Surveying Environmental Awareness- A Green Education Agenda: The Case of Eastern Mediterranean University

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ABSTRACT

This study investigated and evaluated the extent of university student's environmental awareness and the depth of their understanding and knowledge about the environment that surrounds them. Knowing the fact that university environment is not an isolated entity in separation from the larger environment known as community. The community and university are both dimensions of larger environment-that includes various ecosystems. This study focuses on measuring the knowledge of university students on environmental awareness and related issues in one hand and university's commitment to green education agenda in another hand. This study utilized survey questions that applied in other educational institutions. A survey questionnaire distributed among 500 students at EMU to measure their environmental awareness and knowledge through various attributes that addressed environmental issues and concerns. The findings revealed that overall environmental awareness and knowledge among students are low, which will have negative repercussion in the future. The study has also revealed that EMU's commitment to green education agenda is minimal. The results of this study have significant implications for university curriculum development and coordination, community and environment, as well as, the students' environmental behavior in the future. Overall, greening the educational institution has become an important issue as the future decision makers are prepared to have commitment to protect and value the environment.

Keywords: Environmental awareness, Environmental knowledge, University students, Eastern Mediterranean University, North Cyprus.

ÖZ

Bu çalışmada, üniversite öğrencilerinin çevre duyarlılığı düzeyinin boyutu ve kendi çevreleri hakkındaki fikir ve bilgilerinin derinliği araştırılmış ve değerlendirilmiştir. Üniversite ortamının, toplum olarak bilinen daha geniş çevreden soyutlanmış bir kurum olmadığı gerçeğinden hareket edilmiştir. Toplum ve üniversite, çeşitli ekosistemleri içeren daha geniş bir çevrenin iki boyutunu temsil eder. Bu çalışma bir taraftan üniversite öğrencilerinin çevre duyarlılığı ve ilgili konular hakkındaki bilgi düzeyini ölçmeye, diğer taraftan ise üniversitenin yeşil eğitim gündemine yoğunlaşmaktadır. Bu çalışmada diğer eğitim kurumlarında uygulanan anket soruları kullanılmıştır. Bir anket, DAÜ'de 500 öğrenci arasında, onların çevre duyarlılığını ve bilgi düzeyini, çevresel sorun ve endişeleri ele alan çeşitli hususlar aracılığıyla ölçmek üzere dağıtılmıştır. Bulgular öğrenciler arasında genel çevre duyarlılığı ve bilgi düzeyinin gelecekte olumsuz yankılar uyandıracak şekilde düşük olduğunu ortaya koymuştur. Çalışma ayrıca DAÜ'nün yeşil eğitim gündemine yönelik taahhüdünün minimal olduğunu ortaya koymuştur. Bu çalışmanın sonuçları, öğrencilerin gelecekteki çevresel davranışlarının yanı sıra üniversite müfredatı geliştirme ve koordinasyonu bakımından, toplum ve çevre açısından önemli sonuçlar doğurmaktadır. Genel olarak, geleceğin karar vericilerin çevreyi koruma ve ona gerekli değeri verme taahhüdüne hazırlandığı bir ortamda eğitim kurumunu yeşillendirmek önemli bir konu haline gelmiştir.

Anahtar Sözcükler: Çevre duyarlılığı, Çevre bilgisi, Üniversite öğrencileri, Doğu Akdeniz Üniversitesi, Kuzey Kıbrıs.

DEDICATION

I would like to dedicate this thesis to my beloved husband, Paul Gould, who inspired me through his endless support. I should remain indebted to him for rest of my life.

"To My Family"

ACKNOWLEDGMENT

I would like to acknowledge helpful and academic support of Assoc. Prof. Dr. Habib Alipour as my master thesis supervisor for providing useful guides in doing this research professionally.

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INTRODUCTION

Introduction

Following the evolution of green environmental practices, most communities put their strategies in motion in order to minimize the environmental impacts and reach a sustainability to hold positive attributes of environment (Parry, 2012). The causes of these negative effects are manifested by colonization with the ongoing destruction of environment for paving new lands. Climate change as in global warming we are facing, External forces affecting the earth atmosphere by changing compositions and increasing greenhouse effects. Species extinction, reduction of biodiversity, various forms of pollution and pollutants, desertification, deforestation, poverty, lands erosion, disease and hunger, migration and radioactive related disasters, population growth, to name a few.

First step in order to combat such degradation was to form the social movements which then crystallized into environmentalism and green movements. These societies based on Green politics, an ideology with goals of maintaining sustainable ecological environmentalism which is already spread across the globe with some success in some extents (Wall, 2010). The concept of sustainable development recently has been added to the movement which complements and guides the whole process and discourse. The severity of the issue/problem has resulted in establishment of formal

environmental institutions within the governmental structures, as well as grassroots movements through formation of N.G.O.s around the world.

These movements are diverse in scientific, social and political with the management of resources and changes in public policies with individual behaviors of humanity in mind to protect ecology and biosphere in general. Nowadays we have environmental law organizations across the world which follows regulations on monitory system that consists of property rights, citizens' rights and nature's rights. The concerns of environmentalists and related movements transcend dominant anthropocentric philosophy and try to replace it with eco-centric behavior (Baker, 2006).

The interaction between people and the environment is complex, and influenced by a variety of factors such as cultural and scientifically. Humans do not just exist solely in environment, they constantly changing and transforming it. Many science fields are already put into motion for assessing and incorporating human relationships.

However environmental awareness has become an important means to achieve environmental goals through conservation, green technology, laws and regulation, policy, management, and behavioral change. Among influences, the impact of business on green environment has becoming a problem in globalization era, growing concern especially in western economies (Robbins, 2001). Assumption is that educational institutions are appropriate venues to disseminate such awareness. Environmental education and awareness can begin at the early stages of education; however, at the higher education level students not only can learn and accumulate knowledge about environment, they can also develop responsibility towards the

stewardship of the ecosystems and respect other species right to a healthy environment (i.e., social purpose) (Ken, 1997).

How people react and behave in return to environmental problems is important in perceiving responses from individual groups. Behavior is the fact that is one of important factors which determines the environmental awareness. Students nowadays pay more attention to their environment and as futures decision-makers of the society their attitude towards environmental protection and economic priorities and issues and efforts are vital to ones' society and its' developing cycles.

The assumption is, as Wong (2003, Pg. 520) noted; 'How people judge, and react in response to, environmental problems are important in understanding responses from individual group, and societal levels. Although people (i.e., with focus on university students) will not always do what they say they will, their perceptions are important steps towards action and behavior is an important element in forging purposeful responses'.

1.1 Purpose of the Study

The aim of this study is to examine the extent of university students' environmental awareness and the depth of their understanding and knowledge about the environment that surrounds them. Knowing the fact that university environment is not an isolated entity in separation from the larger environment known as community. The community and university are both dimensions of larger environment-that includes various ecosystems. Now-a-days, green education agenda is becoming an important commitment by the educational institutions around the

world. Education can become a vital vehicle to instill environmental knowledge and awareness among the students as the future policy makers.

1.2 Significance of the Study

After the completion of this research, the general awareness of students for environmental overall and specific conditions will be determined. At this scale, the issue concerning several themes and scenarios regarding the health risks, environmental hazards, natures' degrading among the implementation of environmental educational programs will be analyzed and discussed that will reach to better understanding the situational awareness of several student group within the university. The results then will suitable to use in implementing such education and increasing the understanding of environmental awareness by how students exactly know the surroundings and how to convince other people to follow suit. This research is completely new and fresh in case of Eastern Mediterranean University's students which never before considered and done.

1.3 Rational of the Study

A vast amount of literature has been allocated to this subject in general and environmental education in particular. There are numerous journal dedicated to this subject and the significance of the problem is crystallized into an increasing concern by the people at the local, regional and global levels. The following topics have been the subject of numerous journals:

- General
- Environmental economics
- Environmental health
- Environmental law
- Environmental sciences

- Environmental law journals
- List of environmental and social periodicals

Environmental problems have become the most daunting challenges of 21st century. Environmental agencies and laws are capturing a large proportion of advanced nations' budget and planning processes. No doubt, educational institutions are playing a vital role in realization of these plans and application of the laws to achieve environmental quality.

1.4 Methodology of the Study

A quantitative research method will be utilized for the purpose of this research. A survey questionnaire will be designed based on literature and similar studies which targeted the universities and students. Survey questions will be distributed to the students on the campus, off campus, dormitories, and library and lecture halls. A non-probability sampling method in the context of convenience sampling will be administered and as it will target students only, the representativeness of the sample potentially is high. Scaling will be based on Likert scale on 5 items ranging from strongly agree to strongly disagree. The latest version of SPSS will be utilized for the statistical analysis and data interpretation. Deductive method selected for the study as it is highly suitable for this type of survey, which will provide a better strategy to reveal the perception of the students as well as gauge the university's commitment to environmental education.

1.5 Organization of the Study

This study is divided into six chapters. Chapter one consists of a brief introduction about the problem, the significance of the study, methodology and describing what we are going to do in this thesis. Chapter two is literature review which describes the general items of the study. A history of environmentalism, issues and challenges and

a history of organizations involved with environmentalism. Chapter three is the focus on education and awareness towards the environment, roles of NGOs and universities and academic institutions. Chapter four describes the history of North Cyprus and Eastern Mediterranean University as related to our main case and the practices taking place in the case study. Chapter five includes the methodology of the study and the structure of questionnaires and data analysis. Chapter six consists of discussion and conclusion of the study in addition to describing the limitations, policy implication and proposals for further research regarding this topic.

Chapter 2

LITERATURE REVIEW

2.1 The History of Environmentalism

In the beginning of Industrial age and revolution in 1730 till 1850, many efforts were put in motion to satisfy the needs of overgrowing industrial developments, factories, mines and forest clearances and colonization of new worlds and lands. Land degradations began at a fast rate, many forests were removed and seas and oceans used as huge sewers for factory wastes and dumps. The history of environment movements dates back to early 1900's when The American Conservation began with John Muir, Gifford Pinchot and Franklin and Theodore Roosevelt as founding members. These people moved environmental awareness to the next level by establishing organizations such as the Audubon community, and the National Parks service in American Society.

Later in 1960, several concerns were brought to light like uncontrolled rise of the population and its effect on the natural resources (Ehrlich, The Population Bomb). Then the decisions were made to add on to classic conservation, protection and development to be a new and creative conservation of restoration and innovation having regard to the total relationship between humans and the world, man's welfare plus man's spirit (Conservation Timelines, 2005). Later in 70's incidents such as Love Canal brought wide-spread awareness towards the issue of toxic contamination.

After these disasters, several movements began to change a number of educational fields.

2.1.1 The beginning of environmental movements

In 1850, many nature supporters began to publish books in terms of showing respect for Mother Nature. Like Henry David Thoreau published his book in 1848, Walden that includes his researches and discoveries of his two-year period time in Walden Pond. The whole goal was to understand the harmony of living humans with nature. Later many philosophies like harmonious philosophy taken shape by many conservationists and naturalists such as John Muir. He was the founder of the Sierra Club conservation organization in 1892 which he used literary presents to make the US government understand the importance of countries wilderness areas and protect some of those great regions.

In their efforts to save the land, they met with oppositions from politicians and many company managers. They did however accept such as reserving large forest and wilderness regions but only as resources of fuels and energy like coal, oil, timber and minerals. Their visions and awareness spread throughout the lands and later many inspired by those visionaries and began to build national parks in places such as Canada, Australia and New Zealand (Reynolds, 2005).

2.1.2 Movements and Growing Awareness

First warnings came off in 1913 with the extinct of many species like North American buffalo in Our Vanishing Wildlife by William Hornaday (1845-1937). He was one of the first naturalists who focused the worlds' attention to endangered species and loss of wildlife. In 1962, Rachel Carson published the Silent Sprint book which focused on the effects of pesticides chemicals on gardens, forests and farms that decaying and destroying the environment specially the DDT. This insecticide

chemical was hurting the natural food chains and disrupting the fatty tissues in both animals and humans, increasing the risk of cancer.

This book despite the opposition it received from media and chemical industry at that time, helped in conducting research about these problems and finally President John F Kennedy ordered the halting and banning the DDT (Reynolds, 2005).

Finally in 1971 modern environmentalism was born, Greenpeace and Friends of the Earth established themselves and started several campaigns for endangered species like various Asian tiger types and panda and spread the word of illegal trades of elephant and rhino ivory and furs of sea seals.

In year 1972, the first Earth Summit was held in Stockholm. This summit, also officially named "the United Nations Conference on the Human Environment", was first held by developed countries and 113 nations to address the issues of industrialization effects on environment. The concerns were mostly based on acid rains, industrial poisoning of the seas and Oil tankers became worldwide concerns due to incidents spilling their cargoes. The summit led to producing several successes in establishing principles and policies of action plans and funds. These outcomes also resulted in establishing the UNEP or United Nations Environment Program, Their mission was to promote several environmental policies and practices throughout the globe, and coordinate the Earth Summits.

After 10 years the second Earth Summit was held but the problem of the Cold War was at its highest level and with this distraction the summit proved to be ineffective. However several Astronomers expressed their concerns about light pollution which

made it difficult for them to observe the sky at nighttime. Also marine biologists complained about noise pollution from ships and water crafts that was a threat to dolphins and whales. These concerns ignored because of being minority but the threat of hole in ozone layer and skin cancer made people stop using CFCs in making and creating deodorants and sprays.

UN established the UN world Commission on Environment and Development in 1983. Dr. Gro Harlem Brundtland made a report about combined environmental and economic issues and created the term of sustainable development. She explained it as development without damaging the needs of future generations (Brundtland, 1983).

This sustainable Development approach was made to investigate the requisites of local communities and include the cultural and environmental conservation which is mainly the purpose of this study along with awareness of local inhabitants (Figure 2.1).

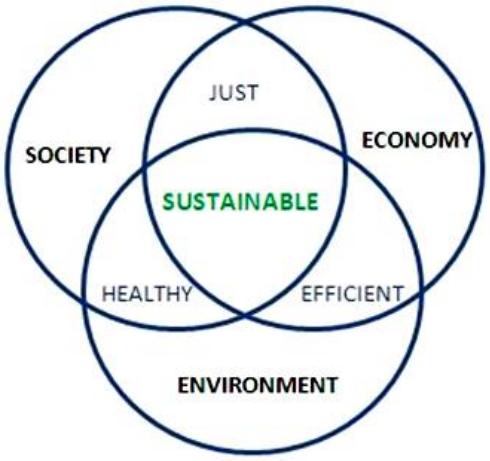

Figure 2.1. Sustainable Developments
Source: Korhonen (2004)

This approach, very similar to other methods, is a process of change but with the definition of natural resources preservation and requires the needs of future generations to reach a higher level of living quality (Aronsson, 1993). The link between these two is dynamic which can consider positive and negative for suggested community, but the main goals don't change, keep a balance between relationship of components and protecting the resource base and environmental concern at the same time (Hunter, 1997). Both the sustainable tourism along with sustainable development helps and contributes to long-term credibility of development.

According to Woodcock and France, the main goal is to suit the changes for a more "idealized and green future for mankind in tourism".

2.1.3 Global Warming and Rio Summit

The 1992 summit was held in Rio, Brazil. Main objective was the Global warming along with how economy is linked to environmental problems and protecting the biodiversity of species and halt of using dangerous chemicals and poisons.

Carbon dioxide releasing from burning of fossil fuels such as petrol, diesel and gasoline, oil and coal caused the planet to increase in its heat atmosphere. The melting ice bergs and result in rising sea levels endangered the whole world. Thus The Kyoto Protocol was introduced whereby signatories have to reduce carbon dioxide gas emissions by 5% throughout 2008 up to 2012. Many nations agreed and signed the protocol but developed countries which relied on their oil trade expressed their concerns about cost of accepting this agreement. The US signed but refused part of agreement and countries such as China and India expelled from Kyoto deadlines

and they are the high consumer of fossil fuels and dirty coal in the world. Canada withdrew in 2011.

This treaty's goal set the obligations on developed and industrial countries to decrease emissions of greenhouse gases, Preventing of dangerous human intervention in climate structure. Being active industrial countries, more than 150 of activity had its effect on atmosphere.

Since year 2005, many countries participated in first round of Kyoto protocol but did not mentioned their second round targets and stated that they may leave the protocol (Figure 2.2).

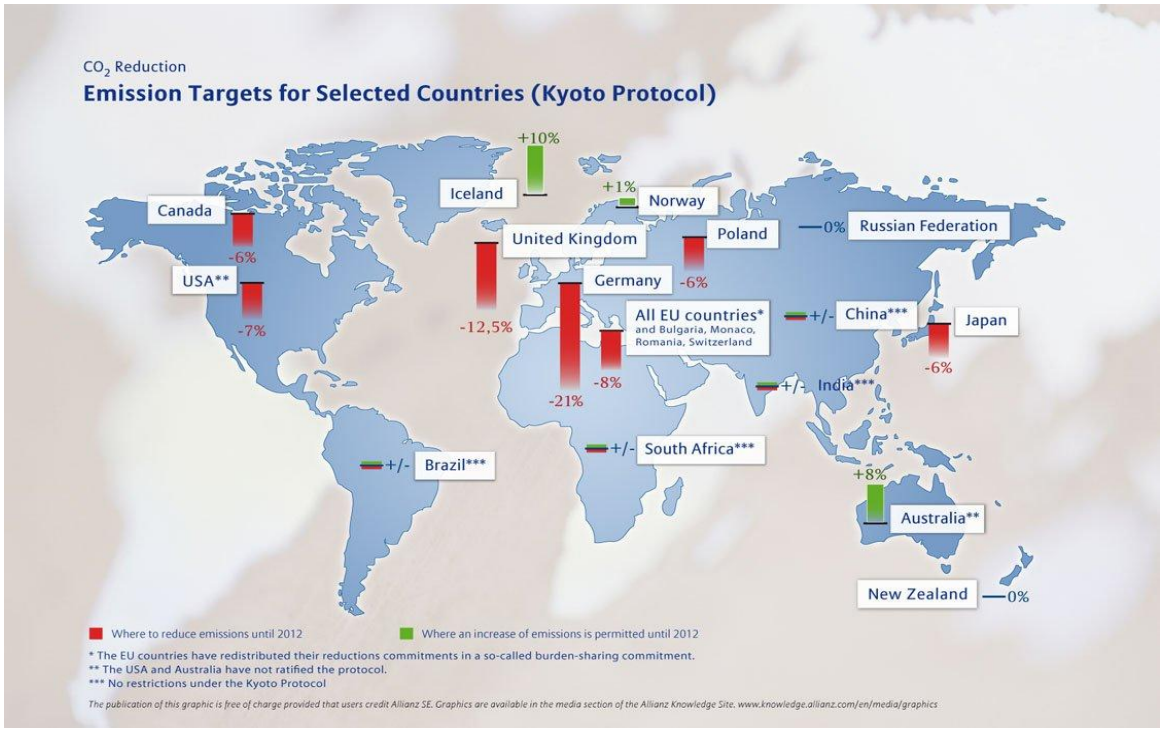

Figure 2.2. Kyoto Protocol Emission Targets

Source: Oberthür (1999)

In parallel to these events, the problem of disposing wastes and various types of rubbishes and garbage became apparent as lack of land and space to bury them began to be notices by different countries. The results were creating recycle facilities and factories along growing green products and items in supermarkets. The solution that was introduced to save the overgrowing problems was Ecotourism. In year 2006 over 1 billion tourist travelled to different countries and many argued that the damage is way over the benefits of tourism (Figure 2.3).

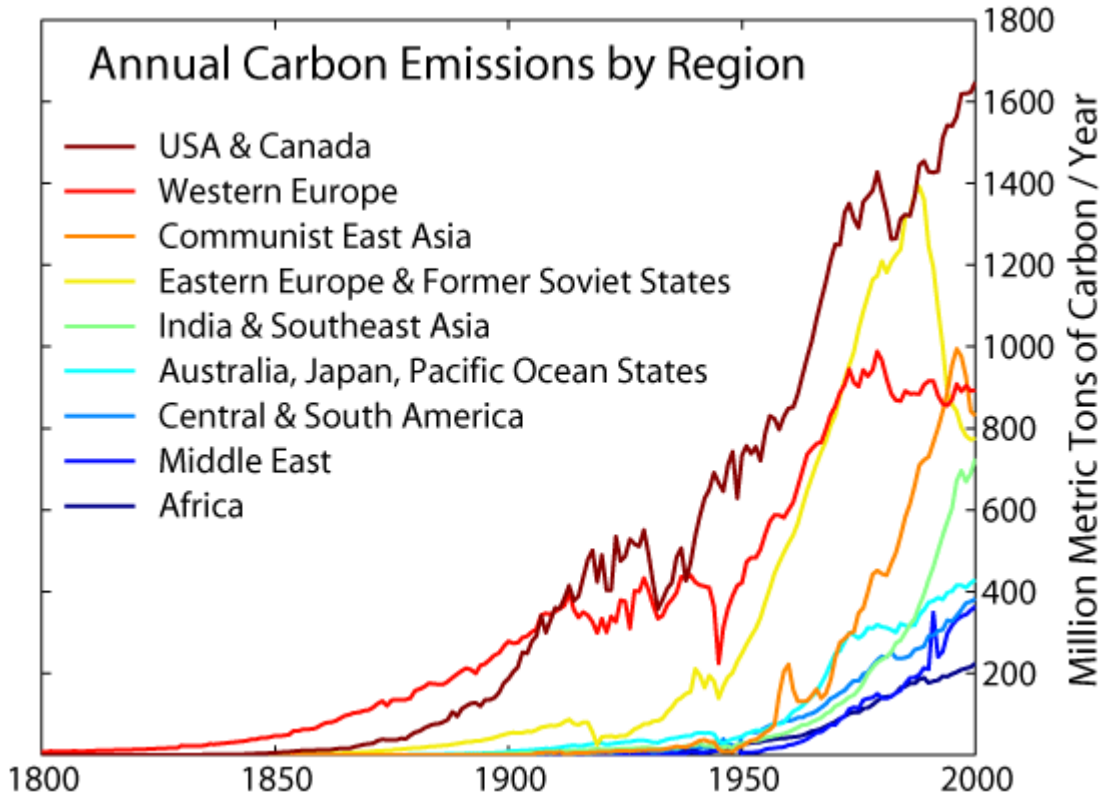

Figure 2.3. Carbon Emissions Classified by Region

Source: Druckman & Jackson (2009)

2.2 Challenge of Environmental Issues

Environmental issues are the side of damaging human interference and activity and its negative effects on nature and biosphere. Climate disasters started since the last century of industrialization and increasing in carbon dioxide of atmosphere

(greenhouse gases) and warming the planet become the major threat to human survival. According to UN report near 70% of natural disasters are climate related and are rising (UN Humanitarian report, 2009).

Environmental movements began to address these problems and issues throughout education and awareness activities since 1960 (Rees, 2009). In developed countries that their wealth increases due to economy and heavy use of fossil based fuels like coal and gasoline and petrol, they have a larger share of increasing greenhouse gases. Many developing countries that are mostly relying on their land and farming and fishing industry are highly susceptible to climate change and their adaptive capacities are much lower in comparison to developed countries.

The impacts of changing climate, biodiversity losses and excess use of natural resource along health problems are related to weak sustainability of ecosystem and environmental stability. This put too much pressure on increased demands of natural supplies and global ecosystem to continuing production of food, water and energy. Nowadays many non-renewable natural resources are being used to their limits and renewable resources are being constantly consumed beyond their productive capacities. Along with the natural resources the loss of biodiversity is one of the major issues. Biodiversity make every species from small to huge, play their role in ecosystem and boost its productivity. Sustainable development however helps averting these ecological issues (Figure 2.4).

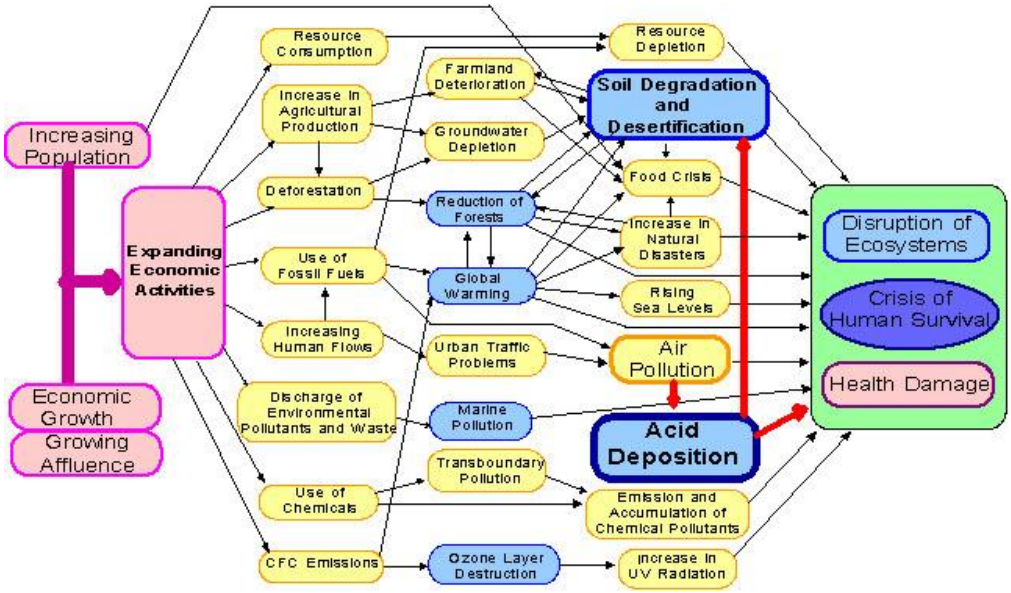

Figure 2.4. Environmental Issues

Source: Steinfield et al. (2006)

2.2.1 Climate Change and Global Warming

Climate change is the condition's change of planet's weather and atmosphere. This changed is caused by several factors, like solar radiation affecting Earth, volcanic eruptions and human interfaces that led to global warming. Rise of Earth's temperature began since late 19th century and accelerated increasing occurred since 1980 (Ammann, Caspar; et al. 2007).

The primary cause is increasing greenhouse gases which produced by human usage of fossil fuels such as gasoline and coal and deforestation. Affects are varying in regions and the increase in temperature resulted in raising the sea levels and expansion of deserts. Human industrialization activities have increased the level of greenhouse gases since the Industrial Revolution era in late 18th century. This effect is absorbed by gases in Earth's atmosphere and by infrared radiation heats up the lower atmosphere (Figure 2.5).

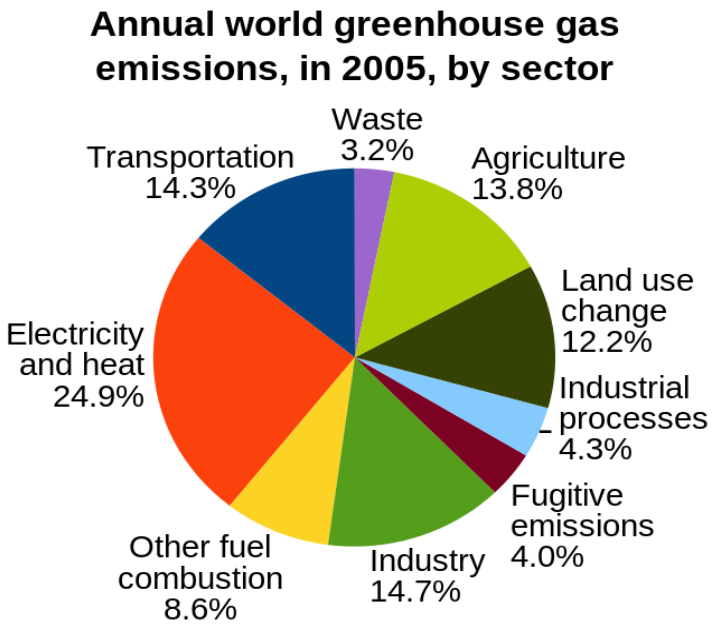

Figure 2.5. Annual World Greenhouse Gas Emissions

Source: Herzog (2009)

2.2.2 Urbanization

The increase in Migration and moving people to urban areas and in return the growth of these regions is referred to as Urbanization. It has a very close relation with industrialization and modernization. Urbanization also represents the conditions and levels of urban development and increase in overall area's population. However it's not a new phenomenon and it happened since the beginning of replacing rural cultures with urban cultures.

Living in cities creates new opportunities to improve individual's wealth and jobs, better housing and education. The advantages however had their own downsides and negative social impacts like stress of daily life, increase costs. Two centuries ago only about 2 percent of world's population existed and live in cities and urban areas. In 200 years later this number increased to 50% (Figure 2.6)

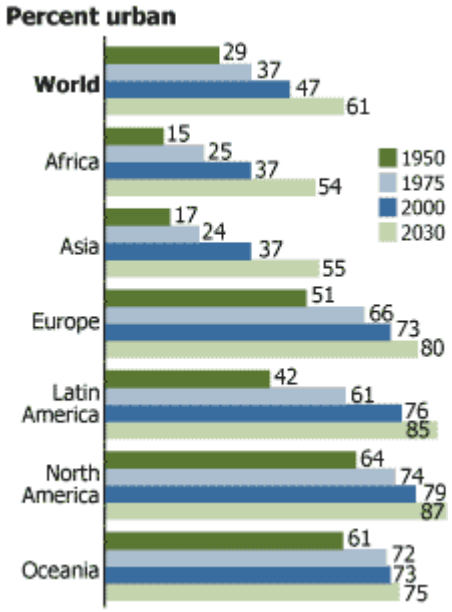

Figure 2.6. Occupied Urban Areas

Source: Hunhammar (1999)

Populations in urban areas interfere with environment and change it through use of energy, consumption of food and water and interact with land. In return by polluting environment, people's health is going to be affected and degrades the life's quality of urban population. With being different consumption patterns than rural populations, they use much more energy and food even twice as rural residence. Also heavy use of durable goods such as Televisions, washing machine and refrigerators led to more energy consumption for electricity.

Activities such as cooking and heavy transportation emit higher heating than urban areas. More cars and transportation used and active in urban areas, all using energy and burning fuels causing heat and global warming in much larger scale in cities and urban areas (US Census Bureau Report, 2003).

Human activities not only affect the weather but also increase in air pollution and water quality, increasing in rain patterns and thus flood incidents increases. However it is not related to how big the urban area or city is; it depends on how population consume and behave, their living qualities and patterns (Figure 2.7).

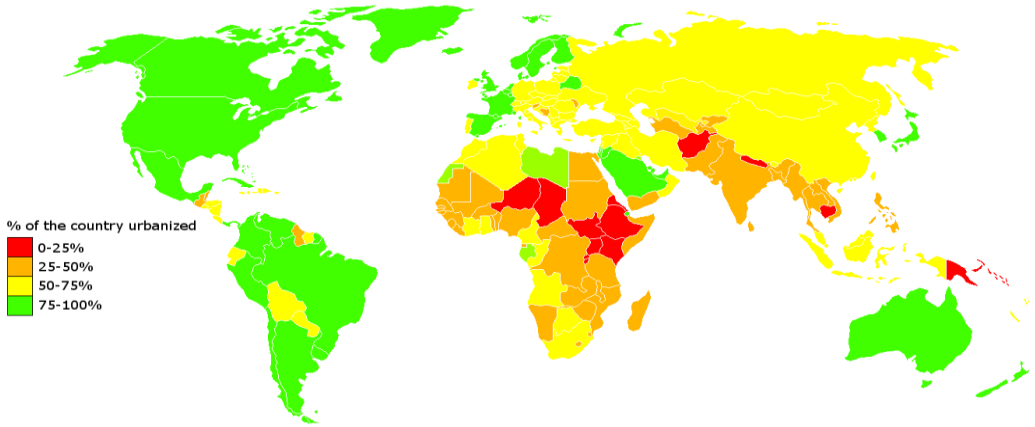

Figure 2.7. Urbanized Regions
Source: Oppenheimer et al. (2011)

The environment of urban sectors determine quality of life in those areas and the problems of inadequate water and waste and rubbish disposal and air pollutions reduces that quality and health of population. Infections and diseases require the use of capital costs to build cleaner projects and better public places and transportations (Taylor & Hardee, 2003).

Land degradation and soil contamination by wastes, oil and chemicals also led to problems that need several policies to deal with. Public transports and public parks correct and lessens some of these problems but sometime public systems cannot handle large number of people and poor housing, unemployment and poverty lead to other social problems (Figure 2.8).

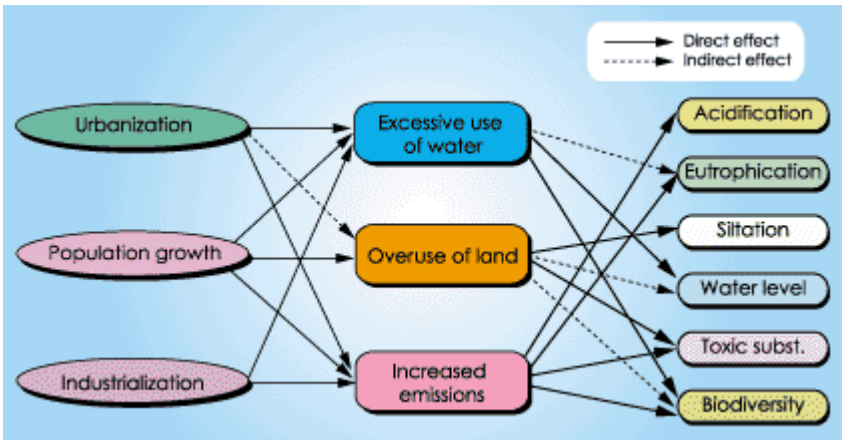

Figure 2.8. Direct and Indirect Effects of Urbanization, Industrialization and Population Growth

Source: Jones (1999)

2.2.3 Industrialization

Industrialization is the process of transforming a group of population relying on their agriculture for sustainability and support to a group relying on industrial activities. This change is a part of modernization process, includes as an economic development in parallel to technological and social change and innovation with the higher purpose of manufacturing. Several factors are at play as acquiring several types of natural resources and low costs supplies plus many skilled researchers and workers. As this process leads to investments and results in economic growth of that region and country. This human activity is sector classified on production of goods and use of natural minerals, manufacturing and processing and services through service industry (Fourastie, 1990). This process has both positive and negative impacts (Figure 2.9):

Positive:

- Urbanization make people enjoy a life of living in large cities and use of advantages it brought as we stated in previous part.
- Benefits of using minerals and natural resources.

- Increase pace of developing economy and increase people's wealth.
- More job opportunities and global trading.

Negative:

- Environmental pollution, health problems.
- Endangering of wildlife and rare species and destroying bio system balance.

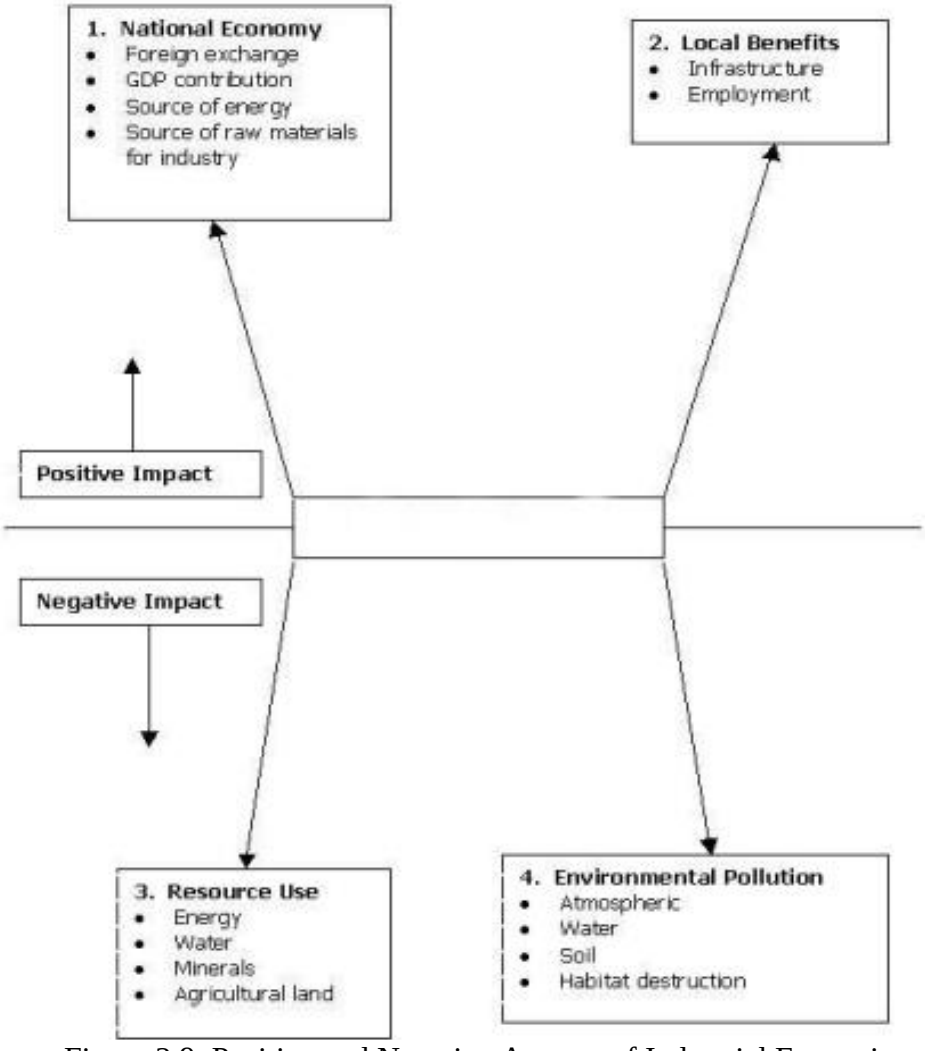

Figure 2.9. Positive and Negative Aspects of Industrial Expansion

Source: Caves (1981)

With the increase of industrialization waste and pollution production affect the nature and every plant and animal. Destroying the environment threatens every species

adapted to that environment. Extracting the minerals makes changing in eco system and rivers and water currents change and polluted with wastes and oil, resulting in destroying marine life and animals using that region.

Deforestation and destruction of jungles, which acts as homes to rare species and animals and storm breakers for nearby settlements are a big issue. Deforestation is an act of felling trees for purpose of using wood materials in various productions but without replanting the lost trees. This act is dangerous to both humans and animals. This process is also lead to soil erosion and land devastations, rainfall in that area is affected and humidity in atmosphere changes (Omiegbe, 1998).

2.2.5 Population Growth

Overpopulation happens when number of human population capacity of region and its occupied group exceed the standard capacity. Increasing in birth rates plus immigration lower the morality rate can result in Population growth. The growth rate of human population has been in rapid increase since 50 years ago, main reasons are the advanced in medical sciences and productivity in agricultural aspect of society. The world population is estimated to be over 7 billion and reach 8 to 10.5 billion in year 2040.

Many concerns are already discussed that the recent fast increase in population growth since three centuries ago raised the question that planet may not hold or sustain the large population. Raising many environmental problems such as increasing in levels of carbon dioxide in atmosphere which results in global warming, increase in pollution and creation of several chemical and non-chemical wastes are already increased by expansion of human population. Population expansion increases the demand for natural resources like food and water, fossil

fuels, which is depleting them faster than they can be replaced or regenerated. Nevertheless, the issue of population and environment are highly intertwined with the recent population projection (see figure 2.10), by the United Nations population studies body. In fact, one of the major challenges for member states is how to tackle

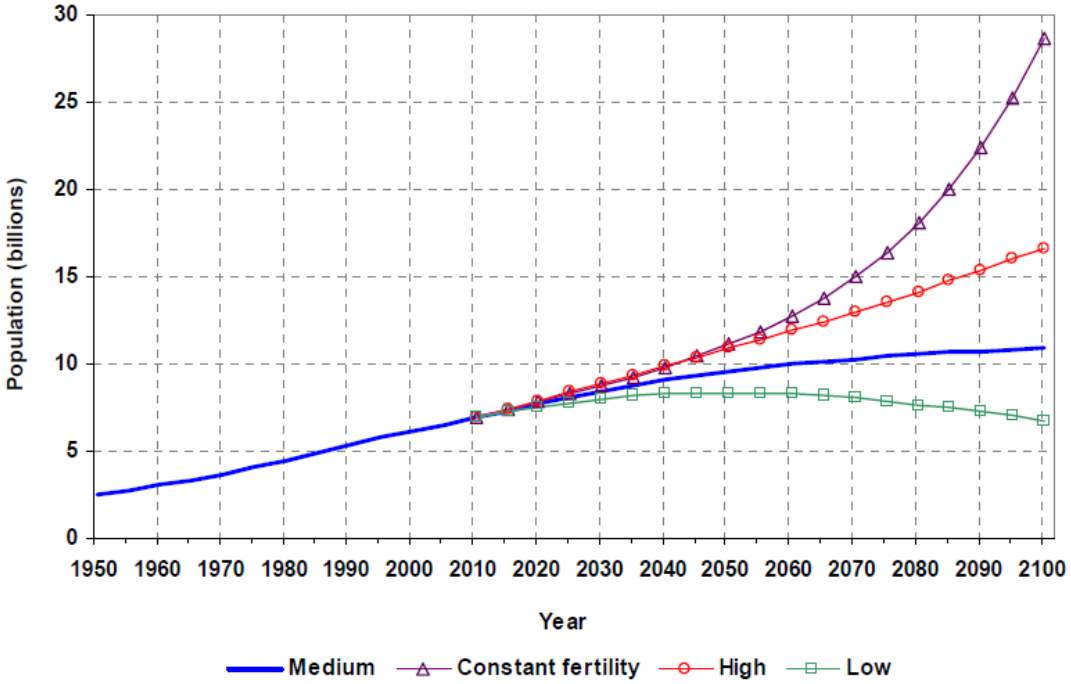

Figure 2.10. Population of the world, 1950-2100, according to different projections and variants

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2013). World Population Prospects: The 2012 Revision. New York: United Nations.

Chapter 3

ENVIRONMENTAL AWARENESS AND EDUCATION

3.1 Environmental Awareness

Everyday people around the world are facing the environmental issues and problems pressuring their lives and environment. To have an exact and correct response to those issues we need to effectively make the people and population environmentally aware. However creating such well-informed population become challenging every day, advancing technology, different global perspectives are slowing this process of awareness.

Moreover, measuring the awareness of a population can be a very difficult research and direct exposure of contact with natural environment is an important factor. For environmental awareness, the experience with nature and environment is potential in measuring the environmental awareness and several programs can reduce the effects and impacts of population's actions on environment. Pollutions, the creation and generation of different wastes by public and the depletion of natural resources, degrading soil and land, deforestation, global warming, ozone destruction and many other environmental issues create many dangerous situation to mankind that environment must be protected from these issues if humans wants to lead a healthy life for them and generations afterwards.

Having concerns and conscious for world's environment is what awareness is all about and its main concern is having a 'green lifestyle' (See Figure 3.1).

For example producers can contribute to environmental preservations in many ways including:

- Resource – saving: by choosing their resources and materials wisely and lessen the improper use of natural resources and produce products with a use of minimum energy and natural resources.
- Energy – saving: by transporting and delivering their products efficiently, less use of energy and customer and user burden.
- Elimination and removal of dangerous and harmful substances in their products and reusing of materials.

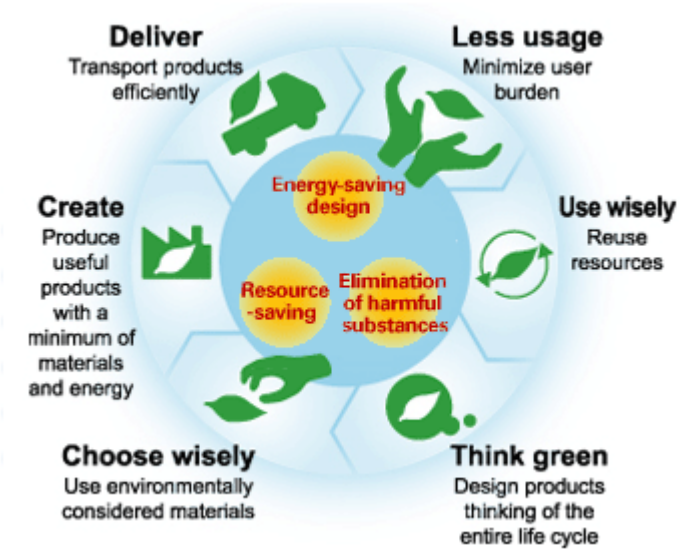

Figure 3.1. Design Cycle

Source: Hevner (2007)

3.2 Environmental Education

Origin of environmental education come back to outdoor and nature study mostly in primary schools and then to the conservation ways of nature. Nature study like other types of studies followed some purposes is to "develop an understanding and appreciation of the natural environment through first hand evaluation and deep observation" (Stevenson, 2007, Pg. 140) with identifying the preservation idea for particular species and some significant natural areas under accurate management.

Empirically, the aim of environmental education is to help the society understand their natural environment more accurately and try to conserve it with enjoying pool of benefits out of it without any forms of destruction (Stevenson, 2007). According to empirical investigation under nature study, it tried to evaluate and improve the understanding, skills, awareness and knowledge of student about their natural resources with incorporating fairly management practices (United Nations Educational, Scientific and Cultural Organization, 1977). One of the ways for government in response to environmental issues is to forming "new governmental agencies" to protect the environment.

Various consensuses remained under the issue of environmental degradation to undermine the causes and effects of catastrophe. Some of these causes are technological development, rapid population growth, economic growth, and capitalist system of economy and variety in consumer society with predominance of materialistic attitudes (Attfield, 1983). One of the causes of environmental problems based on the united nation Conference in Stockholm under human Environment topic was the ecological structure of political and social of countries which for instances

some of the countries do not want to interrupt their current resource usage and consciously or unconsciously prefer to continue their social and economic agendas.

The definition of environmental education according to UNESCO conference in Tbilisi, Georgia 1977 is a process which focuses on train and developing a population which is concern and aware of the environment around them its related problems and issues plus has the knowledge, attitudes, motivations, obligation towards environment individually and as a group work towards solving the problems and prevention of any new issues (See Figure 3.2).

Figure 3.2. An Example of Posters for Education in Universities
Source: Bringle (1996)

There are several objectives declared to be the main goals of environmental education (Figure 3.3):

- Awareness – help population, individuals and social groups to acquire sensitivity and awareness to the whole environment and its related problems.

- Knowledge – help population, individuals and social groups to acquire a variety of experiences and reach a certain basic level of understanding the environment and its associated issues.
- Attitudes – to help both social and individuals to gain a set of feelings and value of concern for overall environment and motivation for participate in improvement of environment and its protection.
- Skills – to help both social and individual groups to learn a set of skill required for understand and solving environmental issues.
- Participation – to supply both social and individual groups with time and opportunity to involve in all aspects and levels of working towards a resolution for environmental problems.

Environment	Relation	Characteristics	Methodology
As nature	To be appreciated and preserved.	Nature as a cathedral, pure and original.	Immersion in nature.
As a natural resource	To be managed.	Collective biophysical inheritance.	Campaign of the 3 "Rs". Case studies.
As a problem.	To be resolved.	Emphasis on pollution, deterioration and environmental threats.	Problems resolution. Case studies.
As a place to live	EE , *about*, *in* and *for* taking care of the environment.	Nature with its social and technological components.	Gardening projects. Places or legends about nature.
As a biosphere	As a place to be shared.	Spaceship Earth, "Gaia", the interdependence of live beings with inanimate objects.	Case studies of global problems. Stories with different cosmologies.
As a community project	To be involved.	Nature with a focus on critical analysis, in the political participation of the community.	Research and participation for community transformation. Discussion forum.

Figure 3.3. Environmental Concepts in Education

Source: Roth (1969)

There can be many variety ways of increasing environmental awareness and education. Most important of these areas are:

- Environmental legal rights and polices including responsibilities and related consequences

- Media
- Campaigns for raising awareness
- Implementing of environmental problems in mainstream education
- Encouraging public population and target groups to participate in environmental actions and matters

Many areas and sectors in society are involved in delivering educational courses and developing public population awareness like Governmental institutions at local and regional and national levels, international and local/domestic NGOs, primary and secondary schools, media and other individuals.

Also these following activities can be raised by environmental education:

- Revising and reorienting the current education systems and programs such as environmental aspects and dimension awareness
- In schools having basic environmental education programs
- Community environmental education awareness programs for adults
- Training and advanced education awareness programs for technical and professional personnel.

The media can be a powerful asset in educating public on increasing awareness and environmental matters, this include, Internet, newspapers, journals and television and radio broadcasts. In most time it is necessary for government to work closely with media and help training the media. By increasing the capacity of media, they can develop the information centers available to media like NGOs or government agencies.

In traditional and local religious communities, leaders can play a decisive role in guiding the local people. Educating such leaders is vital in assisting community in participating in education programs:

- Language – if the system wants to be more accessible by local community it should be presented in their language. However the translation process can cost a lot of money.
- Literacy – using presentation through radios or posters.
- Clarity, plain language – can be easily understood if written in short sentences and meaningful words.

3.3 Role of NGOs

As stated in this study, the protection and preservation of natural environment is an important duty for every individual, organization and institution. It includes sustainable development, pollution and conservation of natural resource along the ecosystem (Shiva, 2007).

The creation of NGOs is derived from civil society which is an organized response to those areas which there are still much desired to be done about environment. Its importance is known worldwide. NGOs involvement and their active number of steps and discussion are crucial about environmental problems in both media and educational system. Their activities consist of advocacy and awareness about environment is important in promoting matters of conservation of natural resource, ecosystem restoration and sustainable development.

Also NGOs can influence policy makers about the priories and needs of local communities and sometime change views about interest of both economic and

ecosystem as a complete and whole matter (Agarwal, 2008). NGOs main missions can be contribution to (Figure 3.4):

- Help educating public and increasing awareness in environmental education
- Analyzing and discovering facts.
- Experimenting and innovating in matters which are hard for government to change.
- Policy analysis
- Providing information and increase its reliability by training professional personnel
- Being on neutral while providing information for both government and public
- Giving support to environmental groups and defenders.
- Promoting and increase in capacity building for protection and environmental awareness in collaboration with government agencies.

Figure 3.4. NGO Roles
Source: Ahmed & Potter (2006)

Government institutes also work with NGOs to achieve:

- Increase the number of participant in their programs

- Increase the coverage area of programs to areas which reaching this teaching is hard
- Perform innovation and researches
- To reach a level of cost effectiveness

3.4 Environmental Sustainability

The whole definition is involved in making decision and suggestion along actions which are with goal of protecting the natural environment, with emphasis on conserving and preserving the capacity of natural world to sustain and support human life.

The environment sustainability is all about reducing human's negative impact on natural environment by making decision which is responsible and decisive. It's not about just reducing wastes or consuming less energy, it's about the whole process with the ability to become sustainable in future.

In process of making decisions, the world population growth rate is 2.5% which is much higher in developing countries and much less in already developed countries (Thurman, 2005).

There are more issues adding to sustainability problems, unsustainable use of natural resources, poverty, absence of environmental costs of services and goods in market prices, knowledge about the work of environment and managing nature. These issues have indicators in environment which is identifiable as:

- Degrades and depleted land/Soil
- Food and drinking water shortages

- Over increasing deforestation
- Biodiversity loss
- Danger to health and diseases

Main topic of sustainability is having a diverse biological system over time. Examples of sustainable and diverse biological systems are forests and wetlands. For humans, they must maintain the well-being of the ecological surroundings as having healthy environment is a must and necessary component to survive along with other species. Environment management is the first major ways to reduce the negative effects and impact of human interference.

Many science such as conservation and environmental science are contributing by gather information for this approach. The next approach is by gather data from economics on the consumption of natural resources and how to manage them, and then we have to add political and cultural concerns into the structure (See Figure 3.5).

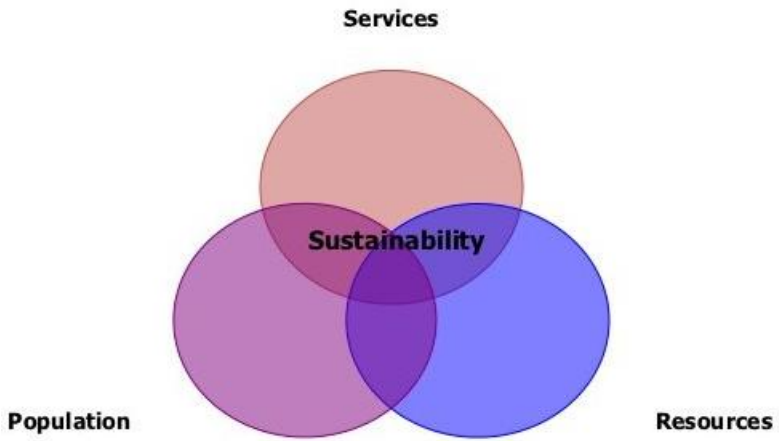

Figure 3.5. Sustainability

Source: Dierickx & Cool (1989)

Managing resources are keys to have a sustainable environment and especially agriculture in many continents. Renewable resources are the main part of ecosphere which renewed and replenish through passing time by reproducing biologically or other natural processes. They also can be a source of power for renewable energy. However many of these natural resources can be critical for environment and the high rate of their consumption is a warning for many environmental issues that sustainability faces (See Figure 3.6):

- Deforestation and Air pollution – jungles and forests are source of wood for fuel and other building materials; however trees protect the earth's environment by absorbing carbon dioxide and in return creating oxygen. The over growing deforestation and destruction of trees increases the amount of carbon dioxide in the air and also cause of climate change and absorb sun's radiation and converts it into heat and thus the global warming along change and reducing the water cycles and amount of water in land and soil and causes of erosion and flooding.
- Endangered species – many species faces the danger of extinction because of over consumption of human population. Risk of extinction concerned many nations and conservation methods are ongoing for preserve several local species.
- Water pollution – although being a renewable resource over using and interfering with its natural recharge of the local area can turn in to non-renewable. Major concerns regarding this matter is water pollution and it's over using it in industry around 22% of word wide water.

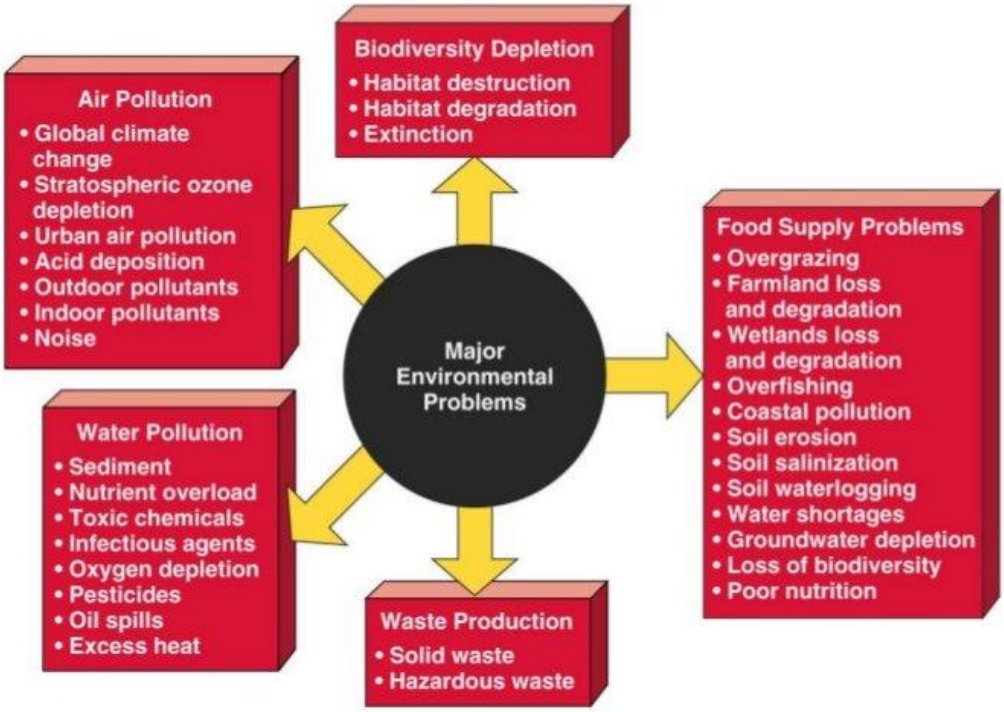

Figure 3.6. Major Environmental Problems

Source: Arcury & Christianson (1990)

Non-renewable resources are mostly out of sustainable environment programs and do not renew itself at a rate relative to human timeframes. Carbon-based fuels, organic derived fuels are such resources like fossil fuels, natural gas, coal and oil. Ores are also non-renewable resources especially metal ores. The process of renewing them takes about millions of years and doesn't occur in human timeframes. In sustainable development, these resources define as goods which implying several resource management models for managing these resources.

3.5 Environmental Education towards Sustainable Development

After the start of 21st century the growth of technological advancements and economic have impacted the environmental view of humanity (Sumuani, 2006). All issues we discussed in this chapter and previous chapter are posing threats and

problems to every aspects of human life and create constraints to sustainable development (Wole, 2009).

There are several factors that account for low awareness of public population and issues regarding it. Principle among these is lack of information. Most studies are not available to public and facts are ignored and mistaken due to costly measures and political decisions on those matters (Adelagan, 2006). Most of environmental agencies run under limited resources and in turn leads to limited reaction towards the complaints. For protecting the environment requires innovative techniques, relevant knowledge and practices. With the ongoing complex issues, education in Eastern Mediterranean University should focus on creating a consciousness of ecological awareness and education which is effective in having a responsible force for holding sustainable development goals.

In this matter we must aim to create future social group and society of civic responsible population which play the roles as people who understand and hold their citizen's conscience on environmental impacts (ICSE, 2000). There are many layers of objective for teaching the population for producing the desired output for sustainable environment and development:

- Having a sensibility and awareness to the natural environment and its challenges and importance
- Understanding of environment and knowledge
- Knowing values and expressing an attitude of concern for the natural environment and motivation to keep maintaining and improving the environmental quality for the main purpose of survival
- Having the required skills to identify and resolve the environmental problems

- Participation in programs and activities that their purpose is the resolution of environmental issues
- Environmental education structure should include all manmade and natural, economic and political, ecological and technological, social and cultural environment
- Life lasting process both in university and out of university
- Active participation and presentation in analyzing environmental issues
- Researching issues from several points of view including regional differences and perspectives
- Consider all value of local, international and national co-operation in solving the environmental issues and problems.

Beside of formal ways the environmental education can also performed in non-formal methods, like raising public awareness by non-governmental organizations or NGOs through materials and campaigns and distributing information.

3.5.1 Theoretical framework of the study

The main paradigm that guided this research is based on the Theory of Ecological Modernization (TEM). EMT has become highly influential in some of the western economies, especially in Germany, the Netherlands, Sweden, Japan, and recently in the USA and the UK including some of the newly industrialized countries. However, Germany is considered to be the birthplace of the theory. As stated by Langhelle (2000, p. 305):

> 'The concept of 'ecological modernization' originates from the works of Huber and Janicke… they can be regarded as the founding fathers of the ecological modernization approach. As a political program, however, ecological modernization was originally intended as an interpretation of the development of environmental policy in Germany and the Netherlands'.

Nevertheless, TME has become an influential model and embedded in various environmental policies and programs of various nations around the world. In fact the Fifth EC Environmental Action Program influenced heavily by the discourse of ecological modernization, as well as, sounded by Clinton and Obama's administrations in the USA (Fieldman, 2014). See also figure 3.7.

As demonstrated in the model, TEM offers a framework that provides a direction to explore and explain the manner in which societies address the ecological risks surrounding their industrialization/urbanization (Hajer, 1995). It provides a variety of theoretical and prescriptive propositions through which to analyze emergent policy discourses as well as policy options for the transformation of modern industrial societies to enable them to better manage the ecological risks. To emphasize further, TEM is founded upon two practical constructs 'institutionalization of environmentalism' and 'general theory of social change', where both of the constructs have been applied that manifested in EPAs (environmental protection agencies) and mobilization of the society for overcoming the challenges of ecological problems (Mol and Sonnenfeld, 2000). As Morad (2007, p.30) argued:

> 'The theoretical approaches adopted by EM specialists have included analyses identifying how modern societies construct the environment; how social and economic change influences the environment and environmental relations; and understanding the social and economic institutions that promote or resist environmental sustainability'.

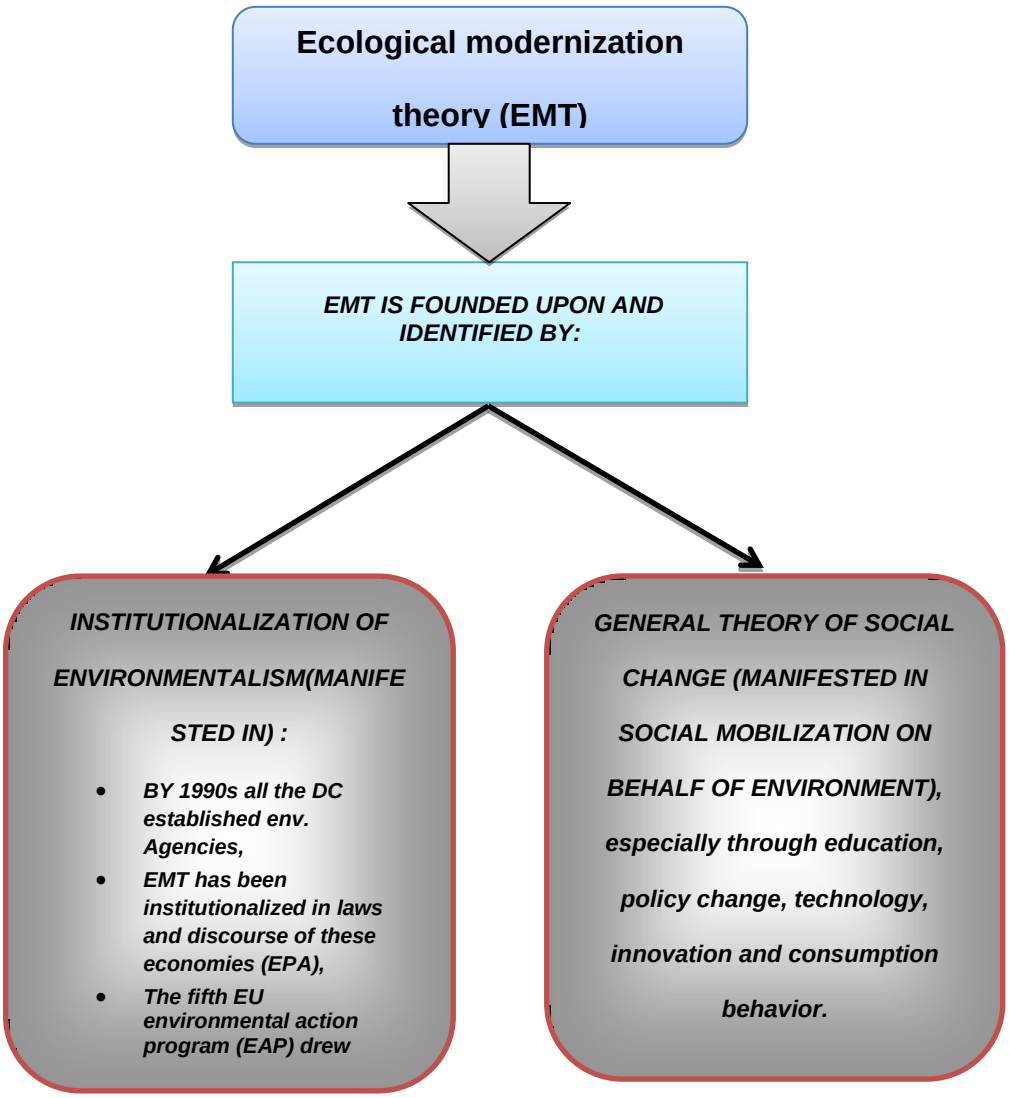

Figure 3.7. EMT model as theoretical framework of the study

However, there is a common understanding that ecological modernization will have to result in innovative structural change. So research is now still more focused on environmental innovations, or eco-innovations, and the interplay of various societal factors (scientific, economic, institutional, legal, political, cultural) which foster or hamper such innovations (Weber and Hemmelskamp, 2005; Olsthoorn and Wieczorek, 2006).

Chapter 4

CASE OF EASTERN MEDITERRANEAN UNIVERSITY/NORTH CYPRUS

4.1 North Cyprus

Cyprus is the third largest island in the Mediterranean Sea. It occupies an area of 9851km (3572 square miles). It lies 60 km south of the coast of Turkey, 96 km West of the coast of Syria, and 322 km distant from Greece (Rustem, 1987, cited in Alipour & Kilic, 2005). (See also figure 3).

For its beneficial location – crossroad of East and West the island has been invade by Arabs, Phoenicians, Achaeans, Assyrians, Egyptians, and Persians. However from 1571 the Ottoman's invasion, which lasted for three hundred years, left a significant mark. During the Ottoman period, the population of Cyprus originally gained additional Cypriot identity – Turkish Cypriot, thus bringing to existence two communities in Cyprus – Turkish Cypriot and Greek Cypriot.

In 1878, under Cyprus Convention the Ottoman Empire let Britain assume the administration of Cyprus, which resulted in Cyprus getting under the British wing. After gaining independence from the United Kingdom in 1960, the Republic of Cyprus was set up as a constitutional democracy by Greece, Turkey and the United Kingdom. These countries granted the Greek and Turkish communities political equality and the right to share power and administer the island in partnership (Kyriacou, 2000; Muftuler-Bac, 1999, Richmond, 1999). In the 1960s conflicts broke

out between the two communities over issues of power sharing and administration. However the main problem was that the Greek Cypriots aimed for unification with Greece, while the Turkish Cypriots preferred to remain under Britain rule or revert to becoming part of Turkey (Richmond, 1999), which erupted into a civil war, resulting in an intervention by the Turkish Army and the *de facto* partition of the island (Bahcheli, 2000). As a result, about 37 per cent of the territory in the North came under the jurisdiction of the Cyprus Turkish Administration. Consequently, since 1974 the two geographical entities have evolved separately (Figure 4.1).

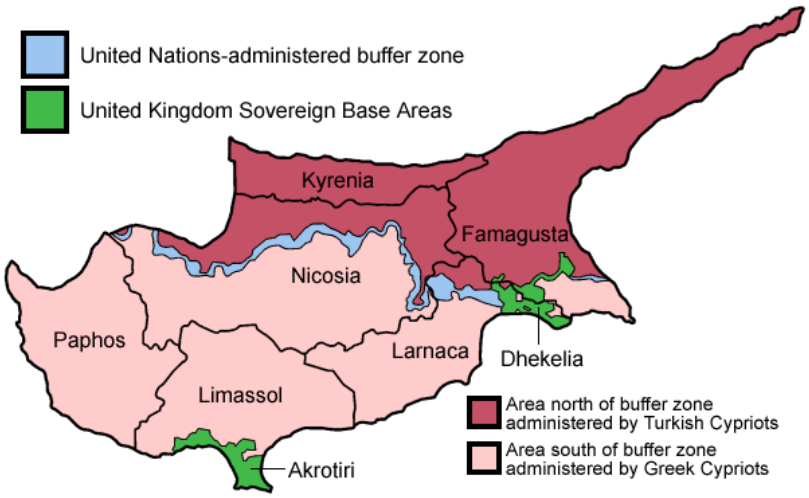

Figure 4.1. Geographical map of Cyprus (Source: www.en.wikipedia.com)

4.2 Geography and Climate

A nearly short Windy spring is followed by a hot summer. The autumn which is very like spring is short and soon from end of November begins with a cold and rainy winter until the beginning of March. The heavy rain falls about 60% each year provide the much needed water for rivers of the Island. The storm and winds of Mediterranean like the “Sirocco” and “Poyraz” and “Meltem” affects parts of the Island.

Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max. Temperature	15	16	19	24	29	33	37	37	35	28	22	17
Min. Temperature	5	6	7	10	14	19	21	21	19	15	10	7
Sun Hours	6	7	7	9	11	12	13	12	11	9	7	6
Rainy days	8	7	6	3	2	1	0	0	1	2	4	7
Water temperature Mediterranean Sea	16	17	17	18	21	22	25	28	27	26	23	19

Figure 4.12. Climate Chart of Cyprus (Sourcewww.northcyprusonline.com)

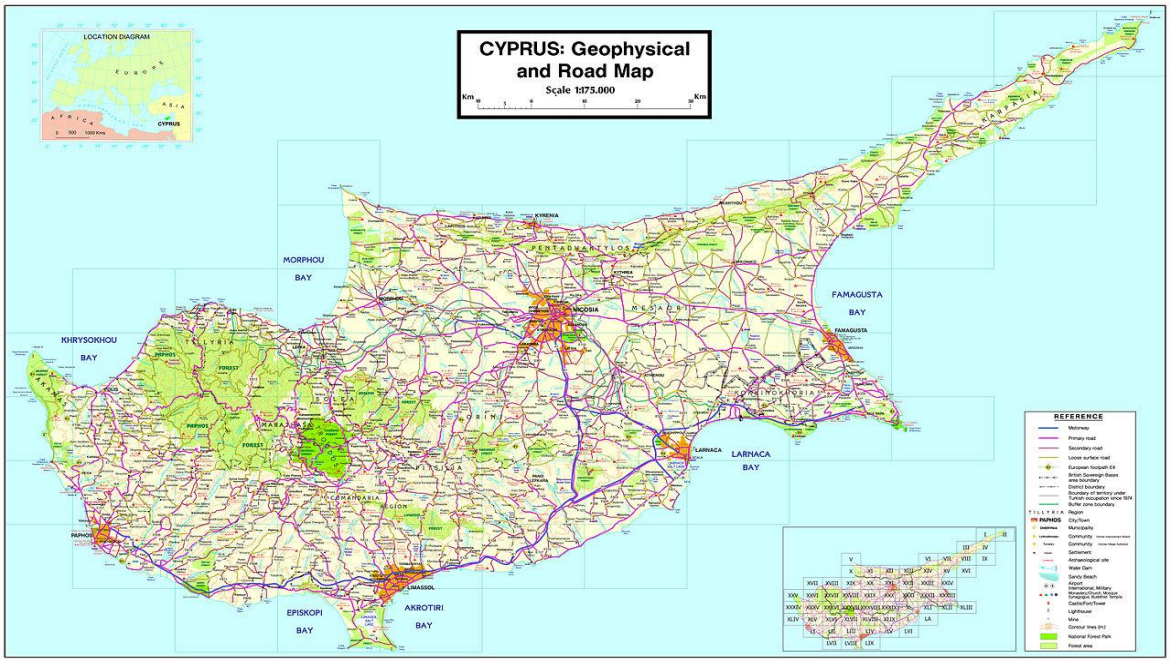

Figure 4.13. Geographical map of Cyprus (Source www.wikipedia.com)

4.3 Economy

The North Cyprus's trade, tourism industry and education are mostly place in service sector that also controls the main economy of the country about 69% GDP. Because of problems with EU and UN communities the North Cyprus is heavily relying on Turkish support and thus both countries' economies are tied together (General Information about North Cyprus: Economy) Also the tourism sector provided the

North Cyprus with an income of nearly 400 million dollars through years of 2011 and 2012 this was mostly due to increase of tourists bed to 17000. However all export and imports used via Turkish unless they are domestic products which distributed through several of its main ports on the Island (Economic and Social Indicators 1977-2007) (See Figure 4.2).

Distribution of TRNC exports by goods (US dollar)				
	2007	2008	2009	2010
Citrus	22,692,324	20,502,086	13,910,934	27,166,238
Dairy products	20,650,394	21,628,852	20,074,239	25,836,381
Rakı	4,482,406	6,653,821	8,413,631	7,669,936
Scrap	8,141,653	7,283,664	4,237,831	6,477,316
Ready-made clothing	6,790,020	3,727,264	2,326,900	4,022,957
Citrus concentrate	3,192,255	662,939	1,746,922	3,007,110
Gypsum	1,894,924	3,927,030	2,490,925	1,889,140
Pharmaceuticals	955,693	1,009,966	649,465	1,573,599
Leather products	1,269,816	908,411	594,751	461,562
Other products	8,975,744	6,354,090	9,002,188	12,579,609
Exports to the Republic of Cyprus	4,639,584	11,006,015	7,615,978	5,746,061
Total	**83,684,813**	**83,664,138**	**71,063,766**	**96,419,909**

Figure 4.2. Distribution of TRNC exports by goods in US dollar
Source: www.onlinenorthcyprus.com

4.4 Regions of North Cyprus

4.4.1 Lefkosa

The capital city of North Cyprus which is actually Nicosia divided into two parts and Turkish people call the northern side Lefkosa. The city was originally called Ledra. Being the only capital city that is divided, it had a total population of 84,900 people around 2006 – 2007, separated from its' southern part by "Green Line" courtesy of United Nations. The most notable tourist attraction places are Arab Ahmet Mosque, Kyrenia Gate and Great inn or Buyuk Han which mostly visited.

The geographical position of Lefkosa is situated at 35°10' north, 33°21' east at the center of the island itself. On the next page there are figures of 3 tourists attraction places are available for view (See Figures 4.3, 4.4 and 4.5).

Figure 4.3. Arab Ahmet Mosque (Source www.northcyprusonline.com)

Figure 4.4. Buyuk Han (Source www.northcyprusonline.com)

Figure 4.5. Kyrenia Gate (Source www.northcyprusonline.com)

4.4.2 Kyrenia

The city of Kyrenia (Girne) is one of beautiful ports and harbor of North Cyprus that is also called "Jewel of Cyprus". The city architect has been preserved very well throughout decades. Kyrenia Castle being one its spectacular tourist attraction and historical site is at east of the old harbor and date back to Byzantine age consist of a 12^{th}-century chapel and museum with towers and huge walls surrounding the castle itself originally built to protect itself against naval artillery bombardment.

Figure 4.6. Kyrenia Castle (Source www.northcyprusonline.com)

In the mountain range of Kyrenia there are also 3 more castles outside the town itself, St. Hilarion Castle, Kantara Castle and Buffavento Castle (See Figure 4.6) Local restaurants are mostly place along the beach line and harbor of Kyrenia with the local gathered fresh fish being the most delicious Cypriot food in the town. Also the Kyrenia harbor is housed to many private owned yachts.

4.4.3 Famagusta

Situated at the east coast of Cyprus Island, Gazimagusa is home to one of the most important Republic of Cyprus harbor and Eastern Mediterranean University, our case study which will be explained more in coming chapters. The population of city is nowadays consist of Turkish Cypriot and Turkish immigrants with very few from other groups reach a total of 39000. The city has change through centuries and seen many battlegrounds between Crusaders and Arabs during the holy crusade era, from just a small fishing village to luxury harbor of Venice merchants and under Ottoman rule and then British rules in 1500 – 1960. Nowadays it’s a main tourist attraction

consist of British, Scandinavian and many other Middle Eastern region coming to this city.

Salamis Roman ruins and Walled city is the most important tourist sites exist in or around the Famagusta. Famagusta as one of the oldest city in North Cyprus include various historical and very old places with specific names which some of the are English, Greece and Turkish because of the its different history of period of time which convey the characteristics of British colonialism and ruins of ancient Greek in 60s and 70s. I can define North Cyprus as a combination of three color (yellow, green and blue), which each of them has specific meaning as yellow the historical an ancient buildings, green the green areas around the blue sea that demonstrate the natural beauty of this Island (See Figure 4.7).

There are a lots of unsustainable planning projects in Famagusta, TRNC as a result of insufficient knowledge of Place making and imperative of its public place planning which lead to ugly and unknown design and colors of buildings, unfinished projects, waste of land, waste of human/physical/ knowledge/ capital resources like marinas and beaches, incompatible use of cultural and historical resources, and pollution that all of them ruined the beauty of landscape which most of them or it’s better to say all of them ignore the role of communities because of other reasons as relative influences or poor community's performance and discipline over the processes. All of these projects have environmental, socio- cultural and economic cost for Island which maybe no individual or organizations can afford to rebuild, renew or even remove them.

Figure 4.7. Salamis Roman Ruins (Source www.northcyprusonline.com)

4.4.4 Karpaz

The Karpaz peninsula is the untouched and mostly undisturbed wilderness of North Cyprus and home to famed Cyprus wild donkeys. Even so after natural preservation it houses of many villas and seaside resort of golden beaches (See Figure 4.8).

Figure 4.8. Karpaz Golden Beach (Source www.northcyprusonline.com)

4.4.5 Guzelyurt

Situated at Troodos Mountain foothills, this town was originally called Morphou and founded by Spartan Army of ancient Greece. Guzelyurt is home to many churches

which are dedicated to St. Mamas who is a local myth and legend. This town is also responsible for producing many fruits and vegetables due to its fertile grounds and soil (See Figure 4.9).

Figure 4.9. Guzelyurt (Source www.northcyprusonline.com)

4.5 Tourism Economy and Industry of North Cyprus

Beautiful landscape and nature, geographical location and climate make North Cyprus a suitable place for a tourism destination. In order to increase the economy of North Cyprus, tourism is an important sector as about 8.004 jobs and employment were provided by tourism industry and resulted in revenue of 145.6 Million dollars (Katircioglu, Arasli, Ekiz, 2007).

One of the many problems the TRNC faced in international community is that it is still not recognized and this leads to disadvantages along with being unable to attract any foreign investors due to political conflict and situation existed. However

International Universities helped tremendously in advertising on international scales (Katircioglu, Arasli, and Ekiz, 2007).

4.6 History of Eastern Mediterranean University

Eastern Mediterranean University EMU is an international university in North Cyprus and established in 1979 first as a higher-education institution of technology. Engineering fields are the founding departments of university. As of 2013 it has approximately population of 24000 students from nearly 70 countries, more than 1000 academic staff with 40 different nationalities. This university being the oldest and biggest university in North Cyprus and the whole island is a multicultural environment for the scholars of different nationalities where they exchange, discover and learn ideas and information (Figure 4.10).

Figure 4.10. University's Logo mark (Source www.emu.edu.tr)

Figure 4.11. University's Library (Source www.emu.edu.tr)

4.7 Nature of Education in EMU

In 1984 both Turkish Republic and North Cyprus governments decided to establish a university called Eastern Mediterranean University, after meetings of Turkish Republic higher education and directors of institute of higher technology in 1986 they converted it to university. After a year several faculties and departments were established. In year 1990, faculty of Tourism and Hospitality along with architecture offered education levels in EMU, Followed by law in 1996 and communication in 1997 and education 1999. School of Applied Sciences started in 2007 and Health and sciences established in 2010 the School of Pharmacy started offering programs in 2011.University campus are includes about 10 dormitory buildings for students' residence.

Eastern Mediterranean University is also a member of European University Association in addition to International Association of Universities. The rector of the university as of now is Prof. Dr. Abdullah Y. Oztoprak. Eastern Mediterranean

University has also the biggest library in the whole Island, collection of books and articles are more than 120000 to this day and offer free privileges and access to hundreds of different sources and databases (Figure 4.11). However, the question that this study raises and tries to answer is the extent of environmental education through various modules in the university's overall curricula? In another hand, the level of dissemination of environmental knowledge and awareness in the context of university education is the main emphasis of this study.

4.8 EMU Strategic Plan

According to university's web site this plan span's across 2012 to 2015:

The Mission Statement of University includes sustainability and offering quality education in range of international standards, researching and contributing to society and aims to meet the requirements of stakeholders and create a multicultural and international atmosphere.

4.9 The Role of EMU in Environment Education and Awareness

The University's student activities club established an environmental group which members are dedicated to maintain environmental activities such as spread notifications about wastes and health problems, wastes disposal, petitioning to managers for any needed action to be taken for the sake of university's environment. Because of universities placement on the island, seaside and beach activities such as sports and festivals are taking place regularly throughout semesters in and around the university areas. Research center in EMU is also focus on development and exploration with the effective use of green-environment energy sources and power consumptions plus the developing polices and planning regarding energy and economics. These activities fall in to 3 categories of application, research and education.

Because of Eastern Mediterranean University's well-equipped both with facilities and individual experts, these environmental preservation projects can be executed at both international and domestic levels. There are several projects are taken or undertaken by these centers such as small-scale wind turbine design, energy survey of bursa textile sector and residential energy consumption surveys.

Chapter 5

METHODOLOGY

In this chapter the study focuses on methodology and challenges related to this research. There are data and information related to study's approach, reason behind choosing this approach, data collection, structure of questionnaire and results of the study.

5.1 Research Approach of the Study

For this research the quantitative or deductive approach is used. Deductive approach is concerned with developing hypothesis, gathering data and eventually testing the hypothesis. Even though, hypothesis testing has not been applied in this study; however, survey questionnaires were administered and the quantitative data analyzed to assess the case based on the research questions (Hyde, 2000). This is highly approached method in case studies. In a way, this is a case study where researcher is trying to solve a puzzle (http://www.gttp.org/docs/HowToWriteAGoodCase.pdf).

The puzzle here is to explore the degree of environmental education that is provided to the students in one hand and students' environmental awareness in another hand. The main research question is: what is the extent of university's environmental education and how it is affecting the students? 'Overall case study research excels at bringing us to an understanding of a complex issue or object and can extend experience or add strength to what is already known through previous research. Case studies emphasize detailed contextual analysis of a limited number of events or conditions and their relationships

(https://www.ischool.utexas.edu/~ssoy/usesusers/l391d1b.htm). Researcher Robert K. Yin defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used (Yin, 1984, p. 23). At the end, case study has become a method in its own right. Researchers from many disciplines use the case study method to build upon theory, to produce new theory, to dispute or challenge theory, to explain a situation, to provide a basis to apply solutions to situations, to explore, or to describe an object or phenomenon (https://www.ischool.utexas.edu/~ssoy/usesusers/l391d1b.htm).

In the meantime, the study questions the degree of student's' environmental awareness and knowledge. The nexus between these two dimensions will have implications for the future environmental behavior of the students after they graduate and involve in the real world decision making. Justification for this case study lies with the challenges of environmental problems that humanity faces around the world. This has been established by various models and statistical evidences as explained in the literature review. Educational institutions' role in combating these challenges is paramount. Therefore, examining such cases is highly demanded. This is also the main problem in this case that this study is trying to examine.

5.1.1 Comparing Deductive and inductive process

Deductive approach starts with several hypothesis and theories will be tested after observations and then ends with conformation of null hypothesis or hypothesis (Saleem, 2008). Mertens (2008) further explained deductive approach by the means of hypotheses, which can be derived from the propositions of the theory. In other words, deductive approach is concerned with deducting conclusions from premises

or propositions. “Deduction begins with an expected pattern that is tested against observations, whereas induction begins with observations and seeks to find a pattern within them”. Gill and Johnson (2010) informed that deductive research approach explores a known theory or phenomenon and tests if that theory is valid in a given circumstances. “The deductive approach follows the path of logic most closely. The reasoning starts with a theory and leads to a new hypothesis. This hypothesis is put to the test by confronting it with observations that either lead to a confirmation or a rejection of the hypothesis” (See figure 5.1).

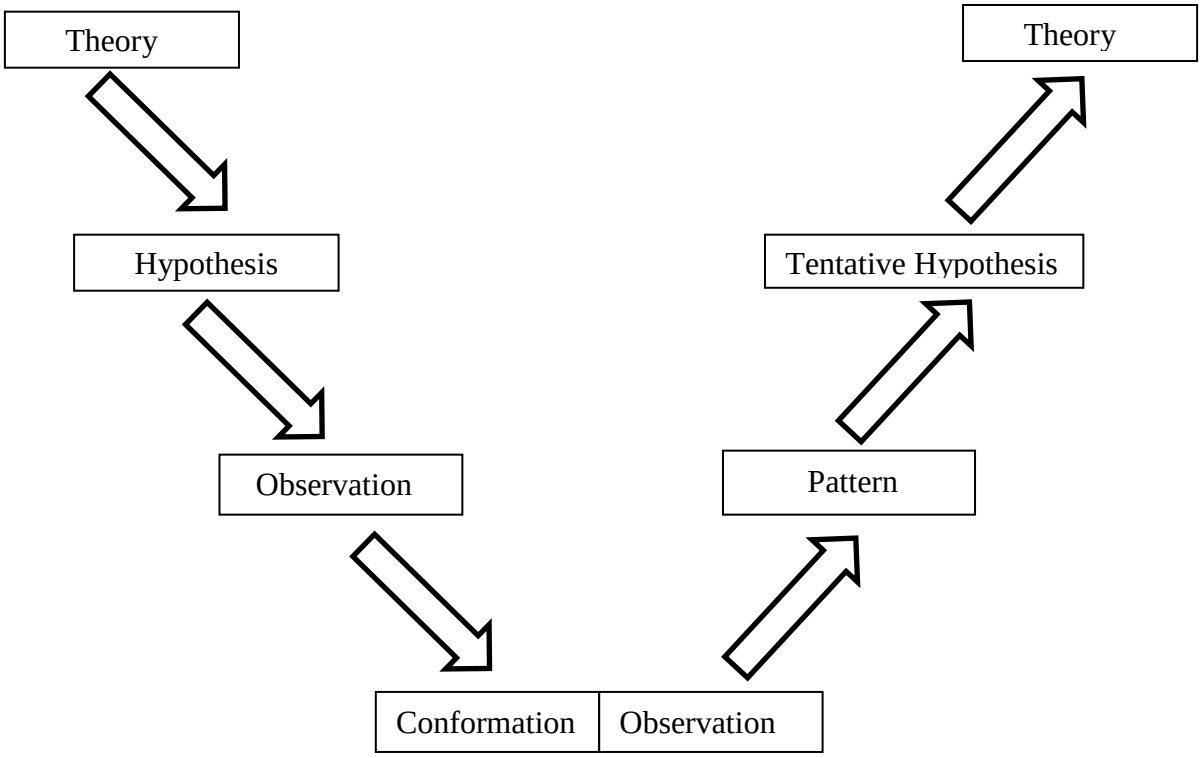

Figure 5.1. Deductive and Inductive Approaches
(Source Hyde 2000)

In inductive approach, researchers can use real sample and examples and prove the theory and assumptions (Ridenour, Newman & Benz, 2008). This type of approach is instrument for researchers in getting general data and related to human resource topic (Ritchie & Lewis, 2003). Inductive approach is mainly in terms of qualitative study

but also they can be inductive approaches using both qualitative and quantitative approaches (Crowther & Lancaster, 2009) (See Figure 5.1). A quantitative research method has been utilized for this research. A survey questionnaire has been designed based on material of literature review and similar studies which targeted the university students.

5.2 Sampling

Sampling approach is based on non-probability sampling with a focus on purposive sampling. This approach has become an increasingly used and cited tool in qualitative research, as well as, quantitative research; a trend that has recently accelerated with the publication of Alexander George and Andrew Bennett's text (2005), *Case Studies and Theory Development in the Social Sciences*. In this study, as mentioned in the introduction, students in the Eastern Mediterranean University were targeted who belong to different faculties and schools. An effort was made to contact students from different levels of schooling. In total, 500 questionnaires were distributed; however, only 200 were collected from sample group. Of the 200 collected survey questionnaires, 150 were valid and correct. The rest were incomplete. The collected data was analyzed by SPSS V22.00 the latest version (http://pic.dhe.ibm.com/infocenter/spssstat/v22r0m0/index.jsp).

5.3 Questionnaire Development

For this research a set of 55 questionnaires were designed based on literature review on the topic. However; the main source of questionnaires came from Bloom (2008), Weidner (2002), Jang-Hsu (2004), Chin-Ivy et al (1998), and Özden (2008) to name a few. The questions (instruments) focused on measuring environmental awareness, knowledge of environmental issues, practical involvement in environmental activities, and scholastic expose to environmental topics that supposed to be provided

by the educational institution of the students. In order to ensure the validity and the appropriateness of the instrument and their clarity, a pilot study was conducted among 25 respondents. This allowed for correction and removal of unclear issues. These students were not included in the main survey to avoid any biased result. Overall, a pilot study allows asking the subjects for feedback to identify ambiguities and difficult questions, record the time taken to complete the questionnaire and decide whether it is reasonable discard all unnecessary, difficult or ambiguous questions (http://sru.soc.surrey.ac.uk/SRU35.html). It is important to assess the reliability or consistency of an instrument. There are two types of reliability: internal consistency (e.g., Cronbach's Alpha) and stability (test-retest). For the pilot test, Cronbach's Alpha reliability for the total of the 50 items was + .72. There is general agreement that + .70-75 or above indicates appropriate instrument internal consistency.

All questionnaire items were distributed in both English and also Turkish for students who lacked the proficiency in English. The English survey has been translated by back-translation model (McGorry, 2000). As demonstrated in table 5.1, the distribution of respondents' profile composed of 53.3% male and 46.7 percent female. 41.3% of respondents were between 18 and 24 years of age that had the highest frequency. The lowest age category was 5.3% who were over 55 years old and above. Educational profile of the respondents contained 67.3% with undergraduate degree of respondents were undergraduate and they have the most frequency, while 32.7 percent were graduate, which they have the lowest frequency.

Table 5.1. Distribution of Respondents Profile

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
18-24	62	41.3	41.3	41.3
25-34	30	20.0	20.0	20.0
35-44	27	18.0	18.0	18.0
45-54	23	15.3	15.3	15.3
55+	8	5.3	5.3	5.3
Total		100.0	100.0	100.0
Undergraduate	101	67.3	67.3	67.3
Graduate	49	32.7	32.7	32.7
Total	150	100	100	100
Male	80	53.3	53.3	53.3
Female	70	46.7	46.7	46.7
Total	150	100	100	100.0

5.4 Data Analysis

Data analysis for each item of the research instrument has been produced by SPSS containing the frequency, valid percentage, standard deviation and mean. Such data analysis process is also known as ‘data from single-round survey’. In this type of study the reference to other information is rather limited. Therefore, a flat file has been prepared that contains essential columns for analysis and interpretation; this is highly used process common to almost all standard statistical packages (http://www.reading.ac.uk/ssc/n/resources/Docs/Approaches_to_the_analysis_of_survey_data.pdf).

Stages of data analysis contain exploratory data analysis where by looking at the data file (Figure 5.2). This is followed by the second stage of the data analysis where data file has produced the following description for each item. Nevertheless, the second stage is a process known as ‘driving the main findings’. This stage is indeed a clear cut version of the data. For further statistical description, see Appendix B.

5.5 Findings

Regarding the issue of energy, from the total numbers of 150 respondents, 46.7% have mentioned the significance of wind power, this item has the highest frequency, whereas, only 5.3% of respondents have stated that solar radiation is important, which they have the lowest frequency. In terms of Sources of Energy that contributes to environmental problems, from the total numbers of 150 respondents, 52% have stated that nuclear power plants play a minimal role in contributing to environmental problems, responded with highest frequency. While only 2% percent of respondents stated that solar energy and its environmental impact is the least.

Regarding the consumption of fossil fuels such as coal, oil and natural gas, which are the main causes of producing carbon dioxide into the atmosphere, from the total numbers of 150 respondents, 33.3% of respondents have stated that as a result of burning coal and oil the amount of carbon dioxide in the atmosphere is increasing. Interestingly, 8% of respondents have stated burning fossil fuels in fact decreases the carbon dioxide in the atmosphere.

Respondents' comments on the major air pollutant discharged by motor vehicles indicated that The total numbers of 150 respondents, 52.7% of respondents have stated that solid particles is the major air pollutant discharged by motor vehicles which they have the most frequency. While the 6 percent of respondents have announced that carbon monoxide is the major air pollutant discharged by motor vehicles, and have the lowest frequency. The principal sources of air pollution in big cities, regarding this issue, the total numbers of 150 respondents, 54.7% of respondents have stated that the principal sources of air pollution in big cities are

motor vehicles and industries which they have the most frequency. While the 3.3 percent of respondents have announced that the principal sources of air pollution in big cities are agriculture and industries.

About the impact and effect of carbon monoxide as a serious air pollutant, the total numbers of 150 respondents, 38% of respondents have stated that carbon monoxide is a serious air pollutant because it is poisonous to humans and they have the most frequency. However, 16% of respondents have announced that carbon monoxide is a serious air pollutant because it is harmful to vegetation.

From the total numbers of 150 respondents, 34% of respondents have stated that increased carbon dioxide in the atmosphere is caused by extensive deforestation. However, they failed to relate deforestation with wood burning which is the main cause of pollution in the developing countries. Again the knowledge of consumption of chemical fertilizers, as one of the major pollutants in agriculture and farming, remained minimal (14%).

For the major source of oil pollution in the oceans, 33.3% of respondents have stated that refineries are the major source of oil pollution in the oceans. While 10.7 % of respondents have stated that oil tankers are the major source of oil pollution in the oceans with lowest frequency.

Regarding the management of the waste management, 42% of respondents have stated that waste thrown into bodies of water kills fish because the decaying waste adds carbon dioxide to water. In reference to noise pollution, 44% of respondents have stated that noise levels have increased through the rapid industrial development.

While the 0.7% of respondents has announced that noise levels have increased through the rapidly ageing population and they have the lowest frequency. Respondent's comments on human's relation to nature and 42.7% of respondents have stated that humans should come up with technological innovations to control the environment impact and increasing pollution. While 6.7 % of respondents have stated that humans should coexist with nature by understanding and protecting. Their comments on issue of acid rain, 30.7% of respondents have stated that chlorofluorocarbons (CFCs) are the main causes of acid rain. While the 12 percent of respondents have announced that methane increase the acidity of rain.

Regarding the issue of deforestation, 62.7% of respondents have stated that deforestation is responsible for the distortion of the rainfall, the destruction of habitat and food supply, extinction of wildlife and the destruction of soil erosion.

Regarding the greenhouse effect, 48.7% of respondents have stated that increased amount of carbon dioxide in the atmosphere, which traps the heat radiated from the ground, is the cause of the greenhouse effect. While the 4 percent of respondents have announced that the cause of the greenhouse effect is increased rate of melting of polar ice caps due to increased temperature of the atmosphere.

When asked how they will be responsible for protection of the environment, 33.3% of respondents have stated that national council on the environment should be most responsible for protection of the environment. While the 12 percent of respondents have announced that business organizations should be most responsibility for protection of the environment. Regarding the overall Knowledge about the environment, 23.3% of respondents have stated that special environmental courses at

school is the best describes the way in which they have gained most of their knowledge about the environment. 41% of respondents were agreeing that EMU has provided them with environmental knowledge.

When asked about environmental/ecological related courses in EMU, the total, 29% of respondents have stated that the number of environmentally/ecologically related courses that are taken at EMU have not been more than three. While the 9.3 percent of respondents have stated that they have not taken any courses relevant to giving them environmental knowledge .And /or, when asked about EMU's Involvement in environmental awareness, 38% of respondents were agreeing that EMU is seriously involved in environmental awareness campaign. Environmental courses that are offered at EMU, 43% of respondents have stated that environmental courses are part of their curriculum. Regarding TRNC's environmental issues, 35% of respondents have stated that most of the electrical energy used in TRNC is produced by oil-burning power plants. While the 8.7 percent of respondents have announced that most of the electrical energy used in TRNC is produced by nuclear power plants. In relation to solid wastes in TRNC, 40% of respondents have stated that most of the solid waste is produced by industrial and residential activities. For further statistical description, see Appendix B.

Table 5.2. Data Analysis Description

No	Questions/issues	F	%	Valid %	S.D.	Mean
1	An Important World-Wide Source of Energy	70	46.7	46.7	.54	3.15
2	Sources of Energy Contributes to Environmental Problems	78	52.0	52.0	.49	3.54
3	A Renewable Resource	60	40.0	40.0	.61	2.95
4	Result of Burning Coal, Oil and Carbon Dioxide in the Atmosphere	50	33.3	33.3	.67	2.86
5	The Major Air Pollutant Discharged by Motor Vehicles	79	52.7	52.7	.51	3.67
6	The Principal Sources of Air Pollution in Big Cities	82	54.7	54.7	.53	3.68
7	Carbon Monoxide as a Serious Air Pollutant	57	38.0	38.0	.69	2.81
8	Increased Carbon Dioxide in the Atmosphere	51	34.0	34.0	.71	2.65
9	Air Pollution	92	61.3	61.3	.45	4.12
10	Major Source of Oil Pollution in the Oceans	81	54.0	54.0	.51	3.87
11	The Decaying Waste	51	42.0	42.0	.60	2.65
12	Noise Levels	66	44.0	44.0	.63	2.61
13	Humans Relation to Nature	65	42.7	42.7	.62	2.59
14	Increases the Acidity of Rain	46	30.7	30.7	.73	2.10
15	Deforestation	94	62.7	62.7	.46	3.78
16	Greenhouse Effect	55	36.7	36.7	.68	2.64
17	Responsible for Protection of The Environment	65	35.8	35.8	.70	2.11
18	Knowledge about the Environment	99	66.0	66.0	.43	4.6
19	The Environmental Problems	108	72	72	.38	4.68
20	EMU and Environmental Knowledge	99	66.0	66.0	.41	4.62
21	Environmental/Ecological Related Courses in EMU	103	68.7	68.7	.40	3.86
22	EMU Involvement in Environmental Awareness Campaign	38	25.3	25.3	.78	2.68
23	Environmental Courses	111	74	74	.36	3.95
24	The Electrical Energy Used In NORTH CYPRUS	106	70.7	70.7	.44	3.96
25	The Solid Wastes In NORTH CYPRUS	71	47.3	47.3	.67	1.94
26	The Environmental Problems Serious In NORTH CYPRUS	47	31.3	31.3	.73	2.64
27	Humans must live in harmony with nature in order to survive	107	71.3	71.3	.44	3.88
28	Humans have the right to modify the natural environment to suit their needs.	41.3	32	32	.81	1.57
29	The remaining forests in the world should be conserved at all costs	41.3	26	26	.87	1.48
30	We are all responsible in one way or another for	52	28.5	28.5	.83	1.95

	the depletion of the ozone layer and global warming.					
31	How often do you reuse items such as glass bottles?	77	51.3	51.3	.61	2.35
32	How often do you choose products with green labels?	52	34.7	34.7	.71	2.05
33	How often do you buy products with a lot of packaging?	71	47.3	47.3	.61	2.67
34	How often do you litter when nobody is watching?	66	44	44	.66	2.18
35	How often do you keep papers which are printed on one side in order to write on the other side?	66	44	44	.65	2.14
36	How often do you turn off the lights in rooms which are not being used?	61	41.7	41.7	.69	2.32
37	How often are you being driven around in a private car?	100	66.7	66.7	.34	4.63
38	How often do you take shorter showers?	91	60.7	60.7	.33	4.55
39	How often do you buy aerosol products without checking whether they contain CFCs?	56	37.3	37.3	.68	2.58
40	How often do you use the air-conditioner while you sleep?	66	44	44	.67	2.26
41	How often do you go to an exhibition concerning the environment when there is a public exhibition?	64	42.7	42.7	.65	2.3
42	Whom do you think should be most responsible for protection of the environment?	50	33.3	33.3	.77	2.09
43	Which *one* of the following best describes the way in which you have gained most of your knowledge about the environment?	35	23.3	23.3	.81	1.99
44	Which one of the environmental problems listed below is an important issue for you personally?	25	16.7	16.7	.94	1.80
45	EMU has provided me with environmental knowledge.	61	40.7	40.7	.68	2.70
46	The number of environmentally/ecologically related courses taken at EMU.	43	28.7	28.7	.95	1.76
47	The number of environmentally/ecologically relevant workshops attended in EMU	57	38	38	.72	2.02
48	How many environmentally organized workshops you have attended since you been in EMU?	64	42.7	42.7	.65	2.45
49	EMU is seriously involved in environmental awareness campaign.	57	38	38	.72	2.02
50	Environmental courses are part of my curriculum.	64	42.7	42.7	.67	2.82
51	My faculty/department has organized several filed trips related to environmental awareness.	68	45.2	45.2	.65	2.86
52	Most of the electrical energy used in NORTH CYPRUS is produced by	40	26.7	26.7	.88	1.95
53	Most of the solid wastes in NORTH CYPRUS are produced by	60	40	40	.67	2.37
54	Which one of the environmental problems listed in the box below do you think is the most serious in NORTH CYPRUS? Thick as many as you want.	34	22.7	22.7	.89	1.59
55	The improvement in air quality in NORTH CYPRUS is mainly the result of	46	30.7	30.7	.73	1.87

Overall, the study revealed that respondents have minimal knowledge and awareness regarding the main renewable sources of energy. Another major finding is that lack of knowledge regarding the differences between non-renewable and renewable sources of energy and their role in affecting the environment. Some respondents have thought that burning fossil fuels actually decreases the amount of carbon dioxide in the atmosphere. This is an utter lack of general knowledge about the main causes of global warming. Respondents have demonstrated confused views regarding the role of the educational institutions in raising and facilitating an understanding of environmental issues. The result indicated that overall knowledge and awareness of environmental issues among the students at EMU is below the average. Students' knowledge and understanding of environmental issues remain to be superficial at best. The study revealed that EMU must reevaluate its commitment to environmental education and raising environmental awareness among the students as the future policy makers and community leaders. The result of this study, to some extent, is in line with other studies; for instance, Jang Hsu(2004), stated that formal university education plays an important role in dissemination of environmental knowledge among the students; however, informal education is also playing an intervening role in prolonging such behavior among the students. As he/she stated**:**

> 'Therefore, EE programs in school should create opportunities for students to be in touch and in cooperation with non-formal EE institutions. For example, students should become familiar with the educational resources in parks, participate in outdoor activities held by non-formal EE institutions, act collectively to resolve environmental problems with environmental organizations, or establish friendship with environmental organization members or park rangers, and share each other's personal experiences (Jang Hsu, 2004: 45).

And/or, this research exposed that environmentally oriented activities remains low in the case of EMU. This finding is verified by another study in a different institution where the issue of environmental campaign plays an important role in enhancing students' awareness and knowledge. Unfortunately, this is highly ignored in the case of EMU. In the case of studying environmental awareness of Chinese students, Kwai-Wang (2003: 531) stated: 'Public awareness about environmental problems has increased remarkably in recent years, largely as a result of expanded public education and enhanced coverage of environmental issues by the mass media'.

Chapter 6

CONCLUSION AND DISCUSSION

6.1 Discussion and Conclusion

A survey was developed to measure the main general and specific understanding of environmental issues among the students at EMU by evaluating the environmental awareness and knowledge of the students in one hand and university's efforts in providing such knowledge. The survey focused on collecting data about the viewpoints of the students regarding information and knowledge on environmental issues, challenges, problems as well as their causes.

Climate change, global warming, and external forces affect the earth atmosphere by changing compositions and increasing greenhouse effects. Species extinction, reduction of biodiversity, various forms of pollution and pollutants, desertification, poverty, land erosion, disease and hunger, migration and radioactive related disasters, population growth, to name a few, are among the challenges that students of today will face as decision makers of tomorrow. The concerns of environmentalists and related movements transcend dominant anthropocentric philosophy and try to replace it with eco-centric behavior (Baker, 2006). Such social development depends on the educational institutions' commitment to the dissemination of knowledge and awareness among the students that they are training and educating.

Environmental awareness has become an important means to achieve environmental goals through conservation, green technology, laws and regulation, policy, management and behavioral change. The main goal of environmental awareness was, and still is, to understand the harmonious living between humans and nature. Climate issue is one of the potentially catastrophic issues that started since the last century of industrialization that resulted in increasing greenhouse gases and warming the planet. This is a challenge that students must get ready to deal with.

Based on the findings of this study, students at EMU are not necessarily getting the environmental education that they need and their knowledge/awareness of environmental issues is minimal. Environmental movements began to address these problems and issues throughout education and awareness activities since 1960s (Rees, 2009). The impacts of changing climate, biodiversity losses and excess use of natural resource along health problems are related to weak sustainability of ecosystem and environmental stability. Climate change by itself encompasses numerous anomalies in the ecosystems including land, forest, oceans, health, economy and social upheavals (Caspar et al. 2007).

One of the other main environmental problems that require educational institutions commitment is the migration from rural to urban areas. This process represents the challenges of policy and planning in urban areas that require professional training to combine environmental issues through education and learning. As stated by Kwai-Wong (2003: 519):

> 'How people perceive, and behave in response to, environmental problems is important in understanding responses from individual, group, and societal levels. Although people will not always do what they say they will, their perceptions are important steps towards action, and behavior is an important element in forging purposeful responses. The factors that determine

> environmental awareness are multi-faceted. Education attainment is certainly one of the major factors that affect people's attitudes towards and behavior in the environment'.

The goal of this research was to examine the extent of Eastern Mediterranean University students' environmental awareness and the depth of their understanding and knowledge about the environment that surrounds them.

The findings of this research is consistent with several past researches such as Wong (2003) on evaluating the awareness of university students on environmental awareness and issues and Metin (2010) in developing a measurement method to help understand the communities knowledge in order to better coordination of teaching regarding the environmental awareness studies. Many environmental issues have already being presented in many educational levels to increase the understanding of students regarding the ecology and environmental awareness (Yilmaz et al., 2004).

This study has tried to add one more dimension to the literature on the topic by assessing the university's commitment to dissemination of environmental knowledge and awareness among its students. It is highly plausible that educational institutions in cooperation with policy makers can reevaluate their curriculum in order to adopt various instruments/modules to facilitate the learning processes in relation to environment. As the study revealed, students at EMU are not necessarily receiving environmental education in a manner that can affect them to behave properly toward the environment in their future carrier arena. By evaluating the university's modules and other conducts in relation to environmental education, it has been realized that there are shortcomings in this regard.

6.2 Managerial Implications

The main analysis of the study result has significant implications for university coordinators, managers, and practitioners. It has significant implication for the committees that are responsible for designing the curriculum. First of all, because of current state of ongoing environmental education that has already being taught in universities and other higher education institutions, it is vital to review these data to evaluate their educational directions choices for community and it is critical to consider the results to gain a better understanding of how their theoretical systems worked.

Secondly, the decision makers and managers in developing the awareness campaigns should understand the significant value of environmental awareness among the population of community. For getting the best results educating the university's students it is the best to keep updating their educational direction of environmental broadcasts in either journals or other media. Furthermore, one important outcome of the study is to direct and convince the university managers to cooperate with public sector and private sector in providing environmental education.

The link between environmental law and social responsibility in the context of enforcement can best be illustrated through environmental education and public awareness initiatives. Public awareness and participation is important in all aspects of enforcement, not only in understanding basic environment and human rights, but also in fostering a sense of responsibility and proactive environmental citizenship. The following examples focus on environmental awareness raising, public participation, and environmental rights.

Third, with the university environment is one with the larger community, the understanding of various important ecosystems are crucial and revealing the extent knowledge of population which will take part in future most important decisions for society is critical. So university's commitment and effort which puts to educating the various groups of student as a primary education system is one of the main aspects of this study to show how much this education method has been successful to this day.

Last but not least, environmental education and awareness are both a challenge and an approach to teach and treat students in a level that has been effective in transmitting the environmental issues and knowledge to future decision makers of society.

Overall, providing awareness is most successful when they are targeting at specific groups (i.e., students), because information can be tailored to the activities, needs, and challenges of the group. Additionally, involving organizations and communities plus the university itself in environmental protection and enforcement can create a sense of stewardship towards the environment, ease hardship through the collaboration and provide a forum for new ideas and greater participation. Examples of such collaboration and stewardship are provided in the initiatives of some NGOs and organizations in the private sectors around the world. They have been active in raising public awareness of environment development issues and mobilized people to take actions that have contributed to positive changes for the environment. This is also possible at the university level education.

6.3 Future Research and Limitation of the Study

This research has limitations and several considerations have to be made for future studies with related topics. Firstly, the sample is from the students of various faculties and departments in Eastern Mediterranean University only. Thus the idea is limited to this certain group.

For future research it is best to survey multiple groups from various universities to evaluate their environmental education awareness and research with different region and different characteristics of area's ecology. Also it is highly suggested to expand on new areas of environmental education and add new variables and sub variables to evaluate new section of environmental education in more countries among different cultures and educational levels.

A similar study can be conducted on a larger sample selected from all the districts of the state of M.P. The study can also be undertaken on a sample at college and university level. To verify the findings of the present study inter-state and cross cultural studies can be conducted.

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APPENDICES

Appendix A: Questionnaire

EASTERN MEDITERRANEAN UNIVERSITY
SCHOOL OF TOURISM AND HOSPITALITY MANAGEMENT

Dear Respondent

As part of my Master thesis at the Eastern Mediterranean University, school of tourism and hospitality management in North Cyprus, I am conducting a survey on environmental awareness and practices in Eastern Mediterranean University in North Cyprus. The results will be a great help and beneficial to understanding the level of environmental awareness among the people and students of Eastern Mediterranean University and in return raise the understanding of preserving the natural environment and highlight the strong and weak points of current policies regarding the conservation and preservation of natural environment and thus having a stronger relation between human and the island. Any obtained information through this research will remain confidential and the identity of participants will be restricted to this study. There is no need to reveal your identity or name. I will appreciate if you could complete this questionnaire. If you have inquiries or questions you can contact me through email or phone number include in following:

Phone:

Email:

Sharareh Sadati

PART A

Demographical questions, for statistical purposes only, please specify the appropriate answer by ticking

1. What is your gender?
   Male ☐ Female ☐

2. What is your age group?
   a) 18-24 ☐
   b) 25-34 ☐
   c) 45-54 ☐
   d) 35-44 ☐
   e) 55+ ☐

3. What is your education level?
   a) Undergraduate
   b) Graduate ☐

Section A:

Instruction: Select *one* response (1, 2, 3 or 4) which provides the best answer. Circle your answers on the Answer Sheet provided.

1. Which of the following is most likely to be an important world-wide source of energy for the future?
   1 solar radiation
   2 tidal flow
   3 geothermal sources
   4 wind power
   5 I don't know.

2. Which of the following sources of energy contributes the least to environmental problems?
   1 solar
   2 coal
   3 petroleum
   4 nuclear
   5 I don't know.

3. Which of the following is a renewable resource?
   1 copper

2 coal
3 oil
4 water
5 I don't know.

4. As a result of burning coal and oil the amount of carbon dioxide in the atmosphere is

1 decreasing, but will not affect the earth's environment
2 decreasing, with possible serious effects on the earth's environment
3 increasing, but will not affect the earth's environment
4 increasing, with possible serious effects on the earth's environment
5 I don't know.

5. The major air pollutant (measured by weight) discharged by motor vehicles is

1 carbon monoxide
2 carbon dioxide
3 sulphur dioxide
4 solid particles
5 I don't know.

6. The principal sources of air pollution in big cities are

1 homes and industries
2 agriculture and industries
3 motor vehicles and industries
4 motor vehicles and homes
5 I don't know.

7. Carbon monoxide is a serious air pollutant because it

1 is poisonous to humans
2 causes atmospheric haze
3 is harmful to vegetation
4 is corrosive to metals
5 I don't know.

8. Increased carbon dioxide in the atmosphere is caused by

1 extensive deforestation and burning of fossil fuels
2 using aerosols and refrigerants found in air conditioners
3 breakdown of inorganic substances
4 using chemical fertilisers
5 I don't know.

9. Which of the following statements is true about air pollution?

1 Air pollution is caused by man-made processes only.
2 Only some pollutants are harmful to health.
3 Air pollution is confined to certain political boundaries.
4 Pollution may give rise to irreversible changes in the environment.
5 I don't know.

10. Which of the following is the major source of oil pollution in the oceans?

1 offshore drilling
2 oil tanker operation

3 refineries
4 motor vehicle waste
5 I don't know.

11. Waste thrown into bodies of water kills fish because the decaying waste
    1 adds carbon dioxide to water
    2 gives off a bad smell
    3 removes the food eaten by fish
    4 uses up oxygen needed by fishes in respiration
    5 I don't know.

12. Noise levels have increased through the following activities
    1 rapid urbanisation
    2 rapid industrial development
    3 rapidly ageing population
    4 rapid increase in vehicle population
    5 I don't know.

13. How should humans best relate to nature?
    1 coexist with nature by understanding and protecting it
    2 wipe out all consumers that compete with humans and their animals
    3 increase food production with the use of irrigation, pesticides, and inorganic fertilisers
    4 increase technological activities designed to control the environment
    5 I don't know.

14. Which of the following *increases* the acidity of rain?
    1 chlorofluorocarbons (CFCs)
    2 carbon
    3 methane
    4 sulphur dioxide
    5 I don't know.

15. Deforestation is responsible for
    1 the distortion of the rainfall
    2 the destruction of habitat and foods species for the wildlife
    3 the destruction of soil in the mountains due to erosion.
    4 all of the above.
    5 I don't know.

16. Which of the following is the cause of the 'greenhouse effect'?
    1 increased amount of carbon dioxide in the atmosphere which traps the heat radiated from the ground
    2 increased vegetation on the surface of the earth
    3 increased rate of melting of polar ice caps due to increased temperature of the atmosphere
    4 increased destruction of the ozone layer
    5 I don't know.

17. Which of the following statements is *not true*?

1 Chlorine reacts with sunlight to produce pollutants like ozone.
2 Ozone prevents the Earth's surface from absorbing into too many ultraviolet rays from the sun.
3 CFCs and methane are ozone depleting gases.
4 Excess ultraviolet rays can cause skin cancer.
5 I don't know.

Section B:

Instruction: Circle *one* response (1, 2, 3, 4 or 5) on the Answer Sheet provided to show the extent to which you agree or disagree with the statements.
1 = strongly disagree
2 = disagree
3 = neutral (neither agree nor disagree)
4 = agree
5 = strongly agree

18. The oceans represent an unused area where man should dispose of his waste.
19. In order to reduce our use of oil, people should be allowed to own only cars that have a low petrol consumption.
20. The conservation of natural resources is totally the government's responsibility.
21. The earth is like a spaceship with only limited room and resources.
22. Controls should be placed on industry to protect the environment from pollution, even if it means that things will cost more.
23. Considering the problems of pollution and crowding, we need to decrease the use of cars.
24. Strong controls by the government are the most effective way to reduce pollution problems.
25. When humans interfere with nature it often produces disastrous consequences.
26. Plants and animals exist primarily to be used by humans.
27. Humans must live in harmony with nature in order to survive.
28. Humans have the right to modify the natural environment to suit their needs.
29. The remaining forests in the world should be conserved at all costs.
30. We are all responsible in one way or another for the depletion of the ozone layer and global warming.

Section C:

Instruction: Circle *one* response (1, 2, 3 or 4) on the Answer Sheet provided to
indicate the frequency of your action.
1 = never
2 = seldom
3 = sometimes
4 = always

31. How often do you reuse items such as glass bottles?
32. How often do you choose products with green labels?
33. How often do you buy products with a lot of packaging?
34. How often do you litter when nobody is watching ?

35. How often do you keep papers which are printed on one side in order to write on the other side?
36. How often do you turn off the lights in rooms which are not being used?
37. How often are you being driven around in a private car?
38. How often do you take shorter showers?
39. How often do you buy aerosol products without checking whether they contain CFCs?
40. How often do you use the air-conditioner while you sleep?
41. How often do you go to an exhibition concerning the environment when there is a public exhibition?

Instruction: Write your answers in the brackets on the Answer Sheet provided.

42. Whom do you think should be most responsible for protection of the

environment?

1 government
2 business organisations
3 National Council on the Environment
4 Nature Society
5 everybody.

43. Which *one* of the following best describes the way in which you have gained most of your knowledge about the environment?

1 general education at school
2 special environmental courses at school
3 attending talks and exhibitions organised by other organisations
4 radio and television
5 private reading of books and magazines
6 talking with parents and friends
7 others (please specify).

44. Which one of the environmental problems listed below is an important issue for you personally?

1. Traffic jam/conjestion
2. Noise pollution
3. Rubbish disposal
4. Pubic health
5. Air pollution
6. Water pollution
7. Waste management
8. Deforestation
9. Lack of urban planning
10. Lack of recycling
11. Lack of environmental awareness
12. Land use

Section D:

45. EMU has provided me with environmental knowledge.

1. strongly disagree
2. disagree
3. neutral (have no idea)
4. agree
5. strongly agree

46. The number of environmentally/ecologically related courses taken at EMU.

1. none
2. one
2. two
3. three
4. I do not remember.

47. The number of environmentally/ecologically relevant workshops attended in EMU.

1. None
2. One
3. Two
4. Three
5. Do not remember

48. How many environmentally organized workshops you have attended since you been in EMU?

1. none
2. one
3. two
4. three
5. four.

49. EMU is seriously involved in environmental awareness campagine.

1. strongly disagree
2. disagree
3. have no idea
4. agree
5. strongly agree

50. Environmental courses are part of my curriculum.

1. strongly disagree
2. disagree
3. have no idea
4. agree
5. strongly agree.

51. my faculty/department have organized several filed trips related to environmental awareness.

1. strongly disagree

2. disagree
3. have no idea
4. agree
5. strongly agree.

52. Most of the electrical energy used in NORTH CYPRUS is produced by

1 nuclear power plants
2 coal-burning power plants
3 oil-burning power plants
4 natural gas power plants
5 I don't know.

53. Most of the solid wastes in NORTH CYPRUS are produced by

1 industrial and residential activities
2 residential and commercial activities
3 commercial and agricultural activities
4 agricultural and industrial activities
5 I don't know.

54.Which one of the environmental problems listed in the box below do you think is the most serious in NORTH CYPRUS? Thick as many as you want.

1. Traffic jam/conjestion
2. Noise pollution
3. Rubbish disposal
4. Pubic health
5. Air pollution
6. Water pollution
7. Waste management
8. Deforestation
9. Lack of urban planning
10. Lack of recycling
11. Lack of environmental awareness
12. Land use.

55. The improvement in air quality in NORTH CYPRUS is mainly the result of

1 a decline in the population
2 the voluntary action of citizens to reduce air pollution
3 the voluntary action of industry to reduce air pollution
4 action taken by the government
5 I don't know.

Thanks for your cooperation.

Appendix B: Distribution of Respondents

Table 5.2 Distribution of Respondents According to First Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Solar Radiation	8	5.3	5.3	5.3
Tidal Flow	27	18.0	18.0	18.0
Geothermal Source	13	8.7	8.7	8.7
Wind Power	70	46.7	46.7	46.7
I don't Know	32	21.3	21.3	21.3
Total	150	100.0	100.0	100.0

Table 5.3 Distribution of Respondents According to the Second Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Solar	3	2.0	2.0	2.0
Coal	24	16.0	16.0	16.0
Petroleum	10	6.7	6.7	6.7
Nuclear	78	52.0	52.0	52.0
I don't Know	35	23.3	23.3	23.3
Total	150	100.0	100.0	100.0

Table 5.4 Distribution of Respondents According to the Third Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Copper	19	12.7	12.7	12.7
Coal	24	16.0	16.0	16.0
Oil	7	4.7	4.7	4.7
Water	60	40.0	40.0	40.0
I don't Know	40	26.7	26.7	26.7
Total	150	100.0	100.0	100.0

Table 5.5 Distribution of Respondents According to the Fourth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Decreasing but not affect the earth environment	12	8.0	8.0	8.0
Decreasing, with possible serious effect on earth env.	17	11.3	11.3	11.3
Increasing but not affect the earth env.	24	16.0	16.0	16.0
Increasing, with possible serious effect on earth env.	50	33.3	33.3	33.3
I don't Know	47	31.3	31.3	31.3

Tolat	150	100.0	100.0	100.0

Table 5.6 Distribution of Respondents According to Fifth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Carbon Monoxide	9	6.0	6.0	6.0
Carbon Dioxide	26	17.3	17.3	17.3
Sulphure Dioxide	10	6.7	6.7	6.7
Solid Practicles	79	52.7	52.7	52.7
I don't Know	26	17.3	17.3	17.3
Total	150	100.0	100.0	100.0

Table 5.7 Distribution of Respondents According to Sixth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Home and Industries	17	11.3	11.3	11.3
Agriculture and Industries	5	3.3	3.3	3.3
Motor Vehicle and Ind.	82	54.7	54.7	54.7
Motor Vehicle and Homes	37	24.7	24.7	24.7
I don't Know	9	6.0	6.0	6.0
Total	150	100.0	100.0	100.0

Table (5-8): Distribution of Respondents According to Seventh Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Poisonous to humans	57	38.0	38.0	38.0
Causes atmospheric haze	25	16.7	16.7	16.7
Harmful to vegetation	24	16.0	16.0	16.0
Corrosive to metals	37	24.7	24.7	24.7
I don't Know	7	4.7	4.7	4.7
Total	150	100.0	100.0	100.0

Table 5.9 Distribution of Respondents According to Eighth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Extensive deforestation and burning of fossil feuls	51	34	34	34
Using aerosols and refrigerants found in air conditioners	34	22.7	22.7	22.7
Breakdown of inorganiz substances	33	22	22	22
Using chemical fertilisers	21	14	14	14
I don't Know	11	7.3	7.3	7.3
Total	150	150	150	150

Table 5.10 Distribution of Respondents According to Ninth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Air pollution is caused by man-made processes only	1	.7	.7	.7
Only some pollutants are harmful to health	34	22.7	22.7	23.3
Air pollution is confined to certain political boundaries	6	4.0	4.0	27.3
Pollution may give rise to irreversible changes in the environment	92	61.3	61.3	88.7
I don't know	17	11.3	11.3	11.3
Total	150	100	100	100

Table 5.11 Distribution of Respondents According to Tenth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Offshore drilling	20	13.3	13.3	13.3
Oil tanker operation	16	10.7	10.7	24
Refineries	81	54	54	78
Motor vehicle waste	25	16.7	16.7	94.7
I don't know	8	5.3	5.3	5.3
Total	150	100	100	100

Table 5.12 Distribution of Respondents According to Eleventh Question

Valid	Freq63uency	Percent	Valid Percent	Cumulative Percent
Adds carbon dioxide to water	51	42	42	42
Gives off a bad smell	21	14	14	56
Removes the food eaten by fish	29	19.3	19.3	75.3
Uses up oxygen needed byfishes in respiration	27	18	18	93.3
I don't know	10	6.7	6.7	6.7
Total	150	100	100	100

Table 5.13 Distribution of Respondents According to Twelfth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Urbanization	46	30.7	30.7	30.7
Rapid industrial Deveopment	66	44	44	74.7
Rapidly ageing population	1	.7	.7	75.3
Rapid increase in vehicle Population	37	24.7	24.7	24.7
Total	150	100	100	100

Table 5.14 Distribution of Respondents According to Thirteenth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Coexist with nature by understandingand protecting it	10	6.7	6.7	6.7
Wipe out all consumers that compete with humans and their increase food production	24	16	16	22.7
with use of irrigation, pestic	47	31.3	31.3	54
Increase technological activites designed to control environment	65	42.7	42.7	96.7
I don't Know	5	3.3	3.3	3.3
Tolat	150	100	100	100

Table 5.15 Distribution of Respondents According to Fourteenth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Chlorofluorocarbons (CFCs)	46	30.7	30.7	30.7
Carbon	20	13.3	13.3	44
Methane	18	12	12	56
Sulphur dioxode	40	26.7	26.7	82.7
I don't Know	26	17.3	17.3	17.3
Total	150	100	100	100

Table 5.16 Distribution of Respondents According to Fifteenth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
The distoration of the rainfall	27	18	18	18
The destruction of habitat and foods species for the wildi	4	2.7	2.7	20.7
The destruction of soil in the mountains due to erosion	11	7.3	7.3	28
All of the above	94	62.7	62.7	90
I don't know	14	9.3	9.3	9.3
Total	150	100	100	100

Table 5.17 Distribution of Respondents According to Sixteenth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Increased amount of carbon dioxide in the atmosphere	73	48.7	48.7	48.7
Increased vegetation on the surface of the earth	12	8	8	56.7
Increased rate of melting of polar ice caps due to increase	6	4	4	60.7
Increased destruction of the ozone layer	55	36.7	36.7	97.3
I don't Know	4	2.7	2.7	2.7
Total	150	100	100	100

Table 5.18 Distribution And Percentage Of Items Related To Questions Of 18-30

Items	**Strongly disagree**		**Disagree**		**Undecided or Neutral**		**Agree**		**Strongly agree**		**Mean**
	F	**P**	**F**	**P**	**F**	**P**	**F**	**P**	**F**	**P**	
Question 18	0	0	2	1.3	5	3.3	44	29.3	99	66	4.6
Question 19	0	0	1	0.7	4	2.7	37	24.7	108	72	4.68
Question 20	0	0	3	2	0	0	48	32	99	66	4.62
Question 21	3	2	10	6.7	13	8.7	103	68.7	21	14	3.86
Question 22	41	27.3	20	13.3	38	25.3	47	31.3	4	2.7	2.68
Question 23	1	0.7	8	5.3	9	6	111	74	21	14	3.95

Question 24	1	0.7	2	1.3	20	13.3	106	70.7	21	14	3.96
Question 25	71	47.3	37	24.7	26	17.3	12	8	4	2.7	1.94
Question 26	23	15.3	47	31.3	44	29.3	32	21.3	4	2.7	2.64
Question 27	2	1.3	13	8.7	7	4.7	107	71.3	21	14	3.88
Question 28	0	0	40	26.7	16	10.7	62	41.3	32	21.3	3.57
Question 29	1	0.7	39	26	22	14.7	62	41.3	26	17.3	3.48
Question 30	21	14	8	5.3	78	52	0	0	43	28.7	3.95

Table 5.19 Distribution and Percentage of Items Related to Questions 31-41

Items	**never**		**seldom**		**seldom**		**always**		**Mean**
	F	**P**	**F**	**P**	**F**	**P**	**F**	**P**	
Question 31	2	1.3	20	13.3	51	34	77	51.3	3.35
Question 32	4	2.7	44	29.3	50	33.3	52	34.7	3
Question 33	3	2	38	25.3	38	25.3	71	47.3	3.18
Question 34	3	2	33	22	48	32	66	44	3.18
Question 35	5	3.3	35	23.3	44	29.3	66	44	3.14
Question 36	30	20	61	40.7	40	26.7	19	12.7	2.32
Question 37	0	0	5	3.3	45	30	100	66.7	3.63
Question 38	0	0	8	5.3	51	34	91	60.7	3.55
Question 39	25	16.7	56	37.3	26	17.3	43	28.7	2.58
Question 40	6	4	15	10	63	42	66	44	3.26
Question 40	4	4.7	4	2.7	75	50	64	42.7	3.3

Table 5.20 Distribution of Respondents According to Forty-second Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Government	32	21.3	21.3	21.3
Business organizations	18	12	12	33.3
National council on the environment	50	33.3	33.3	66.7
Nature society	30	20	20	86.7
everybody	20	13.3	13.3	13.3
Total	150	100	100	100

Table 5.21 Distribution of Respondents According to Forty-Third Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
General education at school	15	10	10	10
Special environmental courses at school	35	23.3	23.3	33.3
Attending talks and exhibitions organized bt other organizations	30	20	20	53.3
Radio and television	25	16.7	16.7	70
Private reading of books and magazines	20	13.3	13.3	83.3
Talking with parents and friends	15	10	10	93.3
Others	10	6.7	6.7	6.7
Total	150	100	100	100

Table 5.22 Distribution of Respondents According to Forty-fourth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Traffic jam/congestion	15	10	10	10
Noise pollution	23	15.3	15.3	25.3
Rubbish disposal	10	6.7	6.7	32
Public health	13	8.7	8.7	40.7
Air pollution	25	16.7	16.7	57.3
Water pollution	20	13.3	13.3	70.7
Waste management	7	4.7	4.7	75.3
Deforestation	11	7.3	7.3	82.7
Lack of urban planning	6	4	4	86.7
Lack of recycling				
Lack of environmental	8	5.3	5.3	92
Awareness	7	4.7	4.7	96.7
Land use	5	3.3	3.3	3.3
Total	150	100	100	100

Table 5.23 Distribution of Respondents According to Forty-fifth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	10	6.7	6.7	6.7
Disagree	20	13.3	13.3	20
Neutral (have no idea)	35	23.3	23.3	43.3
Agree	61	40.7	40.7	84
Strongly agree	24	16	16	16
Total	150	100	100	100

Table 5.24 Distribution of Respondents According to Forty-sixth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
None	14	9.3	9.3	9.3
One	16	10.7	10.7	20
Two	39	26	26	46
three	43	28.7	28.7	74.7
I don't remember	38	25.3	25.3	25.3
Total	150	100	100	100

Table 5.25 Distribution of Respondents According to Forty-ninth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	14	9.3	9.3	9.3
Disagree	16	10.7	10.7	20
Neutral (have no idea)	39	26	26	46
Agree	57	38	38	84
Strongly agree	24	16	16	16
Total	150	100	100	100

Table 5.26 Distribution of Respondents According to Fiftieth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly disagree	20	13.3	13.3	13.3
Disagree	11	7.3	7.3	20.7
Neutral (have no idea)	31	20.7	20.7	41.3
Agree	64	42.7	42.7	84
Strongly agree	24	16	16	16
Total	150	100	100	100

Table 5.27 Distribution of Respondents According to Fifty-second Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Nuclear power plants	13	8.7	8.7	8.7
Coal-burning power	31	20.7	20.7	29.3
Plants	52	34.7	34.7	64
Oil-burning power plants				
Natural gas power plants	40	26.7	26.7	90.7
I don't Know	14	9.3	9.3	9.3
Total	150	100	100	100

Table 5.28 Distribution of Respondents According to Fifty-third Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Residential activities	60	40	40	40
Residential and commercial activites	27	18	18	58
Commercial activites				
Commercial and agricultrul activities	20	13.3	13.3	71.3
Agricultrul and industrial activities	28	18.7	18.7	90
I don't Know	15	10	10	10
Total	150	100	100	100

Table 5.29 Distribution of Respondents According to Forty-fourth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Traffic jam/congestion	17	11.3	11.3	11.3
Noise pollution	34	22.7	22.7	34
Rubbish disposal	20	13.3	13.3	47.3
Public health	13	8.7	8.7	40.7
Air pollution	15	10	10	66
Water pollution	10	6.7	6.7	72.7
Waste management	7	4.7	4.7	77.3
Deforestation	8	5.3	5.3	82.7
Lack of urban planning	6	4	4	86.7
Lack of recycling				
Lack of environmental	8	5.3	5.3	92
Awareness	7	4.7	4.7	96.7
Land use	5	3.3	3.3	3.3
Total	150	100	100	100

Table 5.30 Distribution of Respondents According to Forty-fifth Question

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
A decline in the population	29	19.3	19.3	19.3
The coluntary action of citizens to reduce air pollution	29	19.3	19.3	38.7
The voluntary action of industry to reduce air pollution	46	30.7	30.7	69.3
Action taken by the government	35	23.3	23.3	92.7
I don'tknow	11	7.3	7.3	7.3
Total	150	100	100	100