

ENVIRONMENTAL RESPONSIBILITY: TEACHERS' VIEWS

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Abstract

This research paper investigates the views of the teachers of elementary and secondary schools in Greece with regard to who bears the responsibility for the state of the environment, as well as who should bear the cost of its protection. The research was carried out at the Environmental Education Centre of Kissavos-Mavrovounio. The research subjects were 144 teachers undergoing training in environmental education. The teachers believe that today the quality of both the natural and the urban environments worsens with those most responsible, in order of importance, being the industrialists and businesses, public administration and control mechanisms, politicians and laws, the citizens as consumers, judges and the judicial system and the farmers as producers. According to the respondents, the parties less responsible are the journalists and the mass media, researchers and scientists and, finally, teachers and the educational system in general. With regard to who should bear the cost of environmental protection, the vast majority think that the government should be the one to pay. The ideas of indirect and direct taxation, the adoption of a lower standard of living are much less accepted.

Key words: *environmental responsibility, natural environment, urban environment, environmental protection*

Introduction

The world we live in is much busier and richer than in the past. Today, the capabilities people have for controlling their destiny and improving their life have reached levels older generations could not possibly imagine. However, in order to achieve this, humans have intervened in the natural environment at levels unprecedented in human history (Harper, 1996; Macionis, 1997; Coleman & Cresey, 1999).

In the last years it has become “common knowledge” among people that the quality of both the natural and the urban environments worsens continuously with consequences which cannot yet be calculated (Fitianos & Samara-Konstantinou, 2009). The individual as a user of ecosystems and as a consumer of products produced via various polluting activities certainly contributes to the current degradation of the environment. However, the role of the organized interests and the state with regard to the manner and the degree of environmental exploitation should not be ignored either (Kousis, 1998). Private

enterprises are one of the most powerful forces which shape the interaction between people and environment. However, private enterprise is not the only force which harms the environment – the same happens with state enterprises, too (Doyle & McEachern, 1998). The state of the environment is largely determined by the arbitrary actions of the market forces, much less so by programmed decision making (Jacobs, 1991). While industrialization means accelerated processing of the sources required by economies (McBurney, 1990), political parties decide their position on environmental matters on the basis of minimizing possible conflict with society (Dalton, 1994).

The quality of the environment is a commodity for the benefit of all. As a private commodity, its distribution should naturally favour those with the highest income while, as a public commodity, the state has the obligation to provide equal quantity and quality of this commodity to everybody without exception (Lekakis, 1998). Since environmental problems are the result of human choices and not of the independent operation of the environment, it is humans who should deal with the consequences of the forces which they themselves unleash. The achievement of sustainability requires actions which create long-term and effective solutions (Macionis, 1997).

Who should bear the cost of environmental protection? Should it be the government which is called upon to invest resources in order to deal with the issue or the citizens who are called to bear the cost of environmental protection through indirect or direct taxation or through acceptance of a lower standard of living? (Dunlap & Mertig, 1992; NORC, 1992)

At the European Union level, the authorities are positively predisposed towards the imposition of environmental taxes and charges (Gizari-Xanthopoulou, 2003). Taxation measures are useful in discouraging the undesirable use of products which harm the environment (Pearse, 1998). However, the taxes on pollution can be regarded as “unfair” because they allow pollution of the environment by those who can pay for it (Jacobs, 1991). Taxation measures are based on the principle that those who pollute must pay. Thus, taxation measures contribute to reducing pollution by increasing the cost of using the resource and income from the tax can be used to help improve the environment (Kula, 1994).

Efforts have been made in Greek primary and secondary schools in the last 20–25 years with regard to environmental education – mainly the infusion of environmental issues in various courses, the inclusion of specialized courses in the curricula and the implementation of 7–8 months environmental education programmes (projects). Nevertheless, there is room for improvement: the engagement of students with environmental education is largely voluntary and depends mainly on the enthusiasm and initiative of teachers; environmental education has to compete against more established and career oriented subjects and lacks adequate support from the appropriate authorities; there is a need for wider diffusion and more systematic evaluation of what is achieved; interested teachers need continuous and more rigorous training (Manolas, 2009).

The aim of this paper is to investigate the views of elementary and secondary school teachers with regard to how they evaluate the quality of the natural and urban environment, whom they regard as responsible for the state of the environment and who they think should bear the cost of environmental protection.

Method of research

This research was carried out at the Environmental Education Centre of Kissavos-Mavrovounio through the use of self-management questionnaires. The questionnaire was completed by teachers of elementary and secondary schools attending two-day seminars in environmental education. The research was carried out during the period of December 2008 – December 2009. Research subjects were selected on the assumption that the teachers who participate in such activities are positively predisposed towards protecting the environment. In total, 144 teachers of various specializations completed the questionnaire. Of these teachers, 35.4% were serving in elementary education, and 64.6% – in secondary education; 38.9% were men, and 61.1% were women; 44% had completed 10 years of service, 28.3% – 11–20 years of service and 27.7% – 21–31 years of service.

In order to discover natural and useful groupings of data, the authors used cluster analysis, in particular, hierarchical clustering. Starting from each observation being by itself one cluster, in each step we associated the observations with the smallest distance so that the data of one cluster were included in the data of the hierarchically next cluster (Behrakis, 1999; Siardos, 1999; Philiass, Pappas, Antonopoulou, Zarnari, Magganara, Meimaris, Nikolakopoulos, Papachristou, Perantzaki, Sampson, & Psychogios, 2000; Karapistolis, 2001; Karlis, 2005). Cluster analysis or hierarchical grouping can function not only towards the direction of observation grouping, but also towards the direction of variable grouping (Siardos, 1999). When the unit of analysis is the variable, the measures of distance or similarity were calculated for all the pairs of variables. The Pearson correlation coefficient was used as the measure of distance, and, for combining observations in clusters, the method of the furthest neighbor was used. According to this method, the distance between two clusters is considered to be the one between their furthest points (Siardos, 1999).

Grouping is one of the most basic processes in social science research where theory is either absent or incomplete. The first step of the research is usually to discover some type of structure in the data (Bartholomew, Steele, Moustaki, & Galbraith, 2002). The description of grouping is accomplished through the dendrogram where nodes are used to symbolise subdivisions within the population and the level of each node shows the degree of similarity of the observations (Benzecri, Lebeau, & Jambu, 1979). If we are not interested in the total ranking of the observations, but only in a limited number of clusters, we only need to “cut” the dendrogram with a horizontal line so that the branches which remain satisfy the desirable number of clusters (Karapistolis, 2001). The analysis of the data was done through the statistical package SPSS.

Results

An ecologically sustainable society should meet the needs of the present generation without threatening the environmental legacy for future generations. The most important pre-requisite for the protection of the environment should be that people are aware of the consequences of their actions on the natural and urban environments they live in.

Regarding the future of the natural environment, 64.6% of the teachers who completed the questionnaire believe that it is worsening rapidly, 22.2% – that it is worsening slowly and 8.3% – that it is improving slowly. 2.1% believe that the situation is remaining the same, while 2.8% did not answer the question.

The teachers hold similar views about the urban environment. 56.3% of them think that it worsens rapidly, 21.5% think that it worsens slowly, 10.4% think that it improves slowly and 1.4% that it improves rapidly. 5.6% believe that the situation remains the same, while 4.9% did not answer the question.

When asked who bears responsibility for the state of the environment, the teachers surveyed said that, in order of importance (on a scale from one to ten, with ten being the most responsible): industrialists and businesses (mean=8.09), public administration and control mechanisms (mean=7.80) and politicians and laws (mean=7.67). They also hold citizens responsible (mean=6.64%), because, as consumers of commodities, it is the citizens who create the demand for the production of commodities by the industry. Next come the judges and the judicial system (mean=6.30) who are expected to act in favour of the environment by imposing fines or penalties on those who pollute. Teachers hold farmers responsible due to their use of fertilizers and pesticides (mean=6.29). Next come the journalists and the mass media (mean=5.51) and researchers and scientists (mean=4.86) who are expected to guide the populace towards the direction of environmental protection. Teachers and the educational system in general are placed in the position of least responsibility (mean=4.56). This shows that the teachers believe that, through their work, they make a positive contribution to the protection of the environment.

Hierarchical clustering revealed three groups of variables. Table 1 indicates the linkage of variables and clusters, and the dendrogram of the variables is presented in Figure 1.

Table 1. Complete linkage of variables and clusters

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
	1	1		2	0	
2	1	7	0.534	1	0	5
3	8	9	0.509	0	0	7
4	5	6	0.413	0	0	6
5	1	3	0.373	2	0	7
6	4	5	0.358	0	4	8
7	1	8	-0.054	5	3	8
8	1	4	-0.289	7	6	0

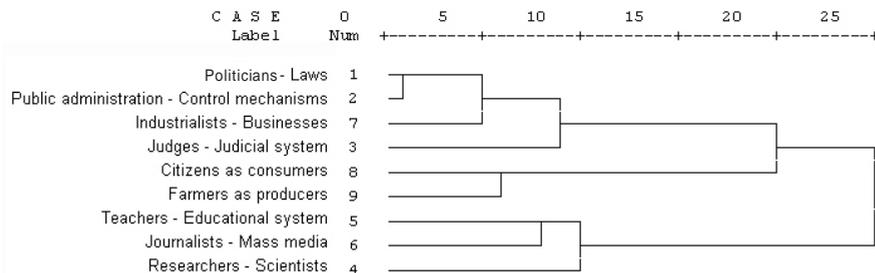


Figure 1. Dendrogram of variables regarding those responsible for the state of the environment

The first cluster, which we titled “political power,” includes politicians and laws related to public administration and control mechanisms, industrialists and businesses and, in a higher level, judges and the judicial system. With the exception of the judiciary, this cluster includes the variables regarded most responsible for the state of the environment. Thus, the respondents associate those holding the economic power with those holding the political power.

The second cluster was titled “general population”, and it includes citizens as consumers and farmers as producers. This cluster is related to the first cluster in a higher level. According to the teachers, this cluster comes second in importance with regard to those responsible for the state of the environment.

Teachers and the educational system in general are related to the journalists and the mass media and, in a higher level, to researchers and scientists. The above comprise the third cluster which we titled “groups influencing the decisions about the environment”. The teachers think that these parties are the least responsible for the state of the environment.

Combining the results, the teachers hold those in the first cluster the most responsible for the state of the environment, with the exception of judges and the judicial system. Next in assessment is the general population and, lastly, groups influencing the decisions about the environment. These are the groups that we expect to contribute to the creation of ecologically conscientious citizens, the provision of information on environmental problems and the development of technological solutions for combating environmental problems.

With regard to who should bear the cost of environmental protection, the vast majority of the teachers (72.2%) agree that the government should be the one who pays, while 22.2% do not agree and 5.6% did not answer the question. A small percentage of teachers (16%) agree with the idea of indirect taxation, for example, fuel taxes, while 72.2% do not agree and 11.8% did not answer. Similarly, 16% agree with direct taxation, while 72.9% do not agree and 11.1% did not answer. Finally, 15.3% agree with the idea of adopting a lower standard of living for the sake of the environment, while 75.7% do not agree and 9% did not answer.

Discussion and conclusions

The teachers who participated in this research generally believe that the quality of the natural environment worsens either slowly or rapidly. The teachers also hold similar views about the urban environment with the difference that their view about the urban environment is a little more positive than it is about the natural environment. In another research paper asking the same questions, the students of the Department of Forestry and Management of the Environment and Natural Resources of the Democritus University of Thrace were found to have similar views. The only difference is that, according to the students, the urban environment worsens faster than the natural one. It is worth noting that the students who have one or two years left until they complete their studies had a more positive view about the natural environment than their younger counterparts. This belief may be due to the knowledge they have accumulated over the years as students in the department.

According to the teachers, those most responsible for the current state of the environment are, in order of importance, the following: industrialists and businesses,

public administration and control mechanisms and politicians and laws, the citizens as consumers of commodities, the judges and the judicial system and the farmers as producers, researchers and scientists and, finally the teachers and the educational system in general. These findings are to a great extent consistent with the results of a similar study conducted earlier among the students of the Department of Forestry and Management of the Environment and Natural Resources of the Democritus University of Thrace (Tampakis, Karanikola, Manolas, Nikou, Xanthopoulos, & Karastamatis, 2008). By applying the technique of grouping in clusters, we found that the variables are related in such a way as to form the same three clusters as for teachers.

Despite the fact that teachers are not held responsible for the current state of the environment, they do recognize a role for themselves in contributing to the formation of environmentally responsible students and future citizens. Ideas about how they might do this include: dealing with the problem of environmental education being largely voluntary in character depending mainly on the enthusiasm and initiatives of the teachers, reducing competition of the subject against more established and career oriented subjects, providing support from the appropriate authorities, promoting wider diffusion and more systematic evaluation of what is achieved and adopting continuous and more rigorous training for interested teachers.

Finally, on the question of who should bear responsibility for protecting the environment, we can say that the behavior of the teachers is politically immature since the vast majority of them think that the government should bear the cost of environmental protection while they also reject the options of indirect and direct taxation or the acceptance of a lower standard of living. This view is consistent with that reported in earlier research (Manolas, Koutroumanidis, & Tampakis, 2004; Tampakis et al., 2008). An important difference among the present study and the earlier research efforts is the fact that teachers and students are equally negative regarding indirect and direct taxation (Tampakis et al., 2008) in contrast to the citizens of Orestiada who were more positive towards indirect taxation as a means for saving up resources which could be used for the protection of the environment (Manolas et al., 2004). It seems that most respondents understand that protecting the environment costs money and that this should be paid, just not by them. This view reveals a contradiction since government funds are collected through direct and indirect taxation. Thus, when we say that costs should be borne not by us but by the government, we are simply seeking to transfer the burden to someone else. In reality, however, we transfer this cost to ourselves.

The results of the questionnaire generally reveal an opposition to the changes required for moving towards sustainability. There may be many reasons for such opposition: inertia based on habit – doing things just as in the past; selfishness – wanting the most, the best and the greatest comfort or convenience for oneself; being averse to sacrifice; seizing short-term personal gains and ignoring long-term negative consequences (especially when the long-term consequences cannot be easily seen); helplessness – feeling ignorant about what to do or unable to do anything that will help to improve the situation; fatalism – feeling it is too late to do anything; fear – feeling fearful in facing such problems; believing that other things are more important – attention to more immediate priorities, for example, family, finances; belief in the power of technology – hoping that technological improvements will be developed to save the environment (Oskamp, 2000; Oskamp, 2002; Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007).

The results of this research project show that incentives designed to increase the adoption of environmentally responsible behaviors and strategies for implementing effective environmental policies are indeed needed. This need is further strengthened by the findings of another research referred to in this paper regarding forestry students and the citizens of the town of Orestiada. Whether these incentives and strategies will be educational or economic ones, something else or, indeed, a combination of all of these, is beyond the scope of this paper. The development of such incentives and strategies is a very complex issue which requires further studies which take into account a multiplicity of factors, such as the relative importance of various barriers to environmentally responsible behaviors, whether these barriers occur in sequence, what type of sequence, whether there is any variation for different population segments, whether the barriers are cumulative or whether they interact and what the most effective approaches for overcoming each for each particular segment of the population are (Swim, Clayton, Doherty, Gifford, Howard, Reser, Stern, & Weber, 2009).

In general, teachers need to understand that they should live in a more ecocentric manner that makes environmental consequences central to their actions. This is the path to a culture that is sustainable and does not increase the environmental deficit. The needs of the present generation must be met in such a way that future generations will not be deprived of the possibility to live in a better environment.

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Appendix

QUESTIONNAIRE

- 1) Sex: Male Female
- 2) Specialization:
- 3) Years of service:
- 4) Level of school: Primary Secondary
- 5) The quality of the natural environment today:

Improves rapidly <input type="checkbox"/>	Improves slowly <input type="checkbox"/>	Remains the same <input type="checkbox"/>
Worsens rapidly <input type="checkbox"/>	Worsens slowly <input type="checkbox"/>	I do not know <input type="checkbox"/>
- 6) The quality of the urban environment today:

Improves rapidly <input type="checkbox"/>	Improves slowly <input type="checkbox"/>	Remains the same <input type="checkbox"/>
Worsens rapidly <input type="checkbox"/>	Worsens slowly <input type="checkbox"/>	I do not know <input type="checkbox"/>
- 7) Who is responsible for the state of the environment? Please assess grading from 1 to 10 (1 means least responsible while 10 most responsible). You may, if you wish, give the same grade to more than one issue.

☒	Politicians – Laws
☒	Public administration – Control mechanisms
☒	Judges – Judicial system
☒	Researchers – Scientists
☒	Teachers – Educational system
☒	Journalists – Mass media

- ✂ Industrialists – Businesses
 ✂ Citizens as consumers
 ✂ Farmers as producers

8) In order to protect the environment:

The government should spend more money.

Yes No I do not know – I do not answer

We should pay higher prices for products, e.g. fuel (indirect taxation).

Yes No I do not know – I do not answer

We should pay higher taxes (direct taxation).

Yes No I do not know – I do not answer

We should accept a lower standard of living.

Yes No I do not know – I do not answer

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