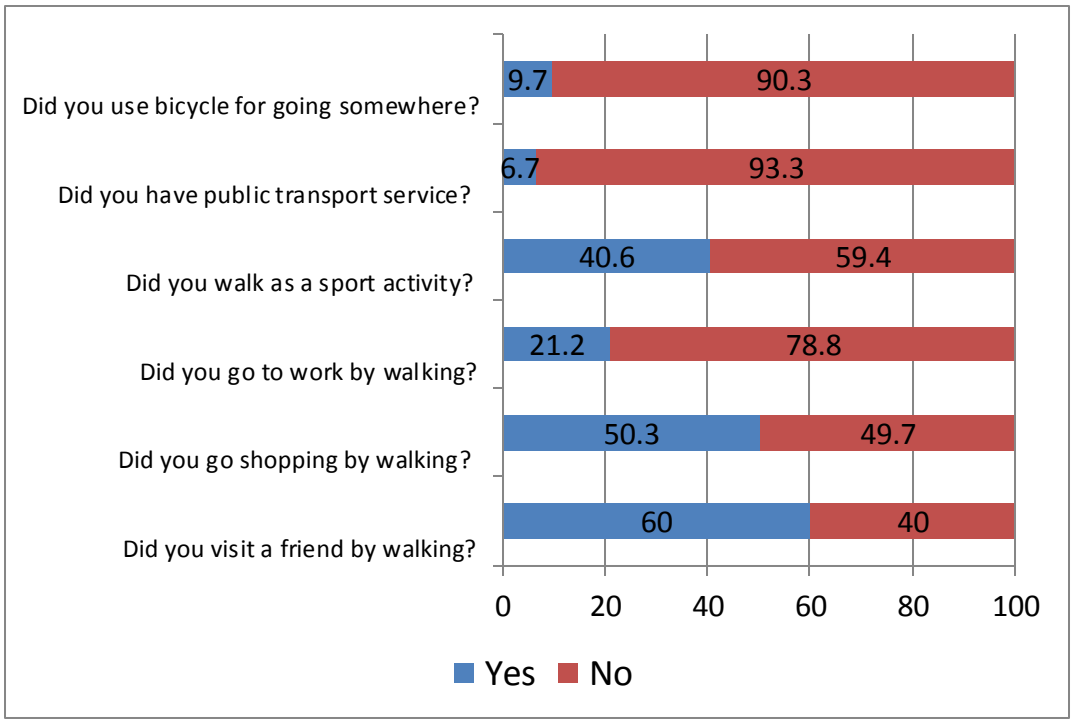

Figure 48: Findings of participants whether several actions within the last week were experienced? (%)

One of the last two statements of this section in the questionaire was, '*Famagusta residents can develop environmental attitudes and behaviours if effective environmental awareness policies are created and implemented'*. %72,8 'agreed' or 'strongly agreed'. %8,4 'disagreed' or 'strongly disagreed'. %18,8 were unsure.

Table 42: The participants' suggestions about 'Famagusta residents can develop environmental attitudes and behaviours if effective environmental awareness policies are created and implemented' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	7	4,2
DISAGREE	7	4,2
UNSURE	31	18,8
AGREE	77	46,7
STRONGLY AGREE	43	26,1
Total	165	100

The last statement was '*Famagusta residents can change their attitudes and behaviours about using the urban environments if several physical improvements are made'*. %72,1 'agreed' or 'strongly agreed'. %9,1 'disagreed' or 'strongly disagreed'. %18,8 were unsure.

Table 43: The participants' responses about 'Famagusta residents can change their attitudes and behaviours about using the urban environments if several physical improvements are made' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	4	2,4
DISAGREE	11	6,7
UNSURE	31	18,8
AGREE	82	49,7
STRONGLY AGREE	37	22,4
Total	165	100

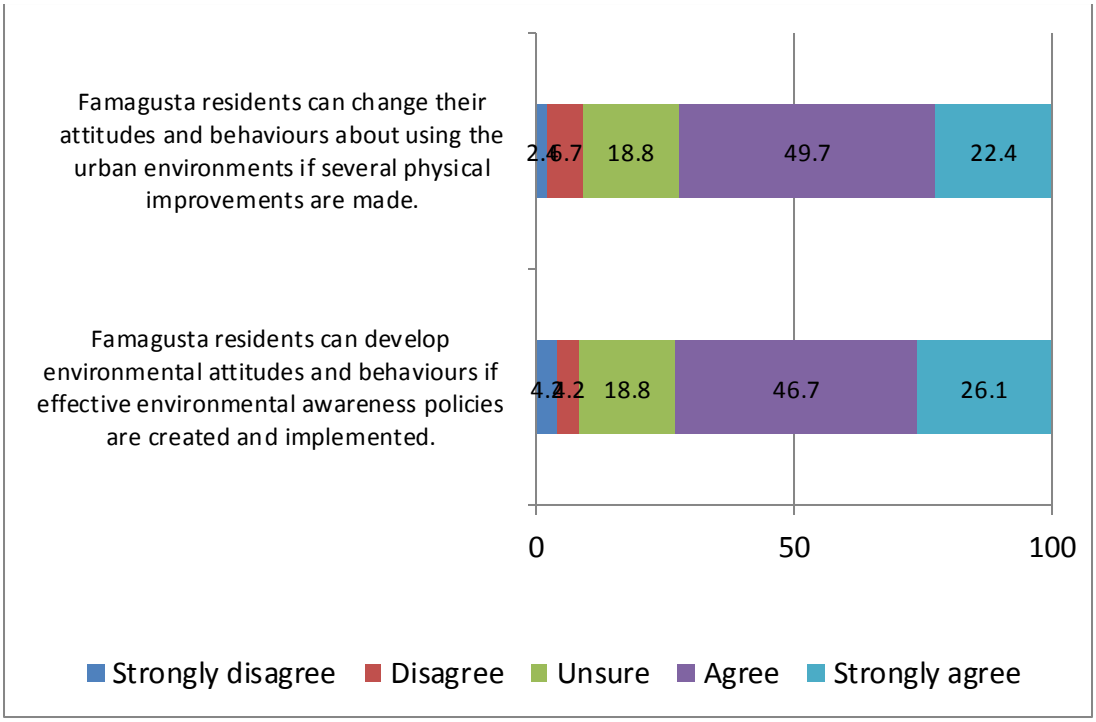

Figure 49: Participants' responses about Famagusta residents' (environmetal) attitudes and behaviours (%)

4.5.3 Findings about 'Environmental Attitudes'

Within this section, there were respondents' findings about 'environmental attitudes'. As the environmental attitudes were measured with Dunlop and Van Liere's NEP scale within the research, the respondents' suggestions to eight ecocentric and seven anthropocentric (15 in total) statements were as following.

When '*We are approaching the limit of the number of people the earth can support'* as an ecocentric statement was asked, %77,5 of the participants replied 'strongly agree' or 'agree'. %13,3 were unsure and %9,1 replied'disagree' or 'strongly disagree'.

Table 44: Respondents' responses to the statement 'We are approaching the limit of the number of people the earth can support' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	6	3,6
DISAGREE	9	5,5
UNSURE	22	13,3
AGREE	72	43,6
STRONGLY AGREE	56	33,9
Total	165	100

%47,9 of the respondents replied 'strongly agree' or 'agree', %32,7 of them replied 'disagree' or 'strongly disagree' about the anthropocentric statement '*Humans have the right to modify the natural environment to suit their needs*'. And %19,4 were unsure.

Table 45: Respondents' responses to the statement 'Humans have the right to modify the natural environment to suit their needs' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	18	10,9
DISAGREE	36	21,8
UNSURE	32	19,4
AGREE	53	32,1
STRONGLY AGREE	26	15,8
Total	165	100

And %78,2 replied 'strongly agree' or 'agree' with the ecocentric statement '*When humans interfere with nature, it often produces disastrous consequences*'. Only %11,5 replied 'disagree' or 'strongly disagree' and %10,3 were unsure.

Table 46: Respondents' responses to the statement 'When humans interfere with nature, it often produces disastrous consequences' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	7	4,2
DISAGREE	12	7,3
UNSURE	17	10,3
AGREE	69	41,8
STRONGLY AGREE	60	36,4
Total	165	100

And when, *'Human ingenuity will insure that we do not make the earth unlivable'* as an anthropocentric statement is asked, %45,5 replied 'strongly agree' or 'agree' and %34,6 replied'disagree' or 'strongly disagree'. %20 were unsure.

Table 47: Respondents' responses to the statement'Human ingenuity will insure that we do not make the earth unlivable' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	28	17
DISAGREE	29	17,6
UNSURE	33	20
AGREE	47	28,5
STRONGLY AGREE	28	17
Total	165	100

Additionally, %84,8 of the respondents suggested 'strongly agree' or 'agree' to the ecocentric item *'Humans are severely abusing the earth'.* Only %6,6 of them suggested 'disagree' or 'strongly disagree' and %8,5 were unsure.

Table 48: Respondents' responses to the statement 'Humans are severely abusing the earth' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	4	2,4
DISAGREE	7	4,2
UNSURE	14	8,5
AGREE	66	40
STRONGLY AGREE	74	44,8
Total	165	100

When '*The earth has plenty of natural resources if we just learn how to develop them*'as an anthropocentric statement was asked, %77,6 replied 'disagree' or 'strongly disagree' and %12,8 replied 'agree' or 'strongly agree'. And %9,7 were unsure.

Table 49: Respondents' responses to the statement 'The earth has plenty of natural resources if we just learn how to develop them' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	61	37
DISAGREE	67	40,6
UNSURE	16	9,7
AGREE	10	6,1
STRONGLY AGREE	11	6,7
Total	165	100

%95,7 of respondents replied 'agree' or 'strongly agree' and only %2,4 replied 'disagree' or 'strongly disagree' to the ecocentric statement '*Plants and animals have as much right as humans to exist'.*

Table 50: Respondents' responses to the statement 'Plants and animals have as much right as humans to exist' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	3	1,8
DISAGREE	1	0,6
UNSURE	3	1,8
AGREE	57	34,5
STRONGLY AGREE	101	61,2
Total	165	100

And %55,8 suggested 'agree' or 'strongly agree' and %27,8 suggested 'disagree' or 'strongly disagree' about the anthropocentric statement *'The balance of nature is strong enough to cope with the impacts of modern industrial nation'.* %16,4 were unsure.

Table 51: Respondents' responses to the statement 'The balance of nature is strong enough to cope with the impacts of modern industrial nation' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	23	13,9
DISAGREE	23	13,9
UNSURE	27	16,4
AGREE	63	38,2
STRONGLY AGREE	29	17,6
Total	165	100

When, *'Despite our special abilities, humans are still subject to the laws of nature'* as another ecocentric statementwas asked to the respondents, %57,6 replied 'strongly agree' or 'agree' and %21,2 replied 'strongly disagree' or 'disagree'. Another %21,2 of them were unsure.

Table 52: Respondents' responses to the statement 'Despite our special abilities, humans are still subject to the laws of nature' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	5	3
DISAGREE	30	18,2
UNSURE	35	21,2
AGREE	52	31,5
STRONGLY AGREE	43	26,1
Total	165	100

%47,3 replied 'strongly agree' or 'agree' and %21,2 replied 'strongly disagree' or 'disagree' to the anthropocentric item *'The so-called "ecological crisis" facing humankind has been greatly exaggerated'.* And %31,5 replied 'unsure'.

Table 53: Respondents' responses to the statement 'The so-called "ecological crisis" facing humankind has been greatly exaggerated (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	17	10,3
DISAGREE	18	10,9
UNSURE	52	31,5
AGREE	59	35,8
STRONGLY AGREE	19	11,5
Total	165	100

%43,1 replied'strongly agree' or 'agree' and %32,1 replied unsure to the ecocentric item '*The earth is like a spaceship with very limited room and resources'.* And %24,9 replied 'disagree' or 'strongly disagree'.

Table 54: Respondents' responses to the statement 'The earth is like a spaceship with very limited room and resources' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	12	7,3
DISAGREE	29	17,6
UNSURE	53	32,1
AGREE	44	26,7
STRONGLY AGREE	27	16,4
Total	165	100

%62,4 replied 'strongly agree' or 'agree' and %20,6 replied 'strongly disagree' or 'disagree' to the anthropocentric statement '*Humans were meant to rule over the rest of nature'*. And %17 were unsure.

Table 55: Respondents' responses to the statement 'Humans were meant to rule over the rest of nature' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	13	7,9
DISAGREE	21	12,7
UNSURE	28	17
AGREE	64	38,8
STRONGLY AGREE	39	23,6
Total	165	100

And %72,2 replied 'strongly agree' or 'agree', %18,2 replied 'unsure' and only %9,7 replied 'strongly disagree' or 'disagree' to the ecocentric statement '*The balance of nature is very delicate and easily upset'*.

Table 56: Respondents' responses to the statement 'The balance of nature is very delicate and easily upset' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	5	3
DISAGREE	11	6,7
UNSURE	30	18,2
AGREE	61	37
STRONGLY AGREE	58	35,2
Total	165	100

When, *'Humans will eventually learn enough about how nature works to be able to control it'* was asked, %50,3 replied 'strongly disagree' or 'disagree' and %27,9 replied 'unsure'. %21,9 replied 'agree' or 'strongly agree'.

Table 57: Respondents' responses to the statement 'Humans will eventually learn enough about how nature works to be able to control it' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	32	19,4
DISAGREE	51	30,9
UNSURE	46	27,9
AGREE	25	15,2
STRONGLY AGREE	11	6,7
Total	165	100

As another ecocentric item *'If things continue on their present course, we will soon experience a major environmental catastrophe'* was asked, %82,4 replied 'agree' or 'strongly agree' and only %8,4 replied 'disagree' or 'strongly disagree'. And %9,1 were unsure.

Table 58: Respondents' responses to the statement 'If things continue on their present course, we will soon experience a major environmental catastrophe' (%)

	Frequency	Percent (%)
STRONGLY DISAGREE	7	4,2
DISAGREE	7	4,2
UNSURE	15	9,1
AGREE	66	40
STRONGLY AGREE	70	42,4
Total	165	100

The findings of environmental attitudes that were measured with Dunlop and Van Liere's NEP scale are also displayed in Figure 50.

4.5.4 Findings about 'Environmental Behaviour'

Within this section, there were respondents' findings about 'environmental behaviour'. In third section of the user survey, environmental behaviours in and around home were examined in three categories: energy saving, water conservation and green consumption. The participants were asked to indicate the degree to which they agree with each item. And the responses are coded as 1= NEVER, 2= RARELY, 3= SOMETIMES, 4= USUALLY, OR 5= ALWAYS.

When the first item *'I use high efficiency bulbs at home' was asked,* %46,1 replied 'always', %31,5 replied 'usually', %9,1 'sometimes' and %13,4 'rarely' or 'never'.

Table 59: Respondents' responses to the statement 'I use high efficiency bulbs at home' (%)

		Frequency	Percent (%)
NEVER		9	5,5
RARELY		13	7,9
SOMETIMES		15	9,1
USUALLY		52	31,5
ALWAYS		76	46,1
Total		165	100

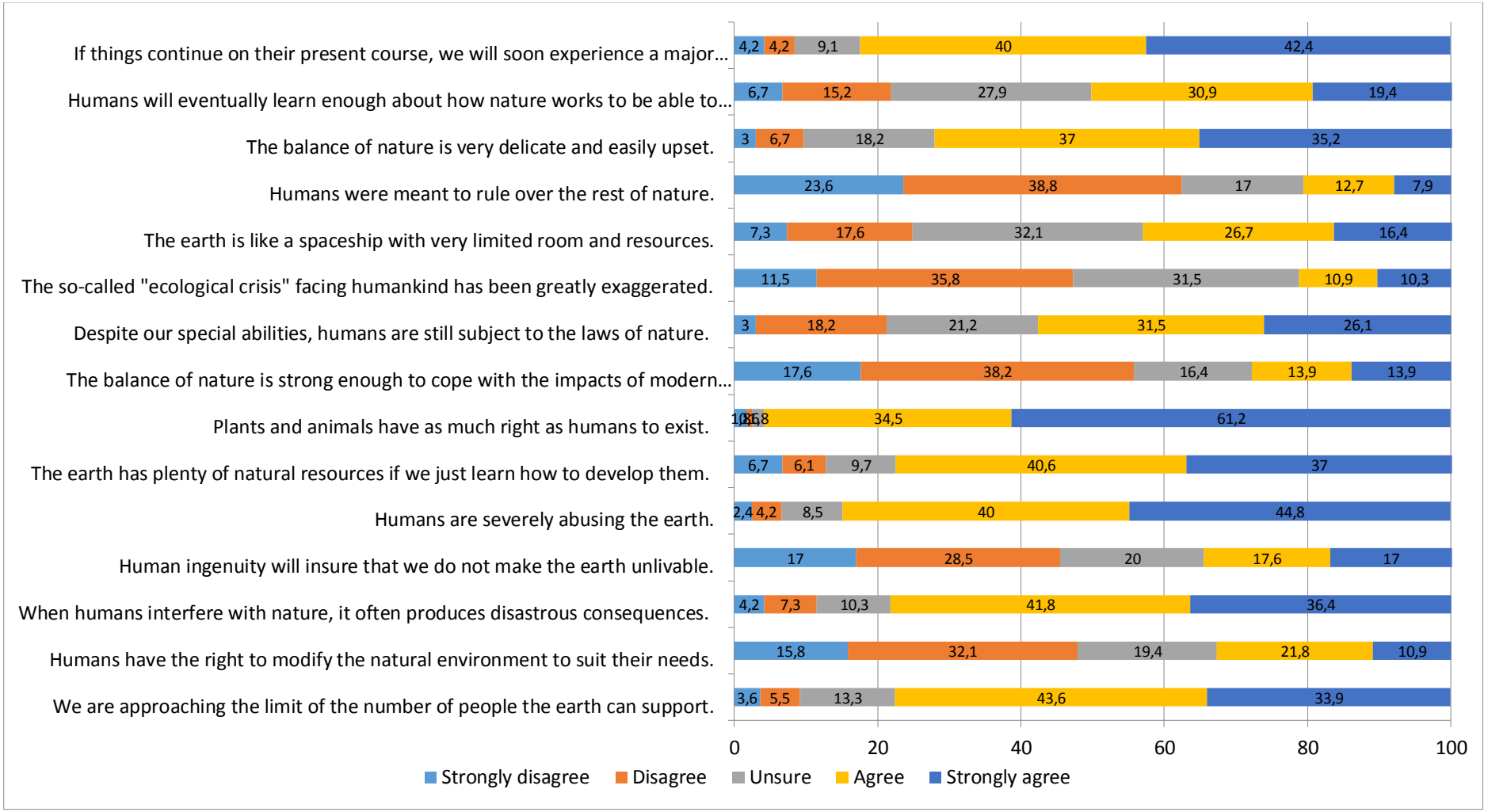

Figure 50: Findings about 'Environmental Attitudes'

And %32,7 of the respondents replied 'usually', %29,1 'sometimes', %15,8 'always', %15,2 'rarely' and %7,3 replied 'never' to the statement *'I use energy efficient white goods at home'.*

Table 60: Respondents' responses to the statement 'I use energy efficient white goods at home' (%)

	Frequency	Percent (%)
NEVER	12	7,3
RARELY	25	15,2
SOMETIMES	48	29,1
USUALLY	54	32,7
ALWAYS	26	15,8
Total	165	100

%29,1 replied 'usually', %26,1 'always', %21,2 'sometimes', %23,6 'never' or 'rarely' to the third item *'I wear more clothes instead of heating more'*.

Table 61: Respondents' responses to the statement 'I wear more clothes instead of heating more' (%)

	Frequency	Percent (%)
NEVER	15	9,1
RARELY	24	14,5
SOMETIMES	35	21,2
USUALLY	48	29,1
ALWAYS	43	26,1
Total	165	100

And when *'I switch lights off in unused rooms'* was asked, %70,9 replied 'always', %24,8 'usually' and %4,2 replied 'sometimes', 'rarely' or 'always'.

Table 62: Respondents' responses to the statement 'I switch lights off in unused rooms' (%)

	Frequency	Percent (%)
NEVER	2	1,2
RARELY	3	1,8
SOMETIMES	2	1,2
USUALLY	41	24,8
ALWAYS	117	70,9
Total	165	100

%58,8 of the participants replied 'always', %23 'usually', %11,5 'sometimes' and %6,6 'rarely' or 'never' to the statement *'I wait until there is a full load for washing'*. This statement was the last item of the first environmental behaviour category.

Table 63: Respondents' responses to the statement 'I wait until there is a full load for washing' (%)

	Frequency	Percent (%)
NEVER	5	3
RARELY	6	3,6
SOMETIMES	19	11,5
USUALLY	38	23
ALWAYS	97	58,8
Total	165	100

When *'I turn tap off when washing the dishes'* as the first statement of the second environmental behaviour category was asked, %53,9 replied 'always', %28,5 'usually', %9,1 'sometimes', and %8,5 replied 'rarely' or 'never'.

Table 64: Respondents' responses to the statement 'I turn tap off when washing the dishes' (%)

	Frequency	Percent (%)
NEVER	5	3
RARELY	9	5,5
SOMETIMES	15	9,1
USUALLY	47	28,5
ALWAYS	89	53,9
Total	165	100

And when *'I reduce toilet flushes'* was asked, %40,6 replied always, %28,5 'usually', %15,2 'never', %10,3 'sometimes' and %5,5 replied 'rarely'.

Table 65: Respondents' responses to the statement 'I reduce toilet flushes' (%)

	Frequency	Percent (%)
NEVER	25	15,2
RARELY	9	5,5
SOMETIMES	17	10,3
USUALLY	47	28,5
ALWAYS	67	40,6
Total	165	100

%61,2 of the respondents replied 'always', %27,9 'usually', %5,5 replied 'never' and %5,4 'sometimes' or 'rarely' to the item *'I prefer to have shower rather than bath'*.

Table 66: Respondents' responses to the statement 'I prefer to have shower rather than bath' (%)

	Frequency	Percent (%)
NEVER	9	5,5
RARELY	2	1,2
SOMETIMES	7	4,2
USUALLY	46	27,9
ALWAYS	101	61,2
Total	165	100

And when *'I turn tap off while cleaning teeth'* was asked, %53,9 replied 'always', %28,5 'usually', %9,1 replied 'sometimes' and %8,4 'never' or 'rarely'.

Table 67: Respondents' responses to the statement 'I turn tap off while cleaning teeth' (%)

	Frequency	Percent (%)
NEVER	8	4,8
RARELY	6	3,6
SOMETIMES	15	9,1
USUALLY	47	28,5
ALWAYS	89	53,9
Total	165	100

%27,3 of the respondents replied 'always' and 'another' %27,3 'usually', %19,4 replied 'never', %16,4 'sometimes' and %1,7 'rarely' to *'I reduce the number of baths/showers'*, which was the last statement of the second environmental behaviour category.

Table 68: Respondents' responses to the statement 'I reduce the number of baths/showers' (%)

	Frequency	Percent (%)
NEVER	32	19,4
RARELY	16	9,7
SOMETIMES	27	16,4
USUALLY	45	27,3
ALWAYS	45	27,3
Total	165	100

When *'I prefer buying locally produced food'* was asked, %33,3 replied 'always', %28,5 'sometimes', %24,8 'usually' and %13,3 replied 'rarely' or 'never'.

Table 69: Respondents' responses to the statement 'I prefer buying locally produced food' (%)

	Frequency	Percent (%)
NEVER	8	4,8
RARELY	14	8,5
SOMETIMES	47	28,5
USUALLY	41	24,8
ALWAYS	55	33,3
Total	165	100

And when *'I prefer to give my unused clothes'* was asked, %44,8 replied 'always', %31,5 replied 'usually', %10,9 'sometimes', %10,3 'rarely' and %2,4 'never'.

Table 70: Respondents' responses to the statement 'I prefer to give my unused clothes' (%)

	Frequency	Percent (%)
NEVER	4	2,4
RARELY	17	10,3
SOMETIMES	18	10,9
USUALLY	52	31,5
ALWAYS	74	44,8
Total	165	100

%48,5 replied 'never', %32,7 'rarely', %12,7 'sometimes', %6 'usually' or 'always' when the item *'I use my own bag while shopping'* was asked.

Table 71: Respondents' responses to the statement 'I use my own bag while shopping' (%)

NEVER	80	48,5
RARELY	54	32,7
SOMETIMES	21	12,7
USUALLY	6	3,6
ALWAYS	4	2,4
Total	165	100

And %28,5 replied 'sometimes', %22,4 'never', %23 'rarely', %18,8 'usually' and %7,3 'always' to the statement *'I choose to buy less packaged products'*.

Table 72: Respondents' responses to the statement 'I choose to buy less packaged products' (%)

	Frequency	Percent (%)
NEVER	37	22,4
RARELY	38	23
SOMETIMES	47	28,5
USUALLY	31	18,8
ALWAYS	12	7,3
Total	165	100

Finally, when *'I prefer to buy recycled paper and toilet paper'* was asked, %24,8 replied 'rarely', %23 'never', %20 sometimes, %18,8 'usually' and %13,3 replied 'always'.

Table 73: Respondents' responses to the statement 'I prefer to buy recycled paper and toilet paper' (%)

	Frequency	Percent (%)
NEVER	38	23
RARELY	41	24,8
SOMETIMES	33	20
USUALLY	31	18,8
ALWAYS	22	13,3
Total	165	100

The findings of environmental behaviours that were measured within three categories are displayed in Figure 51.

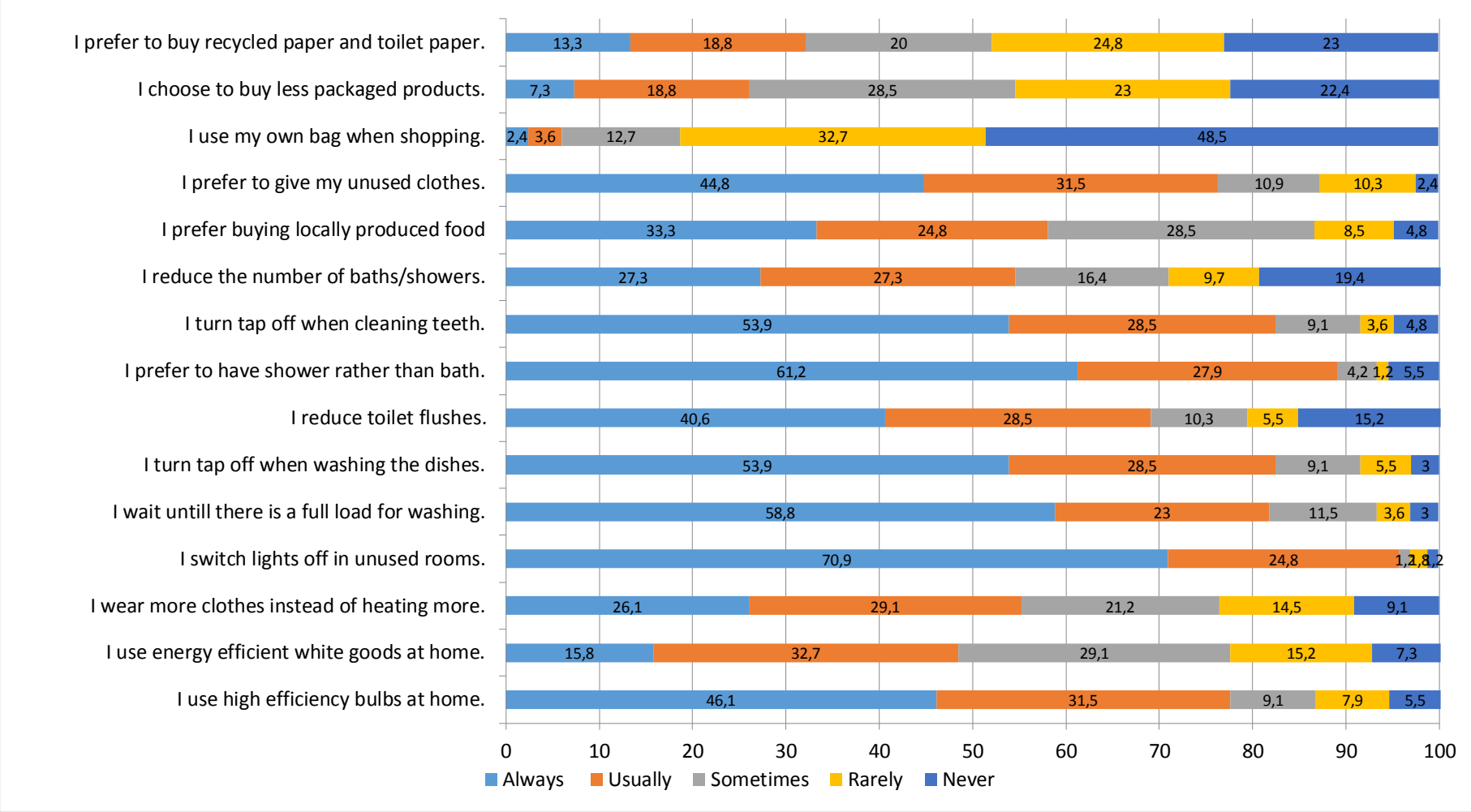

Figure 51: Findings about 'Environmental Behaviours'

4.5.5 Evaluation of the Findings

Within this sub-section, several suggestions and clues are obtained as a result of elaborating all of the findings together (including the most recognizable ones), for each section of the questionnaire.

Environmental Awareness about General Issues

When the findings of the questionnaire's first section's first part, which was about 'environmental concern and awareness about general issues', are elaborated, a summary of evaluation can be made that, 'Famagusta residents' existing awareness and concern about environmental problems and environmental issues such as global warming and climate change, cannot achieve an adequate level in order to be one of the dynamics shaping their lifestyles'.

Such that, despite %77 claimed 'extremely dangerous' about 'the rise in the world's temperature caused by the global warming and climate change', they replied 'health care', 'the economy' and 'education' as the most important three issues for the world today, rather than 'the environment'. Moreover, 'the environment' is the least important issue according to the respondents. And they replied 'water shortage 'as the most important issue for North Cyprus, which is a problem that cannot be the direct target of any possible environmentally responsive policies. In other words, at this point a clue can be derived that, the respondents do not have the priority of concerning the environmental issues that can be the agenda of any (governmental or non-governmental) environmentally responsive attempt. However among the options, there were 'using up our natural resources', 'waste management' that could be the direct targets for pointing out.

Additionally, only less than half of the respondents (%44,3) 'disagreed' or 'strongly disagreed' with the statement '*There are more important things to do in life than protect the environment'*. And merely %24,3 in total, 'agreed' or 'strongly agreed' with the statement '*Most of the people around me have environmentally responsive behaviors in their daily lives'*. And just the half of the respondents (%50) 'agreed' or 'strongly agreed' with the statement, *'From time to time, I discuss on what I can do for the environment in my daily life with my friends and relatives'*. And there was not a high commitment about the statement *'Environmental problems have a direct effect on my everyday life'* either; %57,6 replied 'agree' or 'strongly agree' to that statement.

Environmental Awareness about Famagusta

When the findings of the questionnaire's first section's second part, which was about 'environmental concern and awareness about Famagusta' are evaluated, it can be suggested that participants tend to disagree with all of the statements suggesting that Famagusta is quite sufficient in terms of 'regular sidewalks and pedestrian areas', 'bicycle use facilities', 'urban open spaces', 'urban street trees', 'public transport facilities', 'the quantity and the distribution of urban green spaces' and 'waste (solid and liquid) management'. Although the disagreement is more than the agreement about the sufficiency of all these issues in Famagusta, the least disagreement is about 'waste (solid and liquid) management'.

Such that %41,2 replied 'disagree' or 'strongly disagree' to the statement *'I think that Famagusta municipality is quite sufficient in terms of waste (solid and liquid) management'*. However, the other disagreements about the sufficiency of the related physical characteristics are mostly above %65. On the other hand, one of the highest

disagreement among the respondents is about the sufficiency of 'bicycle use facilities'; %82,4 replied 'disagree' or 'strongly disagree'.

Additionally they highly agreed with several statements suggesting that they would be walking (%76,6), go shopping (%82,2), walk as a sport activity (%81,2), use the park, playground or the sport field (%78,8) or use public transport services (%71,4) if they had the chance of having the appropriate physical environment in their neighborhood.

Environmental Attitudes

First of all it should be reminded that in this research, NEP scale (Dunlop et al., 2000) that was revised as 15 items, is used for measuring the environmental attitudes among the participants. This scale involves eight odd numbered ecocentric statements and seven even numbered anthropocentric statements. These items were developed to tap into five hypothesized facets of an ecological worldview.

As displayed in Table 3, three items were designed to tap each of the five hypothesized facets of an ecological worldview: the reality of limits to growth (1,6,11), antianthropocentrism (2,7,12), the fragility of nature's balance (3,8,13), rejection of exemptionalism (4,9,14) and the possibility of an ecological crisis (5, 10, 15). According to the NEP scale it is expected to have agreement with the ecocentric items and disagreement with anthropocentric items for achieving an ecological worldview.

NEP Scale, was analysed in order to test reliability and the alpha-reliability result of the fifteen-item scale. The results revealed that the scale had Cronbach's alpha value of .77 which showed that the scale had good reliability.

In total, the mean score of the participants is calculated as 3,52. As it is accepted that a NEP mean score of 3 is the boundary between an anthropocentric and ecocentric worldview (Rideout et al. 2005; Van Petegem and Blieck 2006), the result showed that the respondents had a medium level of ecological worldview. In other words, the findings suggest that environmental attitudes among the sample are slightly close to be characterized by the NEP, rather than the DSP.

Ecocentric Attitudes

When the findings of ecocentric items are evaluated, it can be argued that the participants' agreement ('strongly agree' or 'agree') is more than disagreement ('strongly disagree' or 'disagree') about all of the ecocentric statements. Moreover they replied 'strongly agree' or 'agree' to almost all of the eight statements with high percentages.

The percentage of the ecocentric item *'11. The earth is like a spaceship with very limited room and resources',* that has the least agreement (strongly agree or agree) is %43,1. Another relatively low level of agreement is for the item *'9. Despite our special abilities, humans are still subject to the laws of nature';* %57,6 replied 'strongly agree' or 'agree'. And the percentages of the agreement (strongly agree or agree) about the rest of the six ecocentric items are more than at least %70. The highest agreement (strongly agree or agree) among the participants is for the item '*7. Plants and animals have as much right as humans to exist'*. %34,5 agree and %61,2 strongly agree with this ecocentric item.

Anthropocentric Attitudes

When the findings of anthropocentric items are evaluated, it can be summarized that the participants' agreement is slightly below the average but again the agreement ('strongly agree' or 'agree') is more than the disagreement ('strongly disagree' or 'disagree') about most of these anthropocentric statements.

Such that their disagreement is more than agreement for merely two anthropocentric statements. %77,6 replied 'disagree' or 'strongly disagree' to the item *'6. The earth has plenty of natural resources if we just learn how to develop them'* and % 50,3 replied 'disagree' or 'strongly disagree' to another item *'14. Humans will eventually learn enough about how nature works to be able to control it'.* For the rest of the five anthropocentric items, the participants replied 'agree' or 'strongly agree' with percentages of at least % 45.

The Relation between Socio-demographic Data and Environmental Attitudes

Before evaluating the findings of environmental behaviours, it is further investigated whether there are significant relationships between the environmental attitudes of the respondents and their demographic profile such as their gender, age, education and household income. In order to decide which type of analysis would be used, test of homogeneity of variances was checked for each demographic item and then according to the obtained results suitable analyses are conducted. In this respect, the correlation between age, gender, education and household income as socio-demographic characteristics and environmental worldview is examined.

The study results indicate that there is no statistically significant influence of gender, age and education level on environmental attitudes. Merely the household income has been found to achieve a statistically significant effect on the NEP score. According to the results, this calculated effect of household income does not produce any directly positive or negative relation with the NEP score. Household income has a statistically significant nonlinear effect.

Environmental Behaviour

When the findings of questionnaire's third section which involves 15 items about environmental behaviour in and around home are evaluated, it can be argued that the highest percentages replied 'always' or 'usually' for each of the first 10 items which are about energy saving and water conservation.

Such that among these items, the highest percentages replied 'usually' only for two items: For the statement '*I use energy efficient white goods at home',* %32,7 of the repondents suggested 'usually' and secondly %29,1 suggested 'sometimes'. And for the statement *'I wear more clothes instead of heating more',* %29,1 replied 'usually' and %26,1 replied 'always'. For another item **'***I reduce the number of baths/showers'* %27,3 replied 'always' and another %27,3 replied 'usually'. For the rest of the seven items of these first two behavioural categories, the highest percentages replied 'always'.

However when the responses of the last five items which are about green consumption are evaluated, the results differ. It can be suggested that the highest percentage replied 'always' for merely two items: %44,8 suggested 'always' and %31,5 'usually' for the

statement *'I prefer to give my unused clothes'*. And %33,3 replied 'always' and % 24,8 'usually' to the item '*I prefer buying locally produced food'*. For the rest three items the highest percentages suggested 'rarely' or 'never'. Such that for the item '*I use my own bag while shopping'***,** %48,5 replied 'never' and %32,7 'rarely'. For the item *'I prefer to buy recycled paper and toilet paper'*, %24,8 replied 'rarely' and %23 'never'. And %28,5 replied 'sometimes' and %23 'rarely' to the item *'I choose to buy less packaged products'*.

As green consumption items (a behavioral category that needs a high level of environmental awareness) has the least agreement, it can be easily evaluated that the respondents do not achieve an adequate level of environmental awareness. However according to the findings of the NEP scale, they have a medium level of environmental worldview. In other words, they somehow have a potential for the requirements of being ecologically based citizens but they do not achieve a commitment reflecting as a lifestyle with their daily environmental activities and practices.

Chapter 5

DISCUSSIONS AND CONCLUSION

'Ecological citizenship' is one of the emerging issues of sustainable urbanism; and sustainable urbanism can be claimed to be a comprehensive product of modern environmentalism. At the first glance, it would be argued that modern environmentalism dating back to until 1850's is an experience of industrialized western nations. Such that as an outcome of the environmental debate ongoing in 1950's, sustainability as a key concept emerged mostly starting from the western countries in Europe and the USA. However nowadays within the fastly globalizing world, many evidences can be found that both developed and developing countries have similar concerns that sustainable urbanism deals and points out. In this respect, environmental behaviours shaping everyday activities and practices, as the nucleus of environmentally responsive living, have been the focus of scientific investigation worldwide.

A scientific quest for environmentally based living is also eligible for Famagusta city. Hence, besides seeking the most convenient solutions for the physical shortcomings of the Famagusta city with plans, legislations and so forth, accomplishing ecologically based, sustainable residents seems as a potentially crucial and significant requisite.

Within this framework in this study, the emergence of ecological citizenship and research objectives have been highlighted in Chapter 1. In Chapter 2, the evaluation of

the emergence of modern environmentalism has been made and then, the dimensions of Ecological City has been discussed.

Ecological City is one of the definitions emerged in relation to the sustainable urbanism attempts and in this study the main principles characterizing an Ecological City are proposed to be categorized within five dimensions including 'ecological citizenship' as a new dimension after 'sustainable urban form', 'sustainable transportation', 'urban ecology and biodiversity', and 'energy use and waste management'.

In the same chapter, several international cases as leading samples of the concept of 'Ecological City' are also elaborated. Freiburg and Copenhagen in Europe, Bogota in Latin America and Portland in USA were chosen as ecological cities to be reviewed. When these cases are investigated, it can easily be recognized that the role of ecological citizens is both the reason and result of the sustainability efforts of these cities. Therefore, it can further be suggested that encouraging and enhancing ecological citizenship in all countries is essential and viable for the path towards establishing sustainable, ecologically responsive cities.

On that ground in Chapter 3, 'the concept of ecological citizenship' as the new dimension of Ecological City has been evaluated. As a developing concept the content, meaning and definition may differ within the language of greening the citizenship. According to the literature review involved in this study, 'ecological citizenship' as a term has been discussed within several dimensions. Firstly the term's political circumstance is sought to examine. In this regard, republican and liberal theories have

been elaborated. The role of rights and duties have been criticised. Additionally, the relation of the ecological citizenship with the sphere –public or private- has been discussed.

At the end, with the help of the information derived within this study, ecological citizenship can be proposed to be more republican than liberal, can be proposed to have a focus on duties more than rights and can be proposed to be experienced first of all in private spheres before the public sphere as a non-territorial, non-reciprocal, non-contractual account.

In other words, there are activities and actions in and around home as the duties of an ecological citizen. And these activities and actions define the ecological practices of a contemporary citizen making him/her an ecological one in an urban environment.

And although it differs according to the focus of the various researchers (Bell, 2004; Barry, 2006; Hayward, 2006; Dobson, 2007; Seyfang, 2007), it can be argued that within this study, these activities constructing the ecological citizenship are grouped in six behavioural categories: 'energy saving', 'water conservation', 'waste management', 'sustainable transportation', 'green consumption', 'public participation'.

Within this context, further questions emerged about the investigation of ecological citizenship. Based on the knowledge that environmental behaviour is the nucleus of ecological citizenship, there are ongoing studies more than 30 years to investigate the environmental behaviour. When the related literature review is evaluated, it can be

suggested that firstly the psychological variables have been emphasized (Ajzen, 1991; Boldero, 1995; Carrus, Passafora and Bonnes, 2008; Chan, 1998; Fishbein and Ajzen, 1975; Lam, 1999; Perugini and Bagozzi, 2001, 2004; Taylor and Todd, 1997).

Later, starting from the 1980's values have also been recognized to influence the environmental behaviour (Bar, Gilg and Ford, 2001; Dunlop et al., 2000; Schulz and Zelezny, 1999; Schwartz, 1994; Stern and Dietz, 1994; Stern, 2000; Stern et al., 1995; Thompson and Barton, 1994).

In sum, environmental behaviour constructing the 'ecological citizenship' seems to be a paradigm with multi-determinants (social, cultural, psychological, and physical). And it has been and is still investigated according to researchers' different scientific perspectives.

At the end, environmental behaviour is conceptualized based on the related literature review. This proposed conceptual framework is assumed to be the combination of Ajzen's (1991) Theory of Planned Behaviour (TPB) and Stern and Dietz's (1994) Value Belief-Norm Theory (VBN). According to this proposed model, there are general values based on Schwartz's Social Value Instrument (1994) that influence the environmental attitudes. And these environmental attitudes (based on Thompson and Barton, 1994) influence the environmental awareness. As a result of the problem awareness, the individual intends to perform environmental behaviour. There are two more factors influencing the behavioural intension: situational variables and psychological variables.

As Barr, Gilg and Ford (2001) also stated, situational variables can be defined to be individual's personal circumstances at a given time, represented by access to or knowledge and experience of environmental behaviour. The physical context surrounding the individual and the availability of environmental technology etc. are all situational variables. And psychological variables are perceptions and personal traits of the individual such as subjective norms.

Within this framework in Chapter 4, a survey study is constituted. As this research aims to examine, define and evaluate the constructs, determinants and dimensions of environmental attitude and behaviour among Famagusta city inhabitants, the user survey prepared seeks to obtain information about the level of environmental awareness, the existing environmental (ecocentric and anthropocentric) attitudes and also about environmental behaviours in three categories.

In this regard, within the Chapter 4, before the findings of the user survey, Famagusta is evaluated in terms of the 'Ecological City' dimensions: 'sustainable urban form', 'sustainable transportation', 'urban ecology and biodiversity', 'energy use and waste management', 'ecological citizenship'. According to this evaluation, it can be argued that the city has severe problems in terms of achieving ecologically responsive, sustainable urban environments. This argument is prevailing for the first four dimensions.

And when ecological citizenship as the fifth dimension is evaluated before the findings of the user survey, it is clear that Famagusta dwellers as members of Turkish Cypriot community which is not a post-industrialized one as western nations, once had many

advantages of achieving environmentally responsive lifestyles. Such that traditional Cypriot cuisine and vernacular Cypriot architecture and settlements are all significant indicators that Cypriots once had environmental values shaping their traditions and culture as a lifestyle.

At this point, Famagusta Area Study (FAS) is additionally evaluated in Chapter 4 in order to obtain a more comprehensive framework for the user survey model. FAS (directed by Prof Derya Oktay) as comprehensive study which aimed to measure the quality of urban life in Famagusta, involved several characteristics which were the same of the ones defining an ecologically based city. The related characteristics measured were 'public transportation', 'environment around living place' and 'parks/green spaces and playgrounds'. And FAS had several findings indicating that Famagusta city inhabitants were dissatisfied about all of these issues (such as 'public transportation', 'environment around living place' and 'parks/green spaces and playgrounds within the city') which were also several significant characteristics of an ecologically based city. Oktay (2010) argues that these findings point out the necessity of policies targeting to enhance the environmental awareness of the Famagusta city inhabitants. Oktay (2010) further suggests that a strategy of 'lifelong education' for enhancing environmental awareness of the citizens will be eligible to be operated.

Within this framework including the analysis about Famagusta city and findings of Famagusta Area Study, a research model has been developed and a user survey is designed. Then the findings are presented and evaluated in the same chapter.

Obviously, the findings of the user survey prepared within this research, made the discussion about ecological citizenship among Famagusta residents more clear. According to the findings, today environmental issues and problems do not seem to be one of the main dynamics shaping the Famagusta residents' lifestyles. However, they still have a medium level of environmental concern: The mean score is 3,52.

Such that, in this study the level of environmental concern was calculated according to the NEP scale (Dunlop et al., 2000). This scale was constructed to elucidate the contrasts between the anthropocentric Dominant Social Paradigm (DSP). DSP were prevalent in North America prior to the emergence of the contemporary environmental movement as a new environmental paradigm (Ogunbode, 2013). In other words, Dominant Social Paradigm (DSP) is the contrasting paradigm to the NEP that emphasizes traditional American values of individualism and self-interest rejecting proenvironmental actions (Amburgey & Thoman, 2011).

NEP scale involved eight odd numbered ecocentric statements and seven even numbered anthropocentric statements. According to the scale, it is expected to have agreement with the ecocentric items and disagreement with anthropocentric items for achieving an ecological worldview. The responses of seven even numbered anthropocentric items were reverse coded. Therefore it is accepted that a NEP mean score of 3 is the boundary between an anthropocentric and ecocentric worldview (Rideout et al, 2005; Van Petegem and Blieck, 2006). Therefore as the mean score of the participants was calculated as 3,52, the findings suggest that environmental attitudes of the sample are slightly close to be characterized by NEP.

Additionally the study results indicate that there is no statistically significant influence of gender, age and education level on environmental attitudes. Merely the household income has been found to achieve a statistically significant effect on the NEP score.

In brief, it can be argued that they somehow intend to live as environmentally responsive citizens without having an adequate level of environmental worldview. Because unlike the post-industrialized nations, their ecological basis is not totally destroyed with the help of the environmental values which is hidden in their unique traditions and socio-cultural dynamics. However post-industrialized nations which mostly belong to western culture cut the organic relation with the natural environment.

Further, on the basis of the findings of the survey, it can be suggested that the effect of these unique traditions and socio-cultural heritage is not as much as it could be. It seems that as a result of the negative impacts of physical, socio-cultural, traditional shortcomings experienced drastically in the last 40 years, environmentally responsive living loosened or at least this cultural background could not be transformed into any recognizable level of environmental commitment.

Therefore the role of values on enviromental behaviours in the context of Famagusta city may be the subject of further research. Additionally it can be added that further research can be made for the question 'How the environmental awareness can be increased among Famagusta residents?' Despite the fact that it is not one of the main concerns of this research, there are several significant data obtained within the findings of the user survey that the existence of sustainable urban environments is one of the solutions to increase environmentally based living. Such that, the user survey findings

indicate that environmentally based living will increase if the sustainable urban environments increase. Because according to the results, they highly agree with several statements suggesting that they would be walking (%76,6), go shopping (%82,2), walk as a sport activity (%81,2), use the park, playground or the sport field (%78,8) or use public transport services (%71,4) if they had the chance of having the appropriate physical environment in their neighbourhood.

Finally, each of the components conceptualized within the conceptual framework of the survey study, should be taken into consideration and may be tested scientifically. In other words, the components' effect on either environmental attitudes or environmental behaviours may be the subject of further research. It is also eligible to further underline that from one country to another or from one nation to another, the strengths, weaknesses, opportunities and threads may differ in each case.

As concluding remarks, there will be necessity of discussing the dwellers' traditional citizenship profile. Because as it is highlighted within the literature review, the perception of duties and rights by dwellers as citizens, definition of traditional citizenship by the state and the role of environmental laws and legislations within the state may either help or complicate the ecological type of citizenship.

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APPENDIX

Appendix A: A sample of User Survey

A. ENVIRONMENTAL AWARENESS
A.1. Environmental Awarenss about General Issues

A.1.1 Which three of these issues are the most important for the world today?
PLEASE TICK THREE ITEMS ONLY

Health care ☐
Education ☐
Crime ☐
The environment ☐
The economy ☐
Terrorism ☐
Poverty ☐
Unsure ☐
None of these ☐

A.1.2 Here is a list of some different environmental problems. Which three problems, do you think are the most important for North Cyprus?
PLEASE TICK THREE ITEMS ONLY

Chemicals and pesticides ☐
Water shortage ☐
Air, water and/or soil pollution ☐
Lack of physical plans and legislations ☐
Waste management ☐
Climate change ☐
Genetically modified foods ☐
Using up our natural resources ☐
Lack of environmental education ☐
Unsure ☐
Can't choose ☐

A.1.3 How much informed do you feel yourself about the causes of these sorts of environmental problems above?
Please tick one box below to indicate what you think, where 1 indicates you feel you know nothing at all and 5 indicates you feel you know a great deal.

5=VERY INFORMED, 4=INFORMED, 3= UNSURE, 2= UNINFORMED, OR 1= VERY UNINFORMED
PLEASE TICK ONE BOX ONLY
a.1 b.2 c.3 d.4 e.5

A.1.4 And how much informed do you feel yourself about solutions to these sorts of environmental problems?
Please tick one box below to indicate what you think, where 1 indicates you feel you know nothing at all and 5 indicates you feel you know a great deal.

5=VERY INFORMED, 4=INFORMED, 3= UNSURE, 2= UNINFORMED, OR 1= VERY UNINFORMED
PLEASE TICK ONE BOX ONLY
a.1 b.2 c.3 d.4 e.5

A.1.5 How willing would you be to pay much higher prices in order to protect the environment?
Please tick one box below to indicate what you think, where 1 indicates you would be very unwilling and 5 indicates you would be very willing.

5= VERY WILLING, 4= WILLING, 3= UNSURE, 2= UNWILLING, OR 1= VERY UNWILLING
PLEASE TICK ONE BOX ONLY
a.1 b.2 c.3 d.4 e.5

A.1.6 How much do you agree or disagree with each of these statements?
Please tick one box for each statement below to indicate what you think, where 1 indicates you disagree strongly and 5 indicates you agree strongly.

5= STRONGLY AGREE, 4= AGREE, 3= UNSURE, 2= DISAGREE, OR 1= STRONGLY DISAGREE
PLEASE TICK ONE BOX FOR EACH STATEMENT

A.1.6 a. It is just too difficult for someone like me to do much about the environment
a.1 b.2 c.3 d.4 e.5

A.1.6 b. I do what is right for the environment, even when it costs more money or more time
a.1 b.2 c.3 d.4 e.5

A.1.6 c. There are more important things to do in life than protect the environment
a.1 b.2 c.3 d.4 e.5

A.1.6 d. There is no point in doing what I can for the environment unless others do the same
a.1 b.2 c.3 d.4 e.5

A.1.6 e. I find it hard to know whether the way I live is helpful or harmful to the environment
a.1 b.2 c.3 d.4 e.5

A.1.6 f. Environmental problems have a direct effect on my everyday life
a.1 b.2 c.3 d.4 e.5

A.1.6 g. From time to time, I discuss on what I can do for the environment in my daily life with my friends and relatives
a.1 b.2 c.3 d.4 e.5

A.1.6 h. Most of the people around me have environmentally responsive behaviors in their daily lives.
a.1 b.2 c.3 d.4 e.5

A.1.7 In general, do you think that for the environment, the rise in the world's temperature caused by global warming and climate change is …
PLEASE TICK ONE BOX ONLY

… extremely dangerous, □
somewhat dangerous, □
unsure, □
not very dangerous, □
or, not dangerous at all □

A.1.8 Are you a member of any group whose main aim is to preserve or protect the environment?
PLEASE TICK ONE BOX ONLY

Yes □
No□

A.2. Environmental Awareness about Famagusta

A.2.1 There are statements about Famagusta below. Please indicate to what extent you agree or disagree with these statements. Tick one box for each statement below to indicate what you think, where 1 indicates you disagree strongly and 5 indicates you agree strongly.

5= STRONGLY AGREE, 4= AGREE, 3= UNSURE, 2= DISAGREE, OR 1= STRONGLY DISAGREE
PLEASE TICK ONE BOX FOR EACH STATEMENT

A.2.1 a. I think that Famagusta city is quite sufficient in terms of regular sidewalks and pedestrian areas.
a.1 b.2 c.3 d.4 e.5
Please continue if the answer is a or b, pass to the question A.2.1 e'ye if not.

A.2.1 b. I would be walking to work/school if I had regular sidewalks, green streets and attractive pedestrian areas in my neighborhood.
a.1 b.2 c.3 d.4 e.5

A.2.1 c. I would go shopping by walking if I had regular sidewalks, green streets and attractive pedestrian areas in my neighborhood.
a.1 b.2 c.3 d.4 e.5

A.2.1 d. I would walk as a sport activity if I had regular sidewalks, green streets and attractive pedestrian areas in my neighborhood.
a.1 b.2 c.3 d.4 e.5

A.2.1 e. There are safe and comfortable urban open spaces where the children can play in my neighborhood.

a.1 b.2 c.3 d.4 e.5

A.2.1 f. I think that urban environments in Famagusta is quite sufficient in terms of bicycle use facilities.
a.1 b.2 c.3 d.4 e.5

A.2.1 g. I think that Famagusta city is quite sufficient in terms of public transport facilities.
a.1 b.2 c.3 d.4 e.5

A.2.1 h. Do you have any public transport service in your neighborhood?

Yes □
No □

If the answer is 'Yes', please pass to the question A.2.1j. If the answer is 'No', please continue.

A.2.1 i. I would definitely use public transport services if I had the chance in my neighborhoord.
a.1 b.2 c.3 d.4 e.5

A.2.1 j. I think that the quantity and the distribution of urban green spaces is quite sufficient within the Famagusta.
a.1 b.2 c.3 d.4 e.5

A.2.1 k. I think that urban street trees are quite sufficient within the Famagusta city.
a.1 b.2 c.3 d.4 e.5

A.2.1 l. Do you have any park, playground, sport field etc. in your neighborhood?

Yes □
'No □

If the answer is 'Yes', please pass to the question A.2.1n. If the answer is 'No', please continue.

A.2.1 m. I would definitely use if there was a park, playground, sport field etc in my neighborhood.
a.1 b.2 c.3 d.4 e.5

A.2.1 n. I think that Famagusta municipality is quite sufficient in terms of waste (solid and liquid) management.
a.1 b.2 c.3 d.4 e.5

A.2.1 o. I would be separately littering the solid waste (plastic, paper, glass, metal etc.) if I had the chance to recycle in my own household.
a.1 b.2 c.3 d.4 e.5

A.2.2 Can you answer whether you experienced the following actions within the last week?

Yes No

A.2.2 a. Did you visit a friend by walking?	□	□
A.2.2 b. Did you go shopping by walking?	□	□
A.2.2 c. Did you go to work by walking?	□	□
A.2.2 d. Did you walk as a sport activity?	□	□
A.2.2 e. Did you use public transport service?	□	□
A.2.2 f. Did you use bicycle for going somewhere?	□	□

A.2.3 Please indicate to what extent you agree or disagree with these statements. Tick one box for each statement below to indicate what you think, where 1 indicates you disagree strongly and 5 indicates you agree strongly.

5= STRONGLY AGREE, 4= AGREE, 3= UNSURE, 2= DISAGREE, OR 1= STRONGLY DISAGREE
PLEASE TICK ONE BOX FOR EACH STATEMENT

A.2.3 a. Famagusta residents can develop environmental attitudes and behaviours if effective environmental awareness policies are created and implemented.
a.1 b.2 c.3 d.4 e.5

A.2.3 b. Famagusta residents can change their attitudes and behaviours about using the urban environments if several physical improvements are made.
a.1 b.2 c.3 d.4 e.5

B. ENVIRONMENTAL ATTITUDES

Listed below are statements about the relationship between humans and the environment. Please indicate the degree to which you agree with each item. Choose the number of your response for each statement using the following scale. The scale is from 1 to 5.

5= STRONGLY AGREE, 4= AGREE, 3= UNSURE, 2= DISAGREE, OR 1= STRONGLY DISAGREE
PLEASE TICK ONE BOX ONLY

1. We are approaching the limit of the number of people the earth can support.
   ○ 1 ○ 2 ○ 3 ○ 4 ○ 5

2. Humans have the right to modify the natural environment to suit their needs.
   ○ 1 ○ 2 ○ 3 ○ 4 ○ 5

3. When humans interfere with nature, it often produces disastrous consequences.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

4. Human ingenuity will insure that we do not make the earth unlivable.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

5. Humans are severely abusing the earth.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

6. The earth has plenty of natural resources if we just learn how to develop them.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

7. Plants and animals have as much right as humans to exist.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

9. Despite our special abilities, humans are still subject to the laws of nature.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

11. The earth is like a spaceship with very limited room and resources.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

12. Humans were meant to rule over the rest of nature.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

13. The balance of nature is very delicate and easily upset.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

14. Humans will eventually learn enough about how nature works to be able to control it.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

15. If things continue on their present course, we will soon experience a major environmental catastrophe.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

C. ENVIRONMENTAL BEHAVIOURS

Listed below are statements about environmental behaviours in and around home within three cathegories. Please indicate the degree to which you agree with each item. Choose the number of your response for each statement using the following scale. The scale is from 1 to 5.
5= ALWAYS, 4= USUALLY, 3= SOMETIMES, 2= RARELY, OR 1= NEVER
PLEASE TICK ONE BOX ONLY

1. I use high efficiency bulbs at home.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

2. I use energy efficient white goods at home.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

3. I wear more clothes instead of heating more.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

4. I switch lights off in unused rooms.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

5. I wait until there is a full load for washing.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

6. I turn tap off when washing the dishes.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

7. I reduce toilet flushes.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

8. I prefer to have shower rather than bath.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

9. I turn tap off while cleaning teeth.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

10. I reduce the number of baths/showers.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

11. I prefer buying locally produced food

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

12. I prefer to give my unused clothes.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

13. I use my own bag while shopping.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

14. I choose to buy less packaged products.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

15. I prefer to buy recycled paper and toilet paper.

○ 1 ○ 2 ○ 3 ○ 4 ○ 5

D. SOCIO-DEMOGRAPHIC DATA

1. Gender
- ❑ Female
- ❑ Male

2. Age
- ❑ 16-25
- ❑ 26-40
- ❑ 41-55
- ❑ 56-65
- ❑ 66-75

3. Education
- ❑ None
- ❑ Primary school degree
- ❑ Secondary school degree
- ❑ High school degree
- ❑ Univercity degree
- ❑ Master or PhD degree

4. Occupation
- ❑ Student
- ❑ Officer
- ❑ Worker
- ❑ Employer
- ❑ Employee
- ❑ Academician
- ❑ Self employed
- ❑ Retired
- ❑ Artist
- ❑ Housewife
- ❑ Unemployed

5. Nationality
- ❑ Cyprus
- ❑ Turkey
- ❑ Other nationality

6. Marital Status
- ❑ Married
- ❑ Single
- ❑ Divorced or widowed

7. Number of children you have with an age under 18?
- ❑ None
- ❑ 1
- ❑ 2
- ❑ 3 and/or more

8. What is your household financial situation?
- ❑ 600-1199
- ❑ 1200-2499
- ❑ 2500-3999
- ❑ 4000-5999
- ❑ 6000+ TL

9. The people who you live together
- ❑ 1
- ❑ 2
- ❑ 3
- ❑ 4 and/or more

10. How long have you been living in Famagusta?
- ❑ Less than 1 year
- ❑ 1-5 years
- ❑ 6-10 years
- ❑ 11-20 years
- ❑ 20 +

E. OBSERVATIONS

E. 1 The type of the house that the participant is living

Apartment without any green space □
Apartment with a green space that can be used □
Detached or semidetached house without garden □
Detached or semidetached house with garden □
Other □

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…….....

E.2 Building's clearance

□ Very clean □ Clean □ Orta □ Dirty

E.3. Quarter's characteristics

vacant or abandoned houses □
uncompleted construction □
abandoned vehicles □
left-over green and open spaces □
uncollected garbage □

street animals □
none □

E.4 Quarter's general condition
□ Very well-kept □ Well-kept □ Normal □ Uncared □ Very uncared