

# Understanding Environmental Worldview of Famagusta Residents and Its Determinants through Survey Research

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**Abstract:** Environmental attitude studies have been a key focus within the environmental research field, as the significance of ecological citizenship for the sustainable development discourse has been highly recognized in recent years. In this context, the influence of demographic variables on environmental attitude is an emerging issue that is widely investigated in the west. In this respect, this paper seeks to understand the impact of demographic variables on the environmental worldview of Famagusta residents in order to make a scientific contribution to the possible construction of relevant strategies. A random sample of 165 residents within the territory of Famagusta Municipality was chosen for the survey. The survey tapped the relationship between environmental (ecocentric and anthropocentric) attitudes and selected demographic variables (age, gender, education and household income) and the survey results were evaluated with the help of SPSS (statistical package for social sciences) analyses. The findings reveal that younger respondents, women and the highly educated do not achieve higher scores of environmental attitudes and household income has a statistically significant nonlinear effect.

**Key words:** Environmental worldview, demographic variables, survey research, Famagusta.

## 1. Introduction

Ecological citizenship can be considered the emerging key focus area within environmental research studies. As environmental behavior is the nucleus of environmentally based living, questions emerged about investigating the nature, structure and constructs of environmental action within the ecological citizenship debate.

Within this context, on the one hand, the environmental behavior studies have become widespread; On the other hand, questions have arisen about the factors influencing the environmental attitude as the catalyser of the environmental behavior. In other words, questions emerged in order to understand the driving forces, the determinants and the predictors of environmental worldview. In this

regard, beside socio-psychological [1-5] dynamics and socio-cultural [6-11] dynamics, socio-demographic characteristics were also frequently examined in order to understand if there is a considerable relation with the environmental worldview. Such that, there is distinctive amount of empirical research seeking to find the links between various socio-demographic characteristics (such as gender, age, education, race, residence, household income, etc.) and environmental worldview.

Developing strategies targeting to encourage sustainable lifestyles among the Famagusta residents appears as a potentially important and urgent need. Famagusta, North Cyprus is a city with high dynamics of growth in an uncontrolled and haphazard way. As a result of the non-sustainable urban development, the city dictates a new way of living to its inhabitants that is not familiar to them in terms of local socio-cultural characteristics and sensitivity to environmental values.

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Neither the urban form and layout nor the policies and institutions are adequate to positively influence the environment and environmental attitudes. In this regard, our hypothesis is that the validity of the need for ecological citizenship in Famagusta should be assessed in order to open a path towards more consciously established strategies for sustainable lifestyles in the city.

Therefore, understanding which characteristics are the determinants of and to what extent these characteristics influence the environmental attitudes would be essential to be used as scientific data for the possible environmentally based policies targeting the city. At this point, as Ref. [12] argues, further studies are needed to highlight the potential for environmental consciousness among local people.

In this context, this paper aims to analyse the influence of demographic variables (age, gender, education and household income) of Famagusta residents on their environmental attitudes. First, the related literature will be reviewed; Second, a user survey will be carried out among the local residents; Third, the results of the survey will be displayed and interpreted; And finally, a conclusion will be drawn based on discussion.

## **2. Literature Review**

Within the research field focusing on environmental behavior studies, there have been various theories for understanding the nature of environmental behavior. Derived from a considerable amount of studies [13-15], it can be suggested that the “environmental worldview” based on attitudes, are among the significant variables influencing environmental action. In this regard, beside investigating the factors influencing environmental behavior, there has been a distinctive amount of research examining the dynamics of environmental worldview itself. Within this context, there have been researches additionally focusing on examining the impact of various factors (such as environmental consciousness, political view,

socio-demographic characteristics, etc.) on environmental worldview. Among these factors, socio-demographic variables are one of the most examined ones.

The correlation between socio-demographic characteristics and environmental worldview has been investigated by many researchers since the 1970s. Within the socio-demographic characteristics, gender [16-22], age [23-25], education [20, 23, 24, 26] and household income [20, 23, 27] are among the most examined ones as independent variables.

According to these past studies mentioned above [16-27], the existing evidence has not been a consistent result in explaining the relations between various socio-demographic characteristics and individual environmental concern [28]. However, a modest empirical data has been provided that women [19, 21, 29-31], younger respondents [32-34], highly educated respondents [26, 31] and respondents with higher income [27, 35] are more likely to hold higher scores of environmental attitude.

Essentially, the studies mentioned above mostly have an empirical work focusing on the participants in western, developed countries. The related studies having a focus on those individuals in non-western countries have a limitation in quantity. In this regard, besides seeking to find evidence that would be essential for the possible environmentally based policy strategies, this study further aims at making a scientific contribution for the existing literature focusing on the influence of socio-demographic variables on the environmental worldview in a non-western context.

## **3. Research Context**

### *3.1 The Case*

Famagusta, as the second largest city of North Cyprus, has a population of 47,538 (TRNC (Turkish Republic of Northern Cyprus) 2011 Population and Dwelling Census). As a coastal city which is located in the eastern part of the island in the eastern

Mediterranean Sea (Fig. 1), it has a historic core and a harbour.

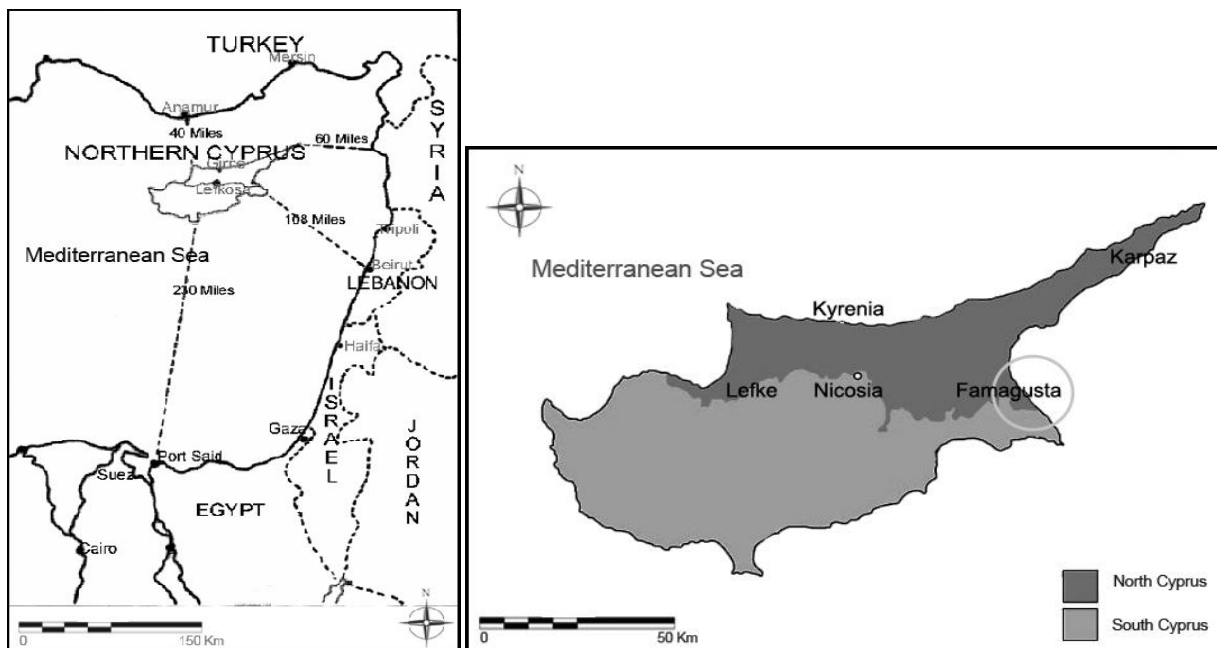
Famagusta has developed throughout seven particular periods:

- the early periods (648~1192);
- the Lusignan (1192~1489);
- the Venetian (1489~1571);
- the Ottoman (1571~1878);
- the British (1878~1960);
- the period between 1960~1974;
- the period after the war in 1974.

The city was a significant regional centre of trade and tourism before the island was divided in 1974. After the division, the city experienced a major recession period and therefore, tourism and trade functions have ceased. Until the early 1980s, this situation has continued. Starting from the late 1980s, EMU (Eastern Mediterranean University) which was founded in 1979, has created a new dynamism and a new momentum within the city. With nearly 14,000 students from 67 different countries, EMU has been a major factor in the overall economic and social structure of the city over the last three decades. Today, Famagusta accommodates a wide diversity of residents, including the local Turkish Cypriots,

immigrants who have come from the southern part of the island and different parts of Turkey since 1974, and university staff and students from many countries [36]. EMU plays a significant role in the socioeconomic life of the city.

While increasing the commercial functions, EMU has been one of the main reasons of rapid and unsustainable urban development. The university has perpetuated uncontrollable and hasty urban development in the form of multi-storey housing, inappropriate additions to existing houses, and incompatible land uses scattered throughout the city [12]. Additionally, the uncertain status of Varosha Region (a region evacuated after 1974 by United Nations' demarcation decision) has caused a cease in terms of development and construction functions in nearby quarters of the city. As a result, the city as a whole has a linear urban development with a scattered urban pattern lacking the effective use of urban open and green spaces and a town centre. However, streets, courtyards, squares, fruit gardens and well-defined gardens with local vegetation and landscaping were significant characteristics of older settlements in the Cypriot towns [37]. Furthermore, due to the lack of legislations, implementations and any master plan, urban



**Fig. 1** Location of the island of Cyprus and Famagusta in the regional scale.

infrastructure facilities such as public transportation system, waste management systems, urban ecology and biodiversity are also inefficient or absent.

These development tendencies have also affected the social structure of Famagusta residents. Although the concept of local community with close relationship to each other, high sense of place and sensitivity to environmental values was a significant aspect in Cypriot towns. In the new settlements, it is observed that the understanding of local community and environmentally based living is not supported. In other words, it can be suggested that this physical enlargement underestimating the social, cultural, natural characteristics of the city has produced a vicious circle. Such that beside the effects of contemporary global trends, the citizens fell apart from their traditions and their environmentally responsive lifestyles with the impact of these new developments. On the other hand, sustainability of these new developments has not been valuable and a matter of demand exactly by these same dwellers. This new unsustainable lifestyle is revealed with situations like highly amounts of car per household (mean score: 2.04) and relatively high preferences of newly developed peri-urban quarters with low density and single function, in a scattered urban layout [38].

Within this framework, there is the necessity of environmental research for fulfilling the informational needs of appropriate plans and policies targeting the development of both sustainable environments and sustainable lifestyles in the city.

## 4. Study Methodology

### 4.1 Research Design

The research framework was closely related to that of the FAS (Famagusta Area Study), which was directed by the second author of this paper and aimed to measure the quality of community life in Famagusta based on a comprehensive survey research carried out in 2007. As a study of environmental

research, FAS involved several findings which are strongly useful to be evaluated in order to recognize the existing situation of the Famagusta citizens as a case study and to determine the appropriate framework of the research measures.

In this context, the aspects of this research were part of a questionnaire including a set of questions which were answered under four important titles. These titles were as follows:

- environmental concern;
- environmental attitudes;
- environmental behaviour;
- socio-demographic data.

### 4.2 The Sample

A random sample of 165 residents between 16 and 75 years old within the territory of Famagusta Municipality including all 16 quarters were chosen for the user survey. The number of participants from each of the 16 quarters was decided according to the ratio of the quarter's population to the city's whole population. The respondents were selected randomly in each sample area for filling out a questionnaire form. The details are shown as follows:

- Gender: 37.6% of the 165 participants were female and 62.4% were male (Table 1);
- Age: 30.9% of the participants in the study were between the ages of 26~40. 28.5% were between 16~25 and 24.8% were between 41~55 years old. The rest 9.7% were between 56~65 years old and 6.1% were between 66~75 (Table 2);
- Education: The largest portion (48.5%) among the participants had a high-school degree. 16.4% had a university degree, 13.3% had a secondary school degree, 12.7% had a primary school degree and 7.9% had a master or Ph.D. degree. A non-significant portion of 1.2% was without a degree (Table 3).
- Household income: 42.4% of the respondents had a monthly household income of 1,200~2,499 TL (Turkish lira), 28.5% had a monthly household income

**Table 1** Participants' gender profile (%).

| Gender | Frequency | Percent (%) |
|--------|-----------|-------------|
| Female | 62        | 37.6        |
| Male   | 103       | 62.4        |
| Total  | 165       | 100         |

**Table 2** Participants' age profile (%).

| Age   | Frequency | Percent (%) |
|-------|-----------|-------------|
| 16~25 | 47        | 28.5        |
| 26~40 | 51        | 30.9        |
| 41~55 | 41        | 24.8        |
| 56~65 | 16        | 9.7         |
| 66~75 | 10        | 6.1         |
| Total | 165       | 100         |

**Table 3** Participants' education profile (%).

| Education               | Frequency | Percent (%) |
|-------------------------|-----------|-------------|
| None                    | 2         | 1.2         |
| Primary school degree   | 21        | 12.7        |
| Secondary school degree | 22        | 13.3        |
| High school degree      | 80        | 48.5        |
| University degree       | 27        | 16.4        |
| Postgraduate degree     | 13        | 7.9         |
| Total                   | 165       | 100         |

**Table 4** Participants' household financial situation profile (%).

| Financial situation | Frequency | Percent (%) |
|---------------------|-----------|-------------|
| 600~1,199 TL        | 14        | 8.5         |
| 1,200~2,499 TL      | 70        | 42.4        |
| 2,500~3,999 TL      | 47        | 28.5        |
| 4,000~5,999 TL      | 9         | 5.5         |
| 6,000 TL+           | 4         | 2.4         |
| Refuse to answer    | 21        | 12.7        |
| Total               | 165       | 100         |

of 2,500~3,999 TL. 12.7% refused to answer and 8.5% had a monthly household income of 600~1,199 TL (Table 4).<sup>1</sup>

#### 4.3 Measures

The main objective of the present study was to statistically compare if there is a remarkable influence of certain socio-demographic variables on the environmental worldview in Famagusta. In this respect, two main measures were determined:

<sup>1</sup>With reference to the date of January 27, 2016 exchange rates, 1 TL = 0.34 USD.

**Environmental worldview:** The environmental attitudes were measured with the help of NEP (New Environmental Paradigm) scale including 15 items [6] in the second section of the questionnaire. These NEP scale items were used to measure the ecocentric and anthropocentric attitudes. According to the NEP scale design, one of the statements refers to an ecocentric attitude and the other refers to an anthropocentric attitude. In total, eight items refer to ecocentric attitude and the other seven items refer to anthropocentric attitude. Likert type five point scale (strongly disagree to strongly agree) was used to record the participants' responses for each item. The answers for the eight ecocentric items were coded as:

- 5 = strongly agree;
- 4 = agree;
- 3 = unsure;
- 2 = disagree;
- 1 = strongly disagree.

The answers for the seven anthropocentric items were reversely coded.

**Socio-demographic characteristics:** Socio-demographic characteristics were investigated in the fourth section of the questionnaire. Among the socio-demographic characteristics, gender, age, education and household income were selected as independent variables to be measured.

#### 4.4 Procedure

After participants were briefly informed about the research, environmental awareness and concern about general environmental issues were measured in the first part of the questionnaire's first section. Awareness and concern about environmental problems of Famagusta in particular, was measured in the second part of the first section. Ecocentric and anthropocentric attitudes were examined in the second section in order to provide data for the existing value orientations. In the third section, environmental behavior was examined in three categories: energy saving, water conservation and green consumption. In the last section, socio-demographic data was collected

in order to obtain information about the issues such as age, gender, education, marital status and housing type of the respondents.

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

After the data was collected, the research results were analysed with the help of SPSS (statistical package for social sciences) and displayed in the following section.

## 5. Results

First of all, the mean score of the NEP scale was calculated as 3.52, in total. As it is accepted that an NEP mean score of 3 is the boundary between an anthropocentric and ecocentric worldview [39, 40], the result showed that the respondents had a medium level of ecological worldview.

NEP scale, the measure used in the study, was analysed in order to test reliability and the alpha-reliability result of the fifteen-item scale was given in Table 5. The results revealed that the scale had Cronbach’s alpha value of 0.77 which showed that the scale had good reliability.

The aim of the study was to find out whether there were significant relationships between the environmental attitudes of the respondents and their demographic information such as their gender, age, education and household income. In order to decide which type of analysis would be used, test of homogeneity of variances was checked for each demographic item and then according to the obtained results, suitable analyses were conducted.

For the “gender” item, the results of test of

homogeneity of variances is greater than the level of significance ( $p = 0.198 > 0.05$ ), it is concluded that the variance is homogenous and the result is given in Table 6. Hence, independent samples *t*-test was conducted to estimate whether the respondents’ ecological attitudes results differ with respect to gender. The results showed that it was not significant ( $t(163) = 0.15, p > 0.05$ ).

In order to find out whether there were differences among the age groups and environmental attitudes, first of all, it was tested if the variances were homogenous and the results indicated that variances were not significant and the Levene statistic was given in Table 7 and the level of significance was found high ( $p = 0.29 > 0.05$ ). Hence, the test of ANOVA (analysis of variance) was conducted in order to find out whether the differences between the means of age groups were significant. The results of the ANOVA test were given in Table 8. The results revealed that the attitudes of the respondents towards environment were not significant among different age groups.

As the result of the test, the homogeneity was below the level of significance ( $p = 0.047 < 0.05$ ) for education level of the respondents, the Kruskal-Wallis test was conducted. The Kruskal-Wallis test found that environmental attitude scores in six different education levels did not differ significantly ( $\chi^2 = 6.35, df = 4, p = 0.174$ ) and the results are given in Tables 9 and 10.

Since the result of the test of homogeneity was below the level of significance ( $p = 0 < 0.05$ ) for household income of the respondents and given in

**Table 5 Reliability value of NEP scale.**

| Cronbach’s Alpha | No. of items |
|------------------|--------------|
| 0.767            | 15           |

**Table 6 Test of homogeneity of variances for gender.**

| Levene statistic | df1 | df2 | Sig.  |
|------------------|-----|-----|-------|
| 1.673            | 1   | 163 | 0.198 |

**Table 7 Test of homogeneity of variances for age.**

| Levene statistic | df1 | df2 | Sig.  |
|------------------|-----|-----|-------|
| 1.258            | 4   | 160 | 0.289 |

**Table 8 Test of homogeneity of variances for education.**

|                | Sum of squares | df  | Mean square | F     | Sig.  |
|----------------|----------------|-----|-------------|-------|-------|
| Between groups | 1.187          | 4   | 0.297       | 1.007 | 0.406 |
| Within groups  | 47.189         | 160 | 0.295       |       |       |
| Total          | 48.377         | 164 |             |       |       |

**Table 9 Test of homogeneity of variances for education.**

| Levene statistic | df1 | df2 | Sig.  |
|------------------|-----|-----|-------|
| 2.308            | 5   | 159 | 0.047 |

**Table 10 Kruskal Wallis test results for education.**

| Test statistics <sup>a, b</sup> |           |
|---------------------------------|-----------|
|                                 | Enviroatt |
| Chi-square                      | 6.353     |
| df                              | 4         |
| Asymp. sig.                     | 0.174     |

**Table 11 Test of homogeneity of variances for income.**

| Levene statistic | df1 | df2 | Sig. |
|------------------|-----|-----|------|
| 5.234            | 5   | 159 | 0    |

**Table 12 Test of homogeneity of variances for incomes.**

| Test statistics <sup>a, b</sup> |           |
|---------------------------------|-----------|
|                                 | Enviroatt |
| Chi-square                      | 9.287     |
| df                              | 4         |
| Asymptotic sig.                 | 0.054     |

Table 11, the Kruskal-Wallis test was conducted. The Kruskal-Wallis test showed that environmental attitude scores in different household incomes of respondent differed significantly ( $\chi^2 = 9.29$ ,  $df = 4$ ,  $p = 0.054$ ) and the results are given in Table 12.

## 6. Discussion and Conclusion

The present study has sought to understand the impact of several demographic variables on the environmental worldview of Famagusta residents in order to make a scientific contribution to the research field as a study involving a non-western sampling context. Such that according to the related literature review based on the samples mostly from the western countries [19, 21, 26, 27, 29-35], there has been a modest evidence indicating the so-called “gender effect”, “age effect” and “social class effect”. In other words, former studies tend to indicate that women, younger respondents, highly

educated ones and respondents with a higher income are more likely to hold environmental beliefs.

In this respect, applying data recently collected in Famagusta, North Cyprus, the correlation between age, gender, education and household income as socio-demographic characteristics and environmental worldview were examined. The environmental worldview was conceptualized by NEP scale [6] in the study. The study results indicate that there is no statistically significant influence of gender, age and education level on environmental attitudes. Merely the household income has been found to achieve a statistically significant effect on the NEP score. According to the results, this calculated effect of household income does not produce any directly positive or negative relation with the NEP score, whereas household income has a statistically significant nonlinear effect.

Briefly, according to the results of the research, complementary to previous results, younger respondents, women and highly educated ones do not seem to achieve higher scores of environmental attitudes in Famagusta. Gender, age and education are found to be irrelevant as factors influencing the environmental worldview. However, former studies have modestly suggested that gender [19, 21, 29-31], age [32-34] and social class [26, 27, 31, 35] were correlates of environmental beliefs. Therefore, a significant part of this study, applied to a non-western sampling context, seems to contradict with the previous studies.

Finally, this paper highlights the need for further research to investigate the nature of ecological citizenship which is acclaimed to be the new notion of citizenship for the sake of the planet’s future.

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**Understanding Environmental Worldview of Famagusta Residents and Its Determinants through Survey Research**

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