Who Cares about Environmental Quality in the MENA Region?

Ghassan Dibeh[a], Ali Fakih[a, b, c], Walid Marrouch[a, b, *], Ghida Matar[a]

[a] Lebanese American University

[b] CIRANO, Canada

[c] IZA, Germany

[*] Corresponding author: Department of Economics, Lebanese American University, P.O. Box: 13-5053 Chouran, Beirut 1102 2801, Lebanon; Phone: +961-1 78 64 56, Fax: + 961-1 86 70 98, E-mail address: walid.marrouch@lau.edu.lb

Abstract

This paper provides new evidence on the demand for environmental quality among youth in the MENA region. Using a unique micro dataset on five Arab Mediterranean Countries, we find that environmental quality demand is increasing with individual income. We also find that being male yields a lower likelihood of being environmentally concerned and that the male's demand for environmental quality is more significantly determined by their income as compared to females. Moreover, being married significantly plays a role for the female youth only. Furthermore, environmental quality demand increases with the lack of confidence in the government. Overall, our results provide a few novel insights into the relationship between youth outlooks and characteristics and environmental concern in the MENA region.

Keywords: Environmental quality, Youth, MENA

JEL Codes: C25; Q56

1. Introduction

The attention to the environment as part of development goals is epitomized by the Agenda 2030 of the United Nations' (UN) Sustainable Development Goals (SDGs)[1]. The Arab region, despite progress on some fronts, still lags behind other geo-economic regions on its overall environmental outlook according to the 2008 report of the Arab Forum for Environment and Development (Tolba and Saab, 2008; Saab and Sadik, 2016).

In the last century, the Arab region has undergone major changes. Population has risen from below 50 million a century ago to over 406 million today (World Development Indicators, World Bank, 2016). During this period, the state of the environment has worsened (Tolba and Saab, 2008, 2016) and from the year 1976 until 2001, genuine investment, which accounts for environmental degradation and natural resource depletion, was negative at an average of -7.09% as share of their Gross Domestic Product (GDP) (Arrow et al., 2004). The Middle East and North Africa (MENA), encompassing the Arab region, also suffers severely from the impact of global climate change.[2] The annual cost of the environmental degeneration is estimated to be between four and nine percent of GDP for some Arab countries (Tolba and Saab, 2008). To put these figures into perspective, the Organisation for Economic Co-operation and Development (OECD) and the Eastern European countries have environmental cost ratios of two to three and five percent of their GDP, respectively. Despite these palpable environmental degradation costs in the Arab countries, the resources allocated by governments for environmental policy are far below one percent of GDP for all countries in the MENA region (Tolba and Saab, 2008).

In this respect, it is clear that environmental issues are urgently in need to be on the political and economic agendas of Arab countries. Although governments bear the major responsibility for such an agenda, citizens' demand for a better environmental quality is now considered as a major determinant of such change in environmental policies across the globe. The empirical evidence for such citizens' demand is scant in the Arab region. To the best of our knowledge, our study presents the first attempt to gather such empirical evidence on microeconomic factors affecting environmental quality demand in the MENA region. It employs a unique and a more recent dataset than most studies in this field. Our findings show a significant association between higher individual level of income and a higher demand for environmental quality. They also highlight the importance of gender, the level of economic development, institutional and identity-related factors.

---

[1] In September 2015, UN members adopted a set of goals to "end poverty, protect the planet and ensure prosperity for all". http://www.un.org/sustainabledevelopment/sustainable-development-goals/

[2] http://www.worldbank.org/en/programs/mena-climate-change

The remainder of the paper unfolds as follows. Section 2 summarizes the related literature and develops the research question. Section 3 describes the empirical methodology including sample, measurement of variables, and model specification. Section 4 presents findings. Section 5 discusses the results and concludes.

2. Related literature and hypothesis development

Our research on the demand for environmental quality in the MENA region relates to and builds on different strands of literature on behavior and the environment. One stream of research on the demand for environmental quality considers individual characteristics. The empirical literature on the relationship between these characteristics and one's demand for environmental quality is very rich. Even though various socioeconomic factors can be enlisted under these characteristics, prior literature has focused mainly on education, gender and income levels. Another strand of literature focus on institutional identity-related determinants of environmental quality concern. In this paper, we contribute to this strand of literature by examining the role of both socioeconomic and identity factors in the demand for environmental quality.

Several studies claim that the citizen's individual characteristics and the level of confidence one has in the government and its institutions have a direct influence on one's concern for the environment and thus, the demand for environmental quality. Dasgupta et al. (2002) and Kahn (2002) claim that higher levels of education create more environmentally-responsible citizenry and eventually drive the introduction of stricter environmental legislation. Similarly, according to the Rio Summit (1992), the more educated people are, the more conscious they are of environmental threats.[3] They would, therefore, adopt behaviors and lifestyles that favor environmental improvement. Education's positive effect on environmental quality is also found in Bimonte (2002) where the improvement in educational attainment in Europe is found to be correlated with a higher level of environmental awareness and demand for natural resources protection. Gallagher and Thacker (2008) using global data, argue that illiteracy leads to higher pollutants emission. Other studies also find a positive relationship between education and the pro-environmental behavior. For instance, Laidley (2013) shows that the level of recycling and the ownership of hybrid automobiles are higher for the college educated population. Additionally, Buttel and Flinn (1978) conclude that the level of education positively and significantly affects two environmental attitudes, which reflect an increased demand for

---

[3] The Rio Declaration on Environment and Development is a text resulting from 1992 United Nations Conference on Environment and Development (UNCED). The 27 principles of the declaration emphasized the concept of sustainable development for the first time on the international stage and the interdependence between the economy and the ecology. The declaration received quasi-unanimous support from UN members.

good environmental quality. The environmental attitudes discussed are environmental awareness and the support for upcoming environmental policies and reforms (Buttel and Flinn, 1978). On the other hand, several studies associate higher levels of education with an increase in overall environmental degradation. Jorgenson (2003), using global data, finds that since education often leads people to have higher incomes, higher educational attainment accordingly encourages overconsumption of material goods. Some studies have even found that education has no effect on the demand for environmental quality. These paradoxical results could be due to the confounding effect of education and income levels. One example study by Samdahl and Robertson (1989) on Illinois concludes that the socio-demographic variables, which include education, have an insignificant effect and environmental concern (Samdahl and Robertson, 1989). Finally, Kinda (2010) finds that an individual's education in 85 countries in fact has no impact on one's preferences and demand for environmental quality.

In terms of the relationship between gender and environmental behavior, nine out of thirteen published studies on the matter show that females are significantly more involved in pro-environmental activities than males (Schahn and Holzer, 1990; Baldassare and Katz, 1992; Roberts, 1993; Stern et al., 1993; Stern et al., 1997; Steel, 1996; Maineri et al., 1997; Wolkomir et al.,1997; Widegren, 1998). On the other hand, only one study finds that males have greater participation in pro-environmental behavior (Mohai,1992). The remaining three studies find no significant difference between males and females (Arcury and Christianson, 1993; Arp and Howell, 1995; Blocker and Eckberg, 1997). Moreover, Lyons and Breakwell (1994) show that one's gender has no effect on the probability of being concerned about the environment.

In the 1990s, the existence of a relationship between income and environmental quality was studied extensively by environmental economists (see Cole and Neumayer, 2005; Stern, 2003; 2004 for overviews). Further studies have provided another evidence on the aforementioned relation. According to Moser and Kleinhuckelkotten (2018), income is one of the major determinants of the pro-environmental behavior. Much of this literature sought to test the Environmental Kuznets Curve (EKC) hypothesis, however these studies an aggregate view and focus on the relationship between GDP per capita levels and a number of environmental indicators. However, and more relevant to our current study, some studies looked at the effect of the individual's income on one's environmentalism. According to Beckerman (1992) and the World Bank (1992), as income becomes larger, the concern for the environment rises, with possible nonlinear effects. Choudary (2010) using students-filled survey in India showed that students of higher social class backgrounds had a better attitude towards the environment. Also, based on a new study by the Scarborough Research Center in the United States, those who take part in activities identified as "environmentally friendly" are significantly more likely

to earn more than US\$150,000 per year. Dorfman (1997) also argues that as income levels rise, households may be more than proportionately interested in the environment in the United States. Similarly, Ghalwash (2008) considers household characteristics, in addition to income, and finds that household expenditures on environmental services rises with the rise of income in Sweden. Likewise, and after accounting for various non-linearities in the estimated model, Diekmann and Franzen (1999) reach a result that the causal effect running from income to environmental-friendly attitudes is positive. On the other hand, the relation between income and environmental awareness or support can be negligible, as mentioned by Buttel and Flinn (1978) who used a multistage probability model. However, Martinez-Alier (1995) claims that it is not conclusive whether rich communities actually care more about the environment than the poor ones. Moreover, Kriström and Riera (1996) show that evidence on individual income elasticity of environmental improvement is not conclusive in Sweden.

Finally, countries' response to citizens' demands for environmental safety is a function of their institutional capabilities (Neumayer, 2003b) and their political parties' environmental doctrine (Neumayer, 2003a). In this respect, many resource depletion problems and environmental threats arise from institutions being incapable of dealing with environmental challenges (WCED, 1987). In light of this, Cole (2007) and Damania et al. (2003) claim that pollution increases with corruption, which weakens institutions and is thus, relaxes environmental controls (Damania et al., 2003). By contrast, Hettige et al. (1992) show that in the absence of effective government policies, communities take positive actions towards limiting pollution via informal regulation. Similarly, Goel et al. (2012) find that more corrupt nations report lower pollution levels. Moreover, some studies have shown that political ideology might not be a conclusive factor for understanding the individual's perception about environmental quality, concern, and behavior (Samdahl & Robertson, 1989).

3. Data and empirical model

3.1 Data

In order to study the determinants of environmental quality in the MENA, we use a recent and unique microeconomic dataset on a sample of five Arab Mediterranean Countries in the MENA region: Algeria, Egypt, Lebanon, Morocco, and Tunisia drawn from the SAHWA Youth Survey (2016). This is a broad, comprehensive, and nationally representative survey of 9,860 youth aged between 15 and 29 years that was conducted as part of the SAHWA Project (2014-2017).[4] The survey is comprehensive and was constructed by dividing regions of each country into layers in order to guarantee a proper per-

---

[4] www.sahwa.eu

geographic-unit youth population representation. The survey covers a number of youth characteristics and views such as education, income, parents' education, residence area, and political involvement.[5]

3.2 Dependent variable

In order to identify factors affecting the demand for environmental quality in our MENA sample, we use a dependent variable representing the ordering of preferences for environmental protection. In the survey, the relevant variable is ordinal and records the respondents' ranking on a scale from one to six on how important paying attention to the environment is to them. The ranking attributes the following: value 1 corresponds to the answer "does not resemble me at all", the value 2 corresponds to the answer "does not resemble me", value 3 corresponds to the answer "barely resembles me", the value 4 corresponds to the answer "resembles me a little", the value 5 corresponds to the answer "resembles me, and the value 6 corresponds to the answer "greatly resembles me".

In order to establish the profile of the youth who express concerns about environmental quality, we construct the empirical model through which we test the effects of different individual, household, institutional, country-specific, and identity-related factors on this demand for environmental quality. In this model, the dependent variable takes one of the six values discussed above.

3.3 Explanatory variables

The explanatory variables of interest in our hypothesis are education, gender, income, and citizens' concern regarding governmental corruption and confidence in government. To control for education, we use four different binary variables. A binary variable takes the value 1 if the individual only has primary education and takes the value 0 otherwise. Another takes the value 1 if the individual has middle school education and the value 0 otherwise. A dummy variable takes the value 1 if the respondent has high school education and the value 0 otherwise. Finally, a dichotomous variable takes the value 1 if the individual has university education and 0 otherwise. The gender variable is also an indicator variable taking the value of one if the respondent is male and zero if female. The income variable is a continuous variable, which has been scaled according to the country's exchange rate to represent the individual's purchasing power. The government variables of interest are an indicator variable that takes the value of one if the respondent is concerned about corruption and zero otherwise and a variable that takes the value of one if the respondent lacks confidence towards the government and zero otherwise.

---

[5] The survey uses a multi-stage probability sampling technique to guarantee a random and representative sample to identify respondents.

The remaining variables included in our model are identified from prior literature and provide control for other individual and household characteristics as well as government-perception and identity-related variables. We also consider the country effect. Specifically, we control for individual characteristics such as marital status (married versus single), level of education as well as the type of academic institution (private versus public) using binary variables. In addition, when it comes to household characteristics, we consider household roominess (continuous variable measuring rooms per household member), parents' education (educated or not) and employment status (employed on not) using indicator variables. We also use a variable on whether or not the individual believes their parliament is corrupt and if the individual has ever engaged in corruption (through paying bribes) using dummy variables. We construct a variable to control for the individual's perception on gender equality in the field of education, labor market, political participation and family code (ordinal variable taking the value 0-3). We use dummy variables on whether the individual considers themselves a global citizen (yes/no), national citizens (yes/no), Arab citizens (yes/no) or belonging to an Islamic or Christian society in specific (yes/no). We construct a variable to measure the unimportance of religion in making decisions about politics, marriage, and the nature of the individual's job (ordinal variable taking the value 0-3). Finally, we use a binary dummy on whether traditions are important to the individual (important or not). We also include country-fixed effects, where Egypt represents the reference country.

Because of missing values for some of the variables, which can affect the results and their interpretation, observations with missing variables have been dropped from our regressions. We end up with 2,745 individual responses in our used sample.

3.4 Summary statistics

Table 1 reports the summary statistics on the used sample. It shows that the median answer to the question relating to the concern of youth about environmental quality is five from an ordinal scale of six, meaning that central tendency of the respondents was towards the answer "resembles me". The statistics also show that 73.7% of the respondents were males, 29.4% of them were married, 84.2% of them were employed, 35.5% of them lack confidence in their government, 3.2% had previously taken part in corruption, 14.3% of them believe that traditions are not important, 21.2% consider themselves to be global citizens, and that the sample is fairly distributed among countries where 516 respondents are from Algeria, 685 from Egypt, 749 from Lebanon, 285 from Morocco and 510 from Tunisia.

Table 2 shows the demand for environmental quality using youth characteristics (for dichotomous variables only). Environmental quality is presented as a binary variable that takes the value 1 if the answer to the question relating to the concern of youth about environmental quality is

"greatly resembles me", "resembles me", or "resembles me a little" and the value 0 if the answer is "barely resembles me", "doesn't resemble me" or "doesn't resemble me at all". When gender is considered, 421 out of 721 females (58.3%) show environmental quality concern while 1008 out of 2024 males (49.8%) do. Of those educated, 52.4% show environmental quality concern while 42.4% of those with no education do. Out of 88 individuals concerned about government corruption, 54 respondents (61.4%) express environmental quality concern.

Table 3 reports the correlation coefficients between the main independent variables used in the regression analysis. The results suggest that married individuals are more likely to be employed, where employed individuals are naturally expected to earn higher income. Moreover, individuals residing in urban areas are less likely to be males but are more likely to earn higher income. Moving to variables that proxy for governmental perception, more educated individuals and those who are married tend to have less confidence in their governments. On the other hand, individuals who earn higher income and reside in urban areas tend to have higher confidence in their governments. Similarly, the results show that males, with higher income, residing in urban areas, and who have no confidence in governments are likely to have taken part in corruption through offering bribes. Finally, when it comes to the unimportance of the religion to the youth, the correlation coefficients show a significantly positive association between income, lack of confidence in governments, and the likelihood of receiving a bribe on one hand and the unimportance of the religion on the other hand; however, more educated youth tend to care more about their religion.

[Insert Table 1]
[Insert Table 2]
[Insert Table 3]

3.5 Empirical model

Given that the dependent variable in our regression is a latent variable, we consider the following ordered probit model where the dependent variable is ($Env\_Quality$) representing the ordinal variable taking a value of 1-6 represents the demand of environmental quality by the youth respondent, which is not directly observed. We use the following specification:

$$
\begin{aligned}
Env\_Quality_i \ = \ & \gamma_0 + \gamma_1 Income_i + \gamma_2 Primary\_Education_i + \\
& \gamma_3 Middle\_Education_i + \gamma_4 Secondary\_Education_i + \gamma_5 University\_Education_i + \\
& + \gamma_6 Male_i + \gamma_7 Corruption_i + \gamma_8 No\_Gov\_Conf_i + \sum_m \alpha_m \, Controls_{mi} + \\
& \sum_k \delta_k \, Country\_FE_{ki} + \varepsilon; \, ,
\end{aligned}
\tag{1}
$$

where i represents the individual, k represents the country where individual i reside, and ε is the normally distributed error term.

4. Empirical results

We first present and discuss the empirical results from the ordered probit model for the whole sample We then present the results broken down by gender and by region.

4.1 Main Results

Table 4 reports the estimated coefficients with robust heteroscedasticity-consistent standard errors from the main estimation given by equation (1), which includes the entire used sample $N = 2,745$. It should be noted that column (i) represents the model for the probability that youth demand environmental quality based on their individual characteristics. Columns (ii), (iii), (iv) and (v) estimate the same probability but control for household characteristics, government perception factors, identity-related factors, and country dummies, respectively. The results show that the pseudo log likelihood is higher for the model with all variables included as can be seen in the last panel of the table, indicating the best explanatory power for model (v).

Youth characteristics

The results of the full model in column (v) reveal that being a male decreases the probability that the youth demands environmental quality. We find that this likelihood decreases with being male at the 1% level of statistical significance. We also find that the probability that the youth demands environmental quality increases as income increases. This effect is significant at the 5% level. We find that marital status is not a significant determinant for environmental quality demand. Similarly, educational attainment, employment status and the type of school the youth attends are not significant factors in determining the demand for environmental quality.

Household characteristics

Moving to household characteristics, we find that although having an employed father is significant at the 5% levels in models in columns (ii) and (iii), none of the household characteristics is a significant determinant for environmental quality in the full model in column (v) except having an employed mother – significant at 1%.

Government perceptions

Our results reveal whether the individuals' concern about government corruption plays a significant role in determining one's demand for environmental quality. When the youth is concerned about corruption, the probability that they demand environmental quality increases. This is significant at the 10% level. Similarly, youth who show job concern or state that they lack confidence in their government are more likely to care about environmental quality, significant at the 5% and 1% levels, respectively. Finally, we find that the individual's participation in corruption (through paying bribes) is a significant element in determining one's outlook on environmentalism at the 10% level.

Identity factors

The more the individual believes one's religion is unimportant in making decisions about politics, marriage and job, the less probable this person demands environmental quality. This is significant at the 1% level. A similar result can be seen when the youth believes traditions are not important where the probability that this person demands environmental quality decreases and is also significant at the 1% level. The more the youth believes in gender equality, the more probable this person demands environmental quality. Results show that this probability is significant at the 5% level. When youth believes they have a national identity, the probability for them to demand environmental quality decreases and is significant at the 10% level. Finally, having a global, Arab, or religious identity are not a significant determinant of environmental quality demand.

Country effect

The results reveal that the country of residence is not an important determinant for environmental quality demand when the country is Lebanon, Morocco and Tunisia compared to Egypt, which is the reference country in our regression. However, when the youth is a resident of Algeria, this probability increases and is significant at the 5% level.

[Insert Table 4]

4.2 Results by gender

Next, we turn our analysis to the results of the ordered probit model by gender. The analysis is conducted separately for males and females. We use the same specification presented in column (v) in Table 4, i.e. the full model. Results are presented in Table 5.

An interesting finding is that the marital status as a determinant for the demand for environmental quality is significant for females only. We find that married females are less likely to be interested in environmentalism. This likelihood is significant at the 1% level. Moving to educational attainment, we find that there are no significant demand differences between educated and uneducated females. The same is observed for males. The demand for environmental quality increases with the increase in

income for males. This is significant at the 10% level. The results for school type are not statistically significant indicating a similarity between youth in private and public schools in terms of their environmental concerns. Being employed is also not statistically significant.

Disaggregated by gender, household characteristics do not exhibit any significance except for having an employed mother, which is significant for males only. It is significant at 5%. Moreover, when it comes to the government-perception factors, the lack of government confidence is a significant factor for males at the 1% significance level. This lack of confidence increases the demand for environmentalism. Having participated in bribery is a significant determinant of increasing the demand for environmental quality for females at the 1% significance level. Believing religion is unimportant in decisions about politics, marriage and jobs decreases the demand for environmental quality for males. The factor is significant at 1%. The same is noted for believing in gender equality, which significantly increases the demand for environmental quality for males but not for females and is significant at the 5% level. Believing that traditions are unimportant is a significant determinant for both males and females and decreases their demand of environmentalism at the 1% significance level. Having a national identity significantly decreases females' demand for environmental quality but not for males at the 10% level. Finally, we report results by gender similar to those found in Table 4 when it comes to country effect except for males in Algeria and Morocco.

[Insert Table 5]

4.3 Results by region

This section presents the results following the ordered probit model by region in Table 6 using - again - the same specification used in column (v) in Table 4. The analysis is conducted separately for urban and rural areas of residence.

In the urban region, being male decreases the demand for environmental quality at the 1% significance level while the demand is increasing in income at the 5% level of significance. Marital status is not a significant determinant affecting the likelihood of environmentalism. Interestingly, being university-educated is significant and increases this demand in the rural area of residence at the 10% level. Type of school attended does not play a role in either region.

None of the household characteristics is a significant determinant of this likelihood except for the status of mother's employment in the urban area of residence. This factor increases the demand for environmental quality and is significant at the 1% level. In addition, we find that job concern in the urban region increases the demand for environmentalism and is significant at the 5% level. Furthermore, lacking confidence in the government increases significantly the demand for environmentalism in both urban and rural regions. As for taking part in corruption through offering

bribes, it increases this demand solely in the rural region at the 1% level. Believing that religion is unimportant in making decisions about politics, marriage and one's job is significant in rural areas at the 1% level and decreases this demand. The same is noted for believing in the unimportance of traditions but in both urban and rural regions of residence at the 1% level. Having a national identity perception is a significant determinant that decreases the demand for environmental quality in urban areas at the 1% level. Concerning gender equality, a belief in it is significantly associated with an increase in the demand for environmental quality in urban regions. Finally, in the rural region, living in Algeria or Tunisia increases the likelihood of expressing environmental concerns with significance levels of 5%, while this likelihood is increasing in Morocco independently of region of residence.

[Insert Table 6]

5. Discussion and concluding remarks

Using a unique and new dataset on youth from five MENA countries, this paper examines the implications of socio-economic characteristics of youth, their households, their government perception and their country of residence on the probability of being environmentally concerned.

In terms of youth characteristics, we find that environmental quality demand is increasing with income. This result is robust across all specifications. We also find that being male yields a lower likelihood of being environmentally concerned. Moreover, being married significantly plays a role for the female youth only.

When we consider household characteristics, we find, surprisingly, that they do not play a significant role in determining the likelihood of demanding environmental quality except when the mother is employed. As for government perception, we find that environmental quality demand increases with the lack of confidence in the government and with concerns about corruption and jobs. When it comes to identity factors, believing in religion's unimportance, gender equality, the unimportance of traditions and perceiving oneself as a national citizen are all significant determinants of demanding environmentalism. Moreover, youth in Algeria and Morocco exhibit a more significant demand for environmental quality than our reference country, which is Egypt, which has the largest economy in terms of GDP and population in our sample of MENA countries.

The empirical results give us novel insights into the relationship between youth and environmental concern in the MENA region. The fact that youth in the Arab region have more environmental quality concerns as individual income increases suggests that economic growth in the region with accompanying rising incomes will lead to more environmental awareness in the future. The fact that females demand more environmental quality than males is an important indicator that allows us to also

forecast a general increase in such awareness as females across the region participate more in the economy, society and politics leading to what we can call 'female environmental stewardship'. Moreover, our study has shown that married females demand less environmental quality than single ones. This will also lead to more awareness in the future, since economic development is usually accompanied by a delay in marriage amongst females especially that early marriage is also associated with school dropout. More so, the study shows that lacking confidence in the government is a significant determinant affecting the likelihood of demanding environmental quality. We can interpret this as individuals' autonomous response to the lack of governmental actions with respect to environmental quality. Finally, our funding on secularism suggests that religiosity among youth is associated with an increased demand for environmental protection. One plausible explanation could be related to the concept of '*hima*'[6] in Islam, which is the predominant religion in our sample.

---

[6] The concept of '*hima*' refers to a private pasture or an inviolate zone with a moral imperative to protect and preserve.

References

Arcury, T. A., and Christianson, E. H. (1990). Environmental worldview in response to environmental problems. *Environment and Behavior*, 22, 387–407.

Arp, W., and Howell, C. (1995). Black environmentalism and gender differences: An ethic of care? *Western Journal of Black Studies*, 19, 300–305.

Arrow, K, P Dasgupta, LH Goulder, GC Daily, PR Ehrlich, GM Heal, S Levin, K-G Mäler, S Schneider, D Starrett, and B Walker. (2004). Are we consuming too much? *Journal of Economic Perspectives*, 18, 147–172.

Baldassare, M., and Katz, C. (1992). The personal threat of environmental problems as a predictor of environmental practices. *Environment and Behavior*, 24, 602–617.

Beckerman, W. (1992). Economic growth and the environment: Whose growth? Whose environment? *World Development*, 20, 481–496.

Bimonte, S. (2002). Information access, income distribution, and the Environmental Kuznets Curve. *Ecological Economics*, 41, 145–156.

Blocker, T., and Eckberg, D. (1997). Gender and environmentalism: Results from the 1993 General Social Survey. *Social Science Quarterly*, 78, 841–858.

Buttel, F., and Flinn, W. (1978). Social class and mass environmental beliefs: A consideration. *Environment and Behavior*, *10*(3), 433–450.

Choudary, L. Y. (2010). Attitude towards awareness of environmental education among B.Ed. college students in Chennai city. Available at SSRN: https://ssrn.com/abstract=1623442

Cole, M. A. (2007). Corruption, income and the environment: An empirical analysis. *Ecological Economics*, 62, 637–647.

Cole, M. A., and Neumayer, E. (2005). Environmental policy and the environmental Kuznets curve: can developing countries escape the detrimental consequences of economic growth? In P. Dauvergne (Ed.), International Handbook of Environmental Politics: 298–318. Cheltenham and Northampton: Edward Elgar.

Damania, R., Fredriksson, P. G. and List, J. A. (2003). Trade liberalization, corruption, and environmental policy formation: theory and evidence. *Journal of Environmental Economics and Management*, 46, 490–512.

Dasgupta, S., Laplante, B., Wang, H., and Wheeler, D. (2002). Confronting the curve. *Journal of Economic Perspectives*, 16, 147–168.

Diekmann, A., and Franzen, A. (1999). The wealth of nations and environmental concern. *Environment and Behavior*, *31*(4), 540–549.

Dorfman, R. (1977). Incidence of the benefits and costs of environmental programs. *American Economic Review*, 67 333–340.

Gallagher, K., and Thacker, S. (2008). Democracy, income, and environmental quality. Political Economy Research Institute Working Paper (164).

Ghalwash, T.M. (2008). Demand for environmental quality: An empirical analysis of consumer behavior in Sweden. *Environmental and Resource Economics*, 41, 71–87.

Goel, R. K., Herrala, R., and Mazhar, U. (2013). Institutional quality and environmental pollution: MENA countries versus the rest of the world. *Economic Systems*, 37, 508–521.

Hettige, H., Lucas, R. E. B., and Wheeler, D. (1992). The toxic intensity of industrial production: Global patterns, trends, and trade policy. *American Economic Review*, 82, 478–481.

Jorgenson, A.K. (2003). Consumption and environmental degradation: A cross-national analysis of the ecological footprint". *Social Problems*, 50, 374–394.

Kahn, M. (2002). Demographic change and the demand for environmental regulation. *Journal of Policy Analysis and Management*, 21, 45–62.

Kinda, S. R. (2010). Does education really matter for environmental quality? *Economics Bulletin*, 30, 2612–2626.

Kriström, B., and Riera P. (1996). Is the income elasticity of environmental improvements less than one? *Environmental and Resource Economics*, 7, 45–55.

Kuznets, S. (1955). Economic growth and income inequality. *American Economic Review*, 49, 1–28.

Laidley, T. M. (2013). The influence of social class and cultural variables on environmental behaviors: Municipal-level evidence from Massachusetts. *Environment and Behavior*, *45*(2), 170–197.

Lyons, E., and Breakwell, G. (1994). Factors predicting environmental concern and indifference in 13- to 16-year-olds. *Environment and Behavior*, *26*(2). 223–238.

Maineri, T., Barnett, E., Valdero, T., Unipan, J., and Oskamp, S. (1997). Green buying: The influence of environmental concern on consumer buying. *Journal of Social Psychology*, 137, 189–204.

Martinez-Alier, J. (1995). The environment as a luxury good or 'too poor to be green'. *Ecological Economics*, 13, 1–10.

Mohai, P. (1992). Men, women, and the environment. *Society and Natural Resources*, 5, 1–19.

Moser, S., and Kleinhuckelkotten, S. (2018). Good intents, but low impacts: diverging importance of motivational and socioeconomics determinants explaining pro-environmental behavior, energy use, and carbon footprint. *Environment and Behavior*, *50*(6), 626–656.

Neumayer, E. (2003a). Are left-wing party strength and corporatism good for the environment? A panel analysis of 21 OECD countries, 1980-1998. *Ecological Economics*, 45(2): 203–220.

Neumayer, E. (2003b). Weak versus Strong Sustainability. Cheltenham and Northampton: Edward Elgar.

Princen, T. (2001). Consumption and its externalities: Where economy meets ecology. *Global Environmental Politics*, 1, 11–30.

Roberts, J. A. (1993). Sex differences in socially responsible consumers' behavior. *Psychological Reports*, 73, 139–148.

Saab, N., and Sadik, A.K. (2016). Sustainable development in changing Arab climate. Available at http://www.afedonline.org/webreport/ENG/Sustainable-development-in-a-changing-arab-climate-eng.pdf

SAHWA Youth Survey (2016). Barcelona Centre for International Studies (CIDOB), Barcelona, Spain.

Samdahl, D. M., and Robertson, R. (1989). Social determinants of environmental concern: Specification and test of the model. *Environment and Behavior*, *21*(1), 57–81.

Schahn, J., and Holzer, E. (1990). Studies of individual environmental concern: The role of knowledge, gender, and background variables. *Environment and Behavior*, 22, 767–786.

Steel, B. S. (1996). Thinking globally and acting locally? Environmental attitudes, behavior, and activism. *Journal of Environmental Management*, 47, 27–36.

Stern, D. I. (2003). The environmental Kuznets curve, Online Encyclopedia of Ecological Economics.

Stern, D. I. (2004). The rise and fall of the environmental Kuznets curve. *World Development*, 32, 1419–1439.

Stern, P., Dietz, T., and Kalof, L. (1993). Value orientations, gender, and environmental concern. *Environment and Behavior*, 25, 322–348.

Stern, P., Dietz, T., Kalof, L., and Guagnano, G. (1995). Values, beliefs, and proenvironmental action: Attitude formation toward emergent attitude objects. *Journal of Applied Social Psychology*, 25, 1611–1636.

Tolba, M.K. and Saab, N.W. (2008). Arab environment future challenges. Available at http://www.afedonline.org/afedreport/Full%20English%20Report.pdf.

UNESCO (1998). World Science Report, Oxford and New York: Oxford University Press.

WCED (1987). Our Common Future: Report of the World Commission on Environment and Development. Oxford: Oxford University Press

Widegren, O. (1988). The new environmental paradigm and personal norms. *Environment and Behavior*, 30, 75–100.

Williams, D.R. (2006). Leisure, environment, and the quality of life. In: Jackson, E.L., ed. Leisure and the Quality of Life: Impacts on Social, Economic and Cultural Development. Hangzhhou, China: Zhejiang University Press: 146–163.

Wolkomir, M., Futreal, M., Woodrum, E., and Hoban, T. (1997). Substantive religious belief and environmentalism. *Social Science Quarterly*, 78, 96–108.

World Bank (1992). World Development Indicators. World Bank Publications.

World Bank (2016). World Development Indicators. World Bank Publications.

Table 1: Summary statistics of variables used in regression analyses

Variable	N	Median	Mean	Std. Dev.	Min	Max
Environmental quality	2,745	5	4.25	1.43	1	6
Male	2,745	1	0.74	0.44	0	1
Married	2,745	0	0.30	0.46	0	1
Primary education	2,745	0	0.10	0.30	0	1
Middle education	2,745	0	0.26	0.44	0	1
Secondary education	2,745	0	0.33	0.47	0	1
University education	2,745	0	0.27	0.45	0	1
Employed	2,745	1	0.84	0.36	0	1
Income	2,745	0.55	0.76	0.92	0	16.81
Public school	2,745	1	0.85	0.36	0	1
Roominess	2,745	0.83	1.00	0.61	0.14	6
Father education	2,745	1	0.68	0.47	0	1
Employed father	2,745	1	0.68	0.47	0	1
Mother education	2,745	1	0.54	0.50	0	1
Employed mother	2,745	0	0.09	0.29	0	1
Urban	2,745	1	0.60	0.49	0	1
Corruption concern	2,745	0	0.03	0.18	0	1
Job concern	2,745	0	0.14	0.35	0	1
No gov-confidence	2,745	0	0.35	0.48	0	1
Bribe	2,745	0	0.19	0.39	0	1
Secular-unimportant	2,745	1	1.28	0.96	0	3
Tradition-unimportant	2,745	0	0.14	0.35	0	1
Gender equality	2,745	4	3.39	1.03	0	4
Global identity	2,745	0	0.21	0.41	0	1
National identity	2,745	0	0.16	0.37	0	1
Arab identity	2,745	0	0.22	0.41	0	1
Religious identity	2,745	0	0.19	0.39	0	1
Algeria	2,745	0	0.19	0.39	0	1
Lebanon	2,745	0	0.27	0.45	0	1
Morocco	2,745	0	0.10	0.31	0	1
Tunisia	2,745	0	0.19	0.39	0	1

Table 2: The demand for environmental quality using youth characteristics

	Environmental quality			Environmental quality	
	0	1		0	1
Male			**Bribe**		
0	300	421	0	1,085	1,142
1	1,016	1,008	1	231	287
Married			**Global identity**		
0	899	1,036	0	1,060	1,103
1	417	393	1	256	326
No Education			**National identity**		
0	1,255	1,384	0	1,113	1,188
1	61	45	1	203	241
Employed			**Global identity**		
0	188	244	0	1,060	1,103
1	1,128	1,185	1	256	326
Public			**National identity**		
0	202	215	0	1,113	1,188
1	1,114	1,214	1	203	241
Father education			**Arab identity**		
0	461	427	0	1,050	1,096
1	855	1,002	1	266	333
Employed father			**Religious identity**		
0	462	407	0	1,087	1,136
1	854	1,022	1	229	293
Mother education			**Algeria**		
0	634	626	0	1,091	1,138
1	682	803	1	225	291
Employed mother			**Egypt**		
0	1,204	1,288	0	940	1,120
1	112	141	1	376	309
Urban			**Morocco**		
0	534	552	0	1,189	1,271
1	782	877	1	127	158
Corruption concern			**Lebanon**		
0	1,282	1,375	0	968	1,028
1	34	54	1	348	401
Job concern			**Tunisia**		
0	1,150	1,198	0	1,189	1,271
1	166	231	1	240	270
No gov-confidence					
0	880	891			
1	436	538			

Table 3: Correlation matrix of explanatory variables of interest

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Male (1)	1.0000									
Married (2)	0.0000	1.0000								
No Education (3)	0.0200	0.0100	1.0000							
Employed (4)	0.0200	0.1612*	-0.0600	1.0000						
Income (5)	0.0400	-0.0100	-0.0600	0.1560*	1.0000					
Urban (6)	-0.1375*	-0.0700	-0.0700	0.0500	0.1336*	1.0000				
Corruption concern (7)	0.0300	-0.0600	0.0000	-0.0600	0.0400	0.0200	1.0000			
No gov-confidence (8)	-0.0500	-0.1009*	-0.0894*	0.0700	0.2203*	0.1469*	0.0500	1.0000		
Bribe (9)	0.0890*	-0.0400	-0.0200	-0.0100	0.2378*	0.1179*	0.0400	0.0996*	1.0000	
Secular-unimportant (10)	-0.0200	0.0200	0.0863*	0.0000	0.1136*	0.0500	-0.0500	0.1033*	0.0996*	1.0000

Notes: * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 4: Ordered Probit Results, Environmental Quality

	(i)	(ii)	(iii)	(iv)	(v)
Youth characteristics					
Male	-0.1913***	-0.1720***	-0.1882***	-0.1752***	-0.1744***
	[0.047]	[0.048]	[0.048]	[0.049]	[0.050]
Married	-0.1647***	-0.1037**	-0.0972**	-0.1150**	-0.0812
	[0.044]	[0.049]	[0.049]	[0.050]	[0.052]
Primary education	-0.1612	-0.1592	-0.1695	-0.2017	-0.1118
	[0.130]	[0.132]	[0.131]	[0.127]	[0.128]
Middle education	-0.0232	-0.0469	-0.0571	-0.0888	0.0002
	[0.119]	[0.123]	[0.123]	[0.118]	[0.121]
Secondary education	-0.094	-0.1050	-0.1153	-0.1650	-0.0524
	[0.117]	[0.123]	[0.122]	[0.119]	[0.121]
University education	0.1125	0.0891	0.0875	0.0015	0.1136
	[0.116]	[0.124]	[0.123]	[0.121]	[0.124]
Employed	-0.0454	-0.0155	-0.0074	-0.0152	0.0456
	[0.054]	[0.056]	[0.056]	[0.056]	[0.058]
Income	0.0928***	0.0834***	0.0728***	0.0782***	0.0636**
	[0.029]	[0.030]	[0.021]	[0.033]	[0.033]
Public school	0.0983	0.1182*	0.1181*	0.1017	0.1113
	[0.065]	[0.067]	[0.067]	[0.070]	[0.072]
Household characteristics					
Roominess		-0.0237	-0.0257	-0.0145	-0.0150
		[0.0367]	[0.036]	[0.037]	[0.039]
Father education		0.0645	0.0591	0.0327	0.0521
		[0.054]	[0.054]	[0.053]	[0.054]
Employed father		0.1321**	0.1078**	0.1114**	-0.0204
		[0.054]	[0.055]	[0.057]	[0.083]
Mother education		-0.0347	-0.0271	-0.0119	0.0049
		[0.0538]	[0.054]	[0.054]	[0.056]
Employed mother		0.0999	0.1009	0.1675**	0.1668**
		[0.071]	[0.070]	[0.061]	[0.071]
Urban		-0.0167	-0.0302	0.0015	-0.0105
		[0.044]	[0.044]	[0.044]	[0.044]
Government perceptions					
Corruption concern			0.2686**	0.2218*	0.2005*
			[0.104]	[0.103]	[0.105]
Job concern			0.1395**	0.1068*	0.1389**
			[0.059]	[0.058]	[0.060]
No gov-confidence			0.0678	0.1200***	0.1605***
			[0.046]	[0.047]	[0.050]
Bribe			0.1041*	0.1132**	0.0950*
			[0.056]	[0.056]	[0.056]
Identity factors					
Secular-unimportant				-0.0740***	-0.0650***
				[0.021]	[0.022]
Tradition-unimportant				-0.7966***	-0.0646***

				[0.061]	[0.022]
Gender equality				0.0375*	0.05155**
				[0.011]	[0.020]
Global identity				0.0757	0.0667
				[0.052]	[0.052]
National identity				-0.0983	-0.1392*
				[0.075]	[0.076]
Arab identity				0.0209	0.0226
				[0.078]	[0.078]
Religious identity				0.0894	0.0551
				[0.078]	[0.079]
Country effect					
Algeria					0.2695**
					[0.102]
Lebanon					0.1615
					[0.115]
Morocco					0.4621
					[0.114]
Tunisia					0.0874
					[0.101]
Log pseudolikelihood	-4524.0174	-4508.4685	-4499.9462	-4383.7490	-4371.6592
N	2,745	2,745	2,745	2,745	2,745

Notes: robust standard errors in brackets, * p<0.1, ** p<0.05, *** p<0.01.

Table 5: Ordered Probit Results by Gender, Environmental Quality

	Female	Male
Married	-0.2772***	0.0017
	[-2.930]	[0.030]
Primary education	-0.0562	-0.1127
	[-0.170]	[-0.800]
Middle education	-0.1493	0.0419
	[-0.500]	[0.320]
Secondary education	-0.2614	0.0018
	[-0.900]	[0.010]
University education	0.1440	0.0654
	[0.480]	[0.470]
Employed	-0.0282	0.0409
	[-0.24]	[0.610]
Income	0.0279	0.0764*
	[0.530]	[1.890]
Public school	0.0757	0.1177
	[0.600]	[1.330]
Roominess	-0.0741	0.0002
	[-0.870]	[0.000]
Father education	0.0166	0.0588
	[0.140]	[0.960]
Employed father	-0.0175	-0.0218
	[-0.100]	[-0.230]
Mother education	0.1412	-0.0333
	[1.320]	[-0.510]
Employed mother	0.1149	0.1930**
	[1.030]	[2.080]
Corruption concern	0.2552	0.1827
	[0.870]	[1.640]
Job concern	0.1935	0.0992
	[1.500]	[1.440]
No gov-confidence	0.0057	0.2272***
	[0.06]	[3.770]
Bribe	0.3376***	0.0430
	[2.630]	[0.680]
Secular-unimportant	-0.0241	-0.0737***
	[-0.540]	[-2.930]
Tradition-unimportant	-0.9665***	-0.7681***
	[-6.960]	[-11.280]
Gender-equality	0.0297	0.0574**
	[0.650]	[2.510]
Global identity	0.1612	0.0463
	[1.480]	[0.770]
National identity	-0.2338*	-0.1060
	[-1.670]	[-1.170]
Arab identity	0.2060	-0.0098
	[1.370]	[-0.110]

Religious identity	-0.0973	0.0728
	[-0.650]	[0.800]
Algeria	0.1682	0.3183***
	[0.830]	[2.680]
Lebanon	0.3398	0.1110
	[1.440]	[0.820]
Morocco	0.3284	0.5085***
	[1.220]	[3.970]
Tunisia	0.1713	0.1001
	[0.760]	[0.790]
N	721	2,024

Notes: robust standard errors in brackets, * p<0.1, ** p<0.05, *** p<0.01.

Table 6: Ordered probit Results by Region, Environmental Quality

	Urban	Rural
Male	-0.2396***	-0.0655
	[-4.000]	[-0.720]
Married	-0.1053	-0.0611
	[-1.550]	[-0.750]
Primary education	-0.0848	-0.1294
	[-0.420]	[-0.730]
Middle education	-0.0382	0.0477
	[-0.200]	[0.290]
Secondary education	-0.0989	-0.0211
	[-0.520]	[-0.130]
University education	-0.0094	0.3471*
	[-0.050]	[1.930]
Employed	0.0234	0.0951
	[0.310]	[1.040]
Income	0.1001**	0.0127
	[2.440]	[0.230]
Public school	0.1268	0.0441
	[1.460]	[0.330]
Roominess	-0.0209	0.0420
	[-0.430]	[0.650]
Father education	0.0312	0.0854
	[0.430]	[1.040]
Employed father	0.0877	-0.1550
	[0.830]	[-1.160]
Mother education	-0.0544	0.1191
	[-0.780]	[1.280]
Employed mother	0.2222***	0.1245
	[2.590]	[0.940]
Corruption concern	0.1347	0.2010
	[1.070]	[1.040]
Job concern	0.2010**	0.0369
	[2.500]	[0.400]
No gov-confidence	0.1040*	0.2247**
	[1.710]	[2.490]
Bribe	0.0134	0.2586***
	[0.190]	[2.610]
Secular-unimportant	-0.0151	-0.1524***
	[-0.560]	[-4.000]
Tradition-unimportant	-0.8226***	-0.8564***
	[-10.340]	[-8.870]
Gender equality	0.0521*	0.0448
	[1.910]	[1.450]
Global identity	0.0952	0.0283
	[1.420]	[0.330]
National identity	-0.2568***	0.0159
	[-2.660]	[0.130]

Arab identity	0.0857	-0.0913
	[0.900]	[-0.690]
Religious identity	0.0383	0.0784
	[0.390]	[0.590]
Algeria	0.1329	0.3848**
	[0.970]	[2.470]
Lebanon	0.0603	0.0514
	[0.400]	[0.270]
Morocco	0.2921*	0.6893***
	[1.880]	[3.910]
Tunisia	-0.1217	0.3877**
	[-0.830]	[2.260]
N	1,659	1,086

Notes: robust standard errors in brackets, * p<0.1, ** p<0.05, *** p<0.01.