

# Environmental Education: A Challenge for Education in Cyprus

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## • Abstract

Since 1974, the island of Cyprus has been divided into two parts. The internationally recognized government of the Republic of Cyprus controls the southern 2/3 of the island, while the political entity “Turkish Republic of Northern Cyprus” controls the northern one-third. For the past 26 years, a United Nations peacekeeping force patrols the “Green Line” separating the two parts of the island. This has played an important role in the formation of economy, health, education and environmental policy. This paper will outline some of the most important issues, glancing at all sectors of life. It will also cover the importance of an educational awareness process for enabling all citizens to actively participate in the environmental decision making process. Finally, suggestions will be outlined for the successful implementation of an environmental education process.

## • Population, Climate, Geography

The population of Cyprus is approximately 762,887 persons, who live in a total area of 9,250 km<sup>2</sup>. The total land area is 9,240 km<sup>2</sup>, and the coastline is 648 km. The capital is Nicosia. Almost all ethnic Greeks (78%) reside in the southern two-thirds of the island, and Greek is the predominant language of that area. Similarly, almost all ethnic Turks (18%) reside in the northern one-third; primarily, Turkish is spoken there. English is also widely used in both areas. As for the religion, the 78% of the population is Greek Orthodox, 18% is Muslim and 4% is Maronite, Armenian, Apostolic, and other. An estimated 94 percent of the total population, age 15 and older, can read and write. About 98 percent of males are literate; approximately 91 percent of females are literate.

Climate-wise, the summers are dry and the winters are wet, as in most Mediterranean-climatic conditions. The mean temperature in January is 10°C and in July is 28.3°C, while the mean annual rainfall is estimated to be 381 mm. ([www.countrywatch.com](http://www.countrywatch.com))

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### • Education and Culture

Education is provided through pre-primary and primary schooling, secondary general and secondary technical/vocational schools, special schools, third level institutions and non-formal institutions and centres.

The educational system is highly controlled by the State. School curricula and textbooks are prescribed by governmental agencies, and schools, at all levels, are visited by the state inspectorate. The inspectorate is also responsible for evaluating schools. Educational policies are formulated by the Ministry of Education and Culture on the advice of the Education Council and approved by the Council of Ministers.

The construction, maintenance and equipment of school buildings are the responsibility of local school committees. Private schools owned/administered by individuals or bodies, are also liable to supervision and inspection of the Ministry of Education.

The Ministry of Education and Culture is also responsible for formulating and implementing the cultural policy of the government through its Cultural Services. The term "cultural policy" includes the attitude and role of the state in all aspects of educational and cultural activity. The Cultural Services have responsibilities embracing literature, books, libraries, publications, lectures, music, cinema, art and theatre. ([www.pio.gov.cy](http://www.pio.gov.cy))

### • Health System

Considering Health in Cyprus, we could state that it has an adequate standard. The demand for health care is increasing. The number of elderly people is low but growing and creates new service demands. Technological changes, both in terms of equipment and pharmaceuticals, are rapid.

It should be pointed out that Cyprus has successfully eliminated malaria in the past and more recently echinococcosis, through the implementation of special campaigns. Current educational and preventive programmes are proving successful in almost eliminating the incidence of thalassaemia, which was a severe health problem.

Health care is provided free through government facilities to those who are eligible. The groups formally covered by this scheme are: government employees, individuals earning less than C£6.000, households earning less than C£10.000 per annum and households with more than three children. The range of services offered through the government health scheme includes visits to general physicians, consultations, inpatient stays, medical care given abroad in specialities not offered in Cyprus and all drugs prescribed. Furthermore, medical care free of charge is provided in all cases receiving treatment at the accident and emergency departments irrespective of the economic situation or the nationality of the person involved, including visitors. The private health sector is open to all those who can afford to pay for their treatment. Private medicine is dominated by a large number of physicians in individual practice.

On 20 April 2001, the House of Representatives enacted a law for the introduction of a National Health System (NHS), which will provide health care free at the time of delivery. It will be universal as regards population coverage and will be financed by contributions from the state, the employers, the employees, the self-employed and the pensioners. The NHS will be administered by the Health Insurance Organisation, a public law body. ([www.pio.gov.cy](http://www.pio.gov.cy))

## • Environment and Economy

Despite its partial degradation, the quality of the environment remains quite good on the whole. However, the Turkish invasion of 1974 and the continuing occupation of the territory of the Republic and rapid economic development over the last three decades, accompanied with rising standards of living and considerable changes in lifestyles, have led to a variety of environmental pressures and strains on the country's natural fabric.

As is the case for many of the countries of the Mediterranean region, Cyprus suffers from coastal degradation, a problem intensified by intensive industrial and agricultural activities, as well as by urbanization and tourism. Urban and industrial waste, and pollution also pose environmental threats, which appear to stem from the country's turn from a principally agricultural society to an urbanized one.

The most important environmental issues in Cyprus are:

- water resource problems (there are no natural reservoir areas; there is seasonal disparity in rainfall),
- water pollution from sewage and industrial waste,
- coastal degradation,
- loss of wildlife habitats due to urbanization.

As water resources are scarce, the demands for water are causing concern, as well as pressures on its quality, in some areas, from effluent and agrochemicals. In the coastal plain aquifers nitrate concentrations in some parts have increased due to agricultural and urban development.

The contribution from nitrogen-containing fertilizers to high levels of nitrate in food and drinking water has been identified as an environmental health concern. Methemoglobinemia (blue-baby syndrome), various cancers and birth defects were listed as possibly being associated to exposure to elevated nitrate levels in drinking water. Other non-cancer health outcomes associated with exposure to nitrate in drinking water have been reported. A German study found an increased incidence of hyperthyroidism (goiter) in persons drinking water with high nitrate levels. (Scragg RK, 1982). A Colorado study reported an increased risk of developing insulin dependent diabetes in residents of counties whose water supplies had high nitrate levels. Maternal transfer of nitrate is suggested by a number of studies on reproductive outcomes linked to high nitrate levels in water supplies. An Australian study reported an increased risk for central nervous system malformations in infants whose mothers consumed drinking water with high nitrate levels. A California study found an increased risk for neural tube defects (anencephaly) in babies of women who consumed drinking water with nitrate levels >10 ppm during pregnancy. Anecdotal reports of reproductive effects are also found in the literature. (Croen LA, 2001).

The annual per capita production of solid waste, estimated at 470 kg./year for residential areas and 670 kg./year for tourist areas (including commercial uses, hotels and restaurants), is quite high and has given rise to the generation to a variety of associated problems. (MANRE, Report on Major Environmental Issues, Nicosia, 1998)

In the agricultural sector, soil erosion, use of weed killers and agrochemicals and the losses of prime agricultural land to other uses, are some of the most important concerns, though the quality of the soils is good.

Tourism will remain the primary engine of the economy, which will be challenged to maintain four to five percent real Gross Domestic Product (GDP) growth in the absence of

structural reform. Capital formation remains in decline, falling below 18 percent in 1998. Unemployment in Cyprus has been very stable at under four percent for numerous years and falling further, to 3.3 percent at the close of 2000. (countrywatch.com)

The agriculture sector in Cyprus contributes 6.3 percent of the GDP and employs an estimated 23.2 percent of labor, as stated in the GDP/Employment by Sector of Origin table. The primary food crops produced are bananas, barley, potatoes and wheat. The primary meat products are beef and veal, chicken, duck, game, meat, lamb, pork, rabbit and turkey. The largest (in value terms) agricultural exports in 1998 were cigarettes, fish, barley, prepared food and maize. The total value of agricultural exports in 1998 was \$533.5 million, while the total value of agricultural imports in 1998 was \$752.5 million. (countrywatch.com)

There is no heavy industry in Cyprus. Discharge licenses for liquid and solid industrial waste are issued by the Ministry of Agriculture, Natural Resources and Environment (MANRE) and for air emissions by the Ministry of Labour and Social Insurance.

### • Environmental Policy

Environmental policy is applied by the Council of Ministers through the Minister of Agriculture, Natural Resources and Environment. The Ministry controls and coordinates the policies for the protection and preservation of the environment. The Environment Service of the MANRE, advises on environmental policy and is responsible for its implementation, coordinates the process for the adoption of the EU's environmental policy and legislation, coordinates programs for the protection of the environment, heads the technical committee on environmental impact assessments, oversees the enforcement of the larger part of the Law on the Control of Water Pollution, promotes environmental awareness and training, gathers and disseminates information on the environment. The Service is also the administrative arm of the Environment Committee and the Council for the Environment.

Through its various Departments, (i.e. Water Development, Agriculture, Geological Survey, Mines and Quarries, Fisheries, Forestry, Agricultural Research, Veterinary Services, Meteorology, as well as the Natural Resources Information and Remote Sensing Center), the MANRE has a wide range of executive functions on environment specific or related issues, such as the protection of the quality of surface and underground waters and the sea, management of water resources, aquaculture, climatology, protected areas, soil conservation, fertilizers and pesticides, reuse of treated effluent, hazardous waste management, mines and quarries, geomorphology, marine pollution, aquatic species and habitats, management of forests, organic farming, protection of flora and fauna, industrial and domestic waste treatment, etc.

Inspectors from some of these agencies (i.e. Departments of Water Development, Agriculture, Geological Survey and Fisheries) have been appointed under the provisions of the Water Pollution Control law. In cooperation with relevant inspectors from the Environment Service and under the supervision of the Director of the Service, who is a Chief Inspector, they enforce those parts of the law for which the MANRE is the competent authority.

The government of Cyprus has planned several programs to manage the natural resources but have not prioritised them and hence remain secondary, as on one hand

financial resources are limited and on the other, the focal point is modernization. The Regulation and protection of the environment is under the jurisdiction of the MANRE. Major non-governmental environmental organizations and entities include the Cyprus Herpetological Society (CHS) and the Laona Project, which is dedicated to maintaining the Laona rural villages on the Akamas Peninsula.

### • **Environmental Awareness**

A report on air quality is regularly published, presenting in detail the results of the monitoring of air quality. Approximately thirty organizations are actively interested in the protection of the environment, covering a very broad range of activities and acting as pressure groups to influence decision-making. The Environmental Committee holds hearings during which NGOs, other representatives of the public and citizens, express their opinion on a variety of issues.

Facilitating the provision of information to the public, a state of the environment report and access to environmental information, are provided in the draft Bill for the Protection of the Environment, in line with the EU Directive and the work done under the activities of the EEC for the preparation of a relevant Convention.

Environmental education is an integral part of formal education curricula, including textbooks on environmental science, participation in international programs and in-service teacher training.

All Ministries have planned their budgetary distribution, considering for seminars, visits, etc. There is a special budget at the Ministry of Finance for travel to EU and attending relevant meetings, short training courses, visits abroad and scholarships. They are all purposed to cover training on environmental issues. There are special provisions for the implementation of the relevant agreement with Greece for co-operation in the field of the environment and sustainable development.

An Environmental Awareness Week has been initiated with the active participation of NGOs, which includes audio-visual aids, the publication of pamphlets, posters, etc. The "MEDACT - Aphrodite" Project has already allowed for the dissemination of the experiences of Greece in the adoption of the EU environmental legislation, through a major Seminar and interactions between counterparts from both sides. A number of seminars are also organized by non-governmental, scientific and professional organizations, frequently supported by the MANRE, the Industrial Training Authority, etc. Awareness rising is being promoted through publications, lectures, discussions in the media, etc. The MANRE financially supports awareness-raising activities either jointly organized or undertaken by NGOs.

Awareness raising is considered effective when citizens reach the point of participation in the decision making process. Citizen participation is an issue continuously under examination. The extent of citizen involvement is a significant subject that concerns both the regulators and the affected parties. The role of citizen involvement is multiple; participation of the public contributes to the quality and efficiency of a decision, ensuring that the expression of public belief is considered throughout the decision-making process.

Speaking about environmental assessment projects, hence environmental decision making, according to article 6 of EC Directive 85/337 the following is stated: "Member States shall ensure that:

Any request for development consent and any information gathered are made available to the public

The public concerned is given the opportunity to express an opinion before the project is initiated.

Participation may mean involvement in determining the scope of a project/decision, evaluating the relative significance of the likely impacts, providing specialist knowledge etc. In other words, public participation can be put into practice throughout the decision-making process; before the decision is made, by communicating, exchanging views, understanding needs and discussing new proposals and alternatives, but even after the decision is made, by informing the public of the decisions made, the reasons considered, the outcomes expected.

For an effective public participation, certain issues must be considered by both the decision makers and the public. Before participation takes place, the decision makers should know the public's behavior and knowledge. They should find out about the existence of the various groups within the public. Moreover, decision makers should be familiar with whether or not the public is experienced in being involved in different processes, the extent of information provided to the public on the proposed or similar schemes, any local or regional interests and ethnic and/cultural. This will help greatly to adapt participation policies according to needs, increasing the possibilities for a successful decision.

Similarly there are certain principles for the public to follow: citizens have to respond to the opportunity given to them to express a view. This can be exercised in the form of opinion surveys, advice, proposal of alternatives and comments on current policies. It has been argued that public participation might result in a negative outcome, because people get scared when they first and suddenly hear about changes that concern their way of life. Especially if they lack education, they may refuse to cooperate and express a negative behavior, causing problems, even when the changes will be related to minor or non-significant alterations. Therefore, it has to be noted that people have to first carefully be informed about the future 'plan', thoroughly examine its implications and finally make their opinions known.

Citizen participation can greatly contribute to decisions. Misunderstandings may be cleared-up, new alternatives may arise; suggestions from groups can lead to avoidance of environmental problems. Early modifications are preferred compared to alterations during advanced levels of a project, saving time and money.

The involvement of the citizens in the decision making process is essential and advantageous. It ensures that needs and societal views are taken into consideration. It helps the decision-making process by including ideas and suggestions often not considered by the developers. Participation of the public maximises the chances that all alternatives are taken into account and ensures that all attempts for a sound, final decision are made. Citizens feel that they have contributed, are needed and are respected in their communities.

It is vital that public participation occurs at an early stage. Making people feel that they have the right to affect a decision modifies their behavior in a positive way mostly because then they are given the chance for a say. In this way, later conflicts and hostilities induced because of decisions made without their contribution are avoided.

#### • **Non Formal Environmental Education**

The environmental crisis the world is facing includes both the unnecessary vandalism of the environment as well as the abuse of the environmental dissemination of information.

Assessment of environmental awareness indicates that for some citizens 'greening' of their country is all that is needed, for others an "abstract" protection of nature is necessary, for some groups the socio-economic aspect is the real environmental interest. A commonly accepted definition of the environment is that it "includes the external conditions that surround a system, an organism, a community or a subject."

It is very interesting though, that people tend to agree on the existence of an environmental crisis, without having the same ideas or awareness on what environment is. The crisis is a fact, something nobody disagrees on. Some people believe so because they know the scientific facts, some because they heard or read something that implied a crisis, some because they are 'trendy' and environment is becoming increasingly fashionable and some because they work on the environmental sector.

As with every crisis, the environmental one is in need for a solution. And the solution, which is suggested as the most useful and effective over time, is the implementation of what we have come to call 'environmental education' (EE). To put it simply, people will contribute in an effort to solve their problems when they know them, when they know where and how they can participate, what are the consequences and the implications and what should be changed and how. To become aware, someone should be "educated" on issues of concern.

Most of the significant world problems such as illiteracy, hunger, pollution, racism and poverty are linked to the environment. The education for the environment, i.e. the dissemination of information on environmental interactions, will help to overcome such problems in the long run and secure a quality life.

At a global level, debate and activity in the field of EE is very healthy; there is a great deal going on in terms of programmes and programme development. Yet, there remain numerous ongoing issues to resolve and serious challenges ahead. Despite the optimistic tone adopted by many environmental educators, it is clear that EE is far from realizing its maximum potential in terms of helping people to understand and appreciate the environment and their role within it. Two of the main challenges are the need to increase the EE research base and most importantly to find ways of enabling this research base to improve the potential of educational practice. (Sterling S, 1999)

EE can be formal, non-formal or informal. This has to do with the way it is applied and where it takes place. Education in schools is the formal one, where teachers and students are involved in the typical school classroom interaction and learning processes. Non-formal is the education, which can be applied outdoor, in museums, parks, aquaria and zoos, through eco-tourism, in art galleries and historical sites, via the mass media and in any form of environmental communication that does not operate within the school boundaries.

Stephen Sterling has completed an assessment from which he has concluded that formal education programmes have not been as successful as they might be in promoting environmental behavior and ecological thinking. On the contrary, data showed that TV, media, travel and the impact of environmental disasters have played an important role in promoting environmental concern, while the impact of 'outdoor' activities is also highly significant.

The EE movement was launched in the 60s and it has been increasingly gaining support. Organizations and movements are formed, action groups are established, and people have become progressively aware of what the environment is, its current condition and the way

it should be. Officially, the EE was an idea that gained a lot of attention in international Symposia like the 1970 Nevada Workshop, where EE was defined as the process, which leads to the development of abilities and attitudes necessary to make people comprehend and appreciate the relationship between them, their culture and the biophysical environment. Also, it is linked to the decision making process and the formation of a behavioral code towards issues of environmental quality. (Papadimitriou, 1998)

The Stockholm conference, in 1972, acknowledged the need of the EE as the solution to the environmental degradation. UNEP (United Nations Environmental Programme) was established in 1972 and along with UNESCO they set up the Belgrade Conference in 1975. According to the “Charte de Belgrade”, the Environmental Education aims were: awareness (of environmental problems), knowledge (of the role of humans in the environment and of the responsibilities towards it), attitude (to the environment, which should be active and protective), abilities (to solve the environmental problems), assessment capabilities (of the measures taken and the educational programmes suggested) and participation (of the social groups in the solution of the environmental problems). Other UNESCO-UNEP EE Conferences were the Tbilissi “Intergovernmental Conference on EE” in 1977, a landmark in the history of the EE, where everything was explicitly defined. Targets, criteria, and issues of the EE were analyzed and the policy to be followed was discussed. It was highlighted that development in technology and economy is not the source of the problem; on the contrary it is essential, particularly for third world countries. Its direction and implementation are the issues to be addressed, since they have to be of a nature that respects the environment. (Papadimitriou, 1998)

The notions of the balanced development, equity and social cohesion were from the very beginning integral parts of the foundations of environmental educations, as one could see from the Belgrade Charter (1975) and the Tbilissi (1977) Conference. Furthermore, the Moscow Conference (1987) raised also the promotion of peace as a central objective of the EE. The United Nations Conference on Environment and Development in Rio was held in 1992, where the relationship of environment and development was redefined and Agenda 21 was created to be the principal guide towards sustainable development. The Conference on ‘Environment and Society: Education and Public Awareness for Sustainability’ was jointly organized by UNESCO and the Greek Government with the coordination of Mediterranean Information Office for Environment, Culture and Sustainable Development (MIO-ECSDE) and the University of Athens. More than 1400 participants from 84 Countries met and discussed about EE, endorsing the Thessaloniki Declaration, where the Education for the Environment is proposed as the carrier of the common and single message of hope for the future. The message of Thessaloniki is that education should be in the center of international, national and regional agendas, and is the foundation of all other pillars of sustainability namely Regulation, Innovation and Economy. (Scoullou M, 1999)

When we discuss EE, we imply the education which makes the citizens willing and interested in the social environmental issues, encourages them to participate in the decision making process, enables them to acknowledge their responsibilities and understand the environmental functions, involves them in protecting the environment and finally orients them in “thinking globally and acting locally”. The basic problem in the implementation of EE is its successful induction in the school curriculum. The formal EE has to overcome curriculum obstacles; the non-formal and informal needs to grow fast.



Discussing about non-formal EE we are in fact addressing the issue of environmental communication.

Non-formal environmental education can be applied in any case, at any moment –since it does not require school environments (functions), it is independent of age, sex, location and social systems. Non-formal EE is the communication that may be coming from many directions, and can be of many forms. It is the form of education, which can send messages about the environment, to the broad spectrum of citizens where classic institutions and schools cannot offer their help. Therefore, the non-formal education has a greater “audience”. Communication has to do with the handling of environmental information, aims at the improvement of our ability to decode information, to exchange it and transmit it. Environmental communication aims at increasing people’s awareness on the environmental issues. Building people’s knowledge and abilities to participate are the main tasks involved. We need environmental awareness in all levels: personal and community ones. We need to educate the citizens, who also happen to be the consumers of everyday services and goods; we need to educate the producers and the decision makers. Decision makers belong both to the governmental sector and to the private industry, hence, we have to move towards both axes and educate all, so as to have an integrated result. A complete educational programme will make people aware of the environmental status quo, and able to act and interact in order to solve the environmental problems that arise and finally will enable people to exert pressure in the political arena.

The benefits of EE are many and are self-evident. EE, with the goal of developing a population that is aware of, and concerned about, the environment and its associated problems and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones, clearly enhances the quality of life, not only for individuals, but also for communities, states, nations and even the world.

The most popular rewards of EE can be:

Advances of high quality, interdisciplinary education tied to the interest of the community,

Creation of job opportunities in the environmental field,

Promotion of public health,

Environmental protection along with economic development,

Encouragement of stewardship of natural resources.

EE must play an integral role throughout our educational system- at the national level, and in each and every classroom as well as reach all those members of the society who are not covered by the school system. But this means we must make significant changes in how, what and when we educate. EE is a relatively new field. Few educators know well what it is or how to incorporate it into their class curricula (formal EE) and even less educators know how to approach the society members at large (non-formal and informal EE). (Skanavis, C. 2001)

#### • **Environmental behavior**

The development and promotion of a responsible environmental behavior became one of the goals and aims of EE. Before considering the issue of environmental behavior, the definition of the term should be considered. Van Liere and Dunlap (1981) presented responsible environmental behavior as a dimension of environmental concern, which

consisted of “activities that have been suggested as ways people can help solve environmental problems.” While many environmental educators agree about the importance of environmental behavior, only a few have incorporated behavior-related instruction into the curriculum. (Culen, G. R., 1997) There have been several attempts and models to incorporate behavior variables into understanding of environmental awareness. Despite the wealth of information, which exists concerning environmental behavior, it is not entirely clear to many environmental educators and program developers, which variables appear to be most influential in motivating individuals to take responsible environmental action. (Hines, et al., 1987) Hines, et al. in 1987, published one of the most influential studies on environmental behavior, aiming at identifying those variables, which were the best predictors of environmental behavior. From this analysis the model of factors that influence environmental behavior evolved. Such factors as situations, intentions to act (action skills, knowledge of action strategies, knowledge of issues, personality issues, which would include attitudes, locus of control and personal responsibility) were the determinants of responsible environmental behavior in Hines et al. model. It should be pointed out that while these variables were seen to have the strongest relationship with environmental behavior, a degree of uncertainty still exists in the prediction of environmental behavior due to the complex process, which is based on a multitude of factors. (Hines, et al., 1987)

Serial researchers have attempted to provide an overview of the significant influences and formative life experiences on the development of Greeks’ Environmental knowledge and concern for the environment (Palmer et al, 1998). As most common influences given by Greek participants were the effects of pollution, childhood experiences of nature, their work (most of them were involved in children’s education), environmental courses taken in colleges, the negative effects of living in urban areas, the general world-wide environmental problems and, the tree clearing (including tree cutting and burning) and the books and articles focusing on the environmental concerns of specialists. Greeks being compared with Slovenia and U.K. showed the highest involvement in curriculum development and attendance at public or organization meetings.

In Greece it has been estimated that only 5% of secondary level students have received environmental education (Faraggitakis, 1996).

In the last decades, Greece, witnessed the growth of a community based environmental protest not as developed as the ones in industrialized countries, but with a powerful presence

Combinations of grassroots activists and environmental organization ones have proven to be very powerful in carrying out successful campaigns promoting environmental protection (Kousis, 1999b). NGO’s had to create and maintain mutual ties with many different groups (Valaora 1995) like: their members or supporters; fund providers such as individuals, businesses national or international bodies; state and governmental agencies deciding on development issues and the planning of the physical environment; other non-profit groups, with whom they share available funds, or act in the same social space or share same topics of interest; all forms of media (printed and non printed means of mass communication) who play a significant role in the construction of public opinion; allies promoters of the organization’s cause, such as local government, schools, the church.

private enterprises and other state bodies. Ties must be especially maintained with all types of citizen groups concerned with environmental issues (Gould et al, 1996).

Sterling has shown that whereas in several countries childhood experiences of nature (outdoor activities) were important, in Greece the significance of negative factors such as pollution, tree clearing and soil erosion are of greater significance in influencing people's thinking. His findings include the facts that early childhood is an absolutely crucial time in affecting environmental awareness, personal experiences of the natural world have immediate and long-term impact, and young people have a far more complex thinking about environmental issues than many may suppose. Also, formal EE can do a great deal in presenting accurate knowledge about local and global environments.

### • **European Community Environmental Education**

The European Community has already come up with directions related to environmental awareness. The legislation in force helps in the identification of the European aims and in combination with environmental priorities the desired targets can be decided upon.

### • **Examples of Areas Where Environmental Awareness Should Be Promoted**

As far as priorities are concerned a major one is that of freedom of access to information on the environment. Access to information is an issue on which many conferences have been set up and an issue, which in practice differs a lot from the theoretical criteria that have been decided, in European Directive 90/313/EEC. There have to be in effect specific ways of improving public access to information held by environmental authorities, and this is something the European Union has put a lot of work on. The objective of the Directive is to ensure freedom of access to, and dissemination of, information of the environment held by public authorities and to set out the basic terms and conditions on which such information should be made available.

Information implies "written, visual, oral or data-base form held by public authorities, concerning the state of the environment, activities or measures adversely affecting, or likely to affect the environment and those designed to protect it."

Public authorities are any public administration at national, regional or local level with responsibilities, and possessing information, relating to the environment with the exception of bodies acting in a judicial or legislative capacity.

Refusal of information can be practiced only in cases where issues of national defense and international relations confidentiality are affected, where public security is in danger, or when matters under enquiry are involved. Also, refusal can be practiced when industrial and commercial confidentiality are at stake, where intellectual property is discussed and where material is supplied by a third party, without that party being under legal obligation to do so. Member States may impose a reasonable cost for supplying information, and should submit a report to the Commission on given dates, on the experience gained after the implementation of this Directive.

Relating this issue with Cyprus, it is worth noticing that the most important development in the Country in recent years has been the adoption of an Environmental Review and Action Plan, prepared by the World Bank in 1993. Two years later, a report was prepared highlighting the Cypriot environmental policy and identifying areas of



action. As a result, the 'Action Plan for the Protection of the Environment' has been completed, which is the formal environmental policy document of the Country. This report, referring to 5 priority areas, it deals with horizontal integration areas such as Information, Research and Participation.

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The conservation of natural habitats and of wild fauna and flora (Directive 92/43/EEC) aims to preserve, protect and improve the quality of the environment, including the conservation of natural habitats and of wild fauna and flora and to promote biodiversity taking account of economic, social, cultural and regional requirements and contributing to sustainable development. Whereas a general system of protection is required for certain species, provisions should be made for specific cases, species and management measures depending on the location, climate and habitat. The improvement of scientific knowledge is essential for the implementation of this Directive and naturally, education is essential for ensuring effective implementation. Special care must be given to endangered, vulnerable and rare species. A coherent European ecological network was set up under the title Natura 2000, including special protection areas, priority sites and habitats, and landscapes of major importance. Surveillance of these sites is essential, to avoid any destruction or disturbance to natural environments and a report to the Commission should be sent every two years listing details such as derogations, conditions, authorities involved and monitoring measures used. It is highlighted that research and education on the need to protect species of wild flora and fauna so as to protect and conserve natural habitats, is intensely promoted.

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The protection of waters against pollution caused by nitrates from agricultural sources is addressed in Directive 91/676/EEC. It is a proposal on the control and water pollution resulting from the spreading or discharge of livestock effluents and the excessive use of fertilizers, highlighting that the use of extreme quantities impose high environmental risks. The Directive suggests that measures should be taken concerning the storage and application on land of all nitrogen compounds and certain land managements measures. Specific limits for the application of livestock manure should be set and monitoring of water should take place. Codes of good agricultural practice should be established, and also, training programmes and information for farmers should be provided so as to promote good agricultural practices. After the required reports are sent to the Commission, action programmes should be established, detailing designated vulnerable zones, available scientific data, environmental conditions, monitoring programmes implemented and reviews if such have been realized.

In Cyprus, enforcement of legislation regarding the control of industrial effluent and emissions, under the Water Pollution Control laws, is carried out through a system of inspection of premises and installations. The inspectors are responsible for administrative arrangements such as criminal procedures, penalties etc. As years go by and environmental awareness increases, the penalties become stricter and sometimes involve reversing the environmental damage caused.

As far as the National Action Plan for the Protection of the Environment is concerned, in Agriculture, primary issues relate to the use of fertilizers and pesticides, animal waste, the location of animal husbandry areas and water use and pricing. Other priorities regard

Industry (the small size of the bulk of the polluting units), Transport (impacts of new major road networks) and Tourism (environmental concerns such as thematic parks, marinas etc).

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Directive 96/61/EC on Integrated Pollution Prevention and Control is another issue, which needs specific attention. Because pollution may be shifted from one media to another and may become transboundary, this Directive requires action at Community level. The purpose of the Directive is to achieve integrated prevention and control of pollution arising from certain activities. It lays down measures designed to prevent or reduce emissions in the air, water and land from these activities, including measures concerning waste, in order to achieve a high level of protection of the environment taken as a whole. Reducing pollution and waste, the most efficient use of energy should take place, minimizing accidents, using the best available techniques, i.e. the most effective and advanced, and achieving the highest possible level of environmental protection. The results of monitoring releases must be made available to the public and Member States must exchange information, sending detailed reports to the Commission every three years.

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Another issue that has been increasingly gaining attention is that of the deliberate release into the environment of genetically modified organisms (GMO), discussed in Directive 90/220/EEC. The objective of the Directive is to approximate the laws, regulations and administrative provisions of the Member States and to protect human health and the environment: when carrying out the deliberate release of GMO into the environment, when placing on the market products containing or consisting of GMO intended for subsequent deliberate release into the environment. It does not apply to the carriage of genetically modified organisms by rail, road, inland waterway, sea or air. By GMO it is implied: an organism in which the genetic material has been altered in a way that does not occur naturally by mating and/or natural recombination. Before any release, an environmental risk assessment is required, i.e. the evaluation of the risk to human health and the environment (including plants and animals) connected with the release of GMOs or products containing GMOs. Inspection and control measures are essential to avoid adverse effects. Notification to competent authorities is necessary before any such release/market-placing alongside with an evaluation of the impacts posed and risks taken, with information on similar releases, past experience, interactions and emergency response plans. The notifier, i.e. the person making the presentation containing the required information to the competent authority, may proceed with the release only after receiving written consent of the authority. When such a product is placed in the market it has to have the required labelling and packaging. Labelling has to include -at least in summarized form- the name of the product and GMOs contained, the name and address of manufacturer or distributor, the exact conditions of use of product, the type of the environment of the Community for which the product is suited, the measures to take in cases of unintended release or misuse and specific instructions for storage and handling. Packaging has to be appropriate so as to avoid unintended release of the GMOs during storage or at a later stage. These facts imply good knowledge from both the producers and the consumers, which in turn mean strong education and high environmental awareness. Member States and the Commission will meet regularly and exchange information on experience acquired, reports will be sent to the Commission and summaries will be

published based on these reports every 3 years. Also, the Commission shall publish in the Official Journal of the European Communities, a list of all products receiving consent and for each one, the GMOs contained shall be clearly specified.

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Directive 2000/14/EC attacks the issue of laws relating to the noise emission in the environment by equipment for use outdoors. It aims to harmonize the laws of the Member States relating to noise emission standards, conformity assessment procedures, marking, technical documentation and collection of data concerning the noise emission in the environment of equipment for use outdoors. It aims to contribute to the smooth functioning of the internal market, while protecting human health and well being. "Marking" means the visibly affixing on the equipment of the CE marking defined in Decision 93/465/EEC accompanied by the indication of the guaranteed sound power level. The collection of noise data is considered to be essential as a basis for informed consumer choice and for the Member States' further assessment of new technological development. Noise data can be collected by sending a copy of the EC declaration of conformity to the Member State and the Commission. Member States have to ensure that the manufacturer shall in fact send the copy of the EC declaration. The Manufacturer must ensure and declare that the equipment concerned satisfies all requirements of the Directive, affix the CE marking and draw up a written EC declaration.

In order to protect citizens against unreasonably high noise exposure, Member States should be able to restrict, in accordance with the provisions of the Treaty, the use of equipment in the environment. Placing of equipment in the market has to meet certain requirements, market surveillance is essential and free movement of equipment in trade fairs, demonstrations, exhibitions and similar events is allowed. Member States shall appoint bodies to carry out the supervision of the assessment procedures, notifying the Commission and the other Member States of the bodies appointed and the tasks to be carried out and the Commission shall publish the lists of bodies appointed and tasks specified, making sure that it is kept up. The staff responsible for inspection must have sound technical and professional training, satisfactory knowledge of the requirements for the assessment of technical documentation, adequate practical experience on the test required to carry out and the ability to draw up certificates, records and reports required to authenticate the performance of the tests. The Commission is assisted by a Committee, which has to exchange information and experience concerning the implementation and practical application of the Directive, discussing matters of common interest in this field.

Equipment subject to noise limits is listed in the Directive. No later than 3 January 2005 and every 4 years thereafter, the Commission shall submit to the European Parliament and to the Council, a report concerning the experience in the implementation and administration of this Directive.

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Directive 75/442/EEC, on waste specifies that: waste means any substance/object which the holder disposes of or is required to dispose of pursuant to the provision of certain national laws in force. Disposal means a) the collection, sorting, transport and treatment of waste as well as its storage and tipping above or under ground and b) the transformation operations necessary for its re-use, recovery or recycling. Radioactive waste, mineral resource waste, substances used in farming, and gaseous effluents are excluded from the

Directive. Reduction of waste volumes, recovery and reuse and treatment are desired. For this, Member States must ensure that waste is disposed of without endangering human health and without harming the environment, and must designate authorities to plan, organize and supervise waste disposal operations. In this view, Member States have to ensure that any holder of waste has it handled by a private or public waste collector or by a disposal undertaking, or disposes of it himself without posing risks to the environment. This in turn means that the waste holder must be aware of methods to dispose waste and must also be aware of what it is meant by 'posing risks to the environment'. Therefore, the need for environmental education is highlighted, in indicating waste disposal meanings and methods, precautions, access to information on environmental risks due to wastes etc.

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Council Directive 86/278/EEC on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture, is another significant priority issue. The aim is to regulate the use of sewage sludge in agriculture in such a way as to prevent harmful effects in soil, vegetation, animals and man, while encouraging its correct use. Sludge must be treated before used in agriculture, but Member States may nevertheless authorize, on certain conditions, the use of untreated sludge, without risk to human or animal health, if it is injected or worked into the soil. Treated is the sludge that has undergone biological, chemical or heat treatment, long-term storage or any other appropriate process so as to significantly reduce the health hazards resulting from its use. Member States shall prohibit the use of sludge where the concentration of one or more heavy metals in the soil exceeds the limit values set, and shall take the necessary steps to ensure that these limit values are not exceeded. It is essential to educate and inform sewage-sludge producers so as to regularly provide users with all the information required. Member States must ensure that updated records are kept, listing quantities of sludge, properties, composition and treatment type, so as to have the basis for a consolidated report on the use of sludge, required to be submitted to the Commission every 4 years.

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Directive 94/62/EC has to do with packaging and aims to harmonize national measures concerning the management of packaging and packaging waste in order, on the one hand, to prevent any impact on the environment of all Member States, as well as of third countries or to reduce such impact, thus providing a high level of environmental protection, and on the other hand, to ensure the functioning of the internal market and to avoid obstacles to trade and distortion and restriction of competition within the Community. It lays down measures to prevent the production of packaging waste, to reuse packaging, to recycle and recover packaging waste and hence reduce the final disposal of such waste. The Directive covers all materials used. Consumers play a key role in the management of packaging and packaging waste and thus have to be adequately informed in order to adapt their behavior and attitudes. Packaging implies all products used for the containment, protection, handling, presentation and delivery of goods, from raw materials to processed goods, from the producer to the user/consumer. Policies have to be formed to allow for return, collection and recovery systems, taking into account environmental protection, consumer health, safety and hygiene. Monitoring of these objectives is essential and provision of information is vital.



Consumers should know about recovery systems available, their role in contributing to reuse and recycling as well as the meaning of markings on packaging in the market.

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Other directives of interest are:

Directive 1999/94/EC relating to the availability of consumer information on fuel economy and CO<sub>2</sub> emissions in respect of the marketing of new passenger cars. This aims to ensure that such information is made available to consumers, so as to make an informed choice. A label on fuel economy and carbon dioxide emissions has to be attached or displayed in a visible manner, at the point of sale of each new passenger car. The Commission has to construct an Internet guide, which should also be available to consumers, free of charge upon request both at the point of sale and also from a designated body within each Member State.

The National Action Plan for the Protection of the Environment, underlines the increasing energy needs of the Country, which are satisfied by the use of conventional fossil fuel and of renewable energy sources. Measures for reducing CO<sub>2</sub> emissions are examined and energy efficiency is a main concern.

Council Regulation 388/97 on the protection of species of wild fauna and flora by regulating trade is another issue of importance. The objective is to protect species of wild flora and fauna and to guarantee their conservation by regulating trade therein in accordance with specific Articles. There are certain criteria for issues like the export of species, their re-introduction in their original community, provisions relating to the control of commercial activities, movement of live specimens and responsibilities of the scientific authorities involved. Communication of information is vital, among the Commission, Member States, competent authorities and Scientific Review Groups.

Council Regulation 1836/93 allows voluntary participation by companies in the industrial sector in a Community eco-management and audit scheme. Its objectives are: to evaluate and improve the environmental performance of industrial activities and to provide relevant information to the public and to promote continuous improvements in the environmental performance of industrial activities by implementing environmental policies and management systems, by systematically evaluating their performance and by providing information of environmental performance to the public. The scheme is open to companies operating sites where industrial activities are performed.

Regulation 2037/2000 concerns substances that deplete the ozone layer. The regulation applies to production, import, export, placing on the market, use, recovery, recycling and destruction of chlorofluorocarbons, and other substances or products that contain such substances. There are certain specification to be met and limits not to be exceeded. There are also, criteria for licenses to import from third countries, export authorization, and trade with a territory not covered by the Protocol, emission controls, inspection and penalties. Substances depleting the ozone layer, emission limits, trading and commercial rules, authorizations, import/export rules, and marketing norms have to be made known to any producer (i.e. any natural or legal person producing substances within the Community) so as to meet the requirements of this Directive. Also, inspection from certain appointed bodies can be successful only when inspectors have adequate experience and expert knowledge. Hence, we again refer to strong educational needs.



### • Suggestions

As it can be seen, the priorities are many and come from various directions. In all Directives and Regulations, it is worth noticing that there are always Articles specifically addressing the *information* that should be provided. Environmental communication is therefore, vital for all legislation to be practiced rightly.

Cyprus is pursuing membership to the European Union and hence has accepted the responsibility to foster development that makes sustainable use of resources, reconciling development and environmental protection. The condition of the environment in Cyprus remains good, despite the Turkish invasion, the rapid economic development and the considerable changes in lifestyles. The pressures however, are intense and have led to a high urbanization rate, degradation of the coastal areas and rising land values.

There is a high demand for water, while the existence of effluents and agrochemical are issues to be addressed. Nitrate concentrations are high due to agricultural and urban development. Also, the annual per capita production of solid waste is rather high and hence problematic. The marine environment is good but is vulnerable to pollution accidents caused from oil transportation. Noise from intensive development poses relevant problems in built-up areas and the quality of air has to be monitored, in order for increasing industrial pollution not to exceed allowed limits. The energy needs are increasing, as the country relies on outside sources of primary fuel. Energy saving schemes could be considered and renewable sources should be examined. Wildlife habitats are subject to continuous pressures by urban and tourist development. In the agricultural sector, soil erosion and agrochemicals are main concerns.

The institutional framework of environmental policy formulation and management is rather complicated. In the apex of the pyramid, there is the Council of Ministers, which has the overall responsibility for the environmental policy formulation. The Ministry of Agriculture, Natural Resources and Environment is mainly responsible for applying environmental programmes and plans, for advising on environmental policy, ensuring implementation, coordination the adoption of the EU Directives, promoting environmental training and awareness and disseminating information on the environment.

The Council for the Environment advises the Minister on environmental problems, related legislation, policy and sustainable development. The Council consists of representatives of all government organizations, business groups, technical professions' organizations and NGOs. The Environment Committee is made up of representatives of the Ministries involved in environmental issues, and there are also other agencies involved in the environment sector such as the Planning Bureau, the Ministry of Labor and Social Insurance, the Ministry of Commerce, Industry and Tourism, the Ministry of Communications and Works, the Ministry of Health, the Ministry of the Interior.

In general, no problems are expected as far as the transposition of EU legislation into national legislation is concerned. There are however weak institutional mechanisms and lack of resources including limited personnel and insufficient managerial power, so that organizational arrangements need to be substantially enhanced. All these agencies need to strengthen monitoring and enforcement of environmental policy.

The major issues include CO<sub>2</sub> emissions and energy efficiency, the landfill of waste, packaging, transboundary air pollution, the sulphur and lead content of fuel, nitrate pollution from agriculture, the protection of wild birds, hazardous waste management and emissions from motor vehicles.

The Country of Cyprus would need the support of the European Union as far as technical assistance is concerned, for instance in setting up the infrastructures for environmental management, research and monitoring and in addressing organizational, institutional and technology know-how weaknesses. Also, assistance is needed in better understanding the implications from EU texts, through the presentation of practical implementation and enforcement issues associated with specific Directives. Participation of Cyprus at various Commission Fora and legal assistance cover the drafting of the numerous regulations, decrees, notifications and codes of practice required to achieve full transposition, would also be of vital importance.

We need to remember that Cyprus is the third largest island in the Mediterranean, a fact that implies a respectable amount of population, producers, consumers and decision makers. The natural contrasts of tranquil villages and cosmopolitans towns, countryside and hotels, modernity and tradition, indicate –among others- that people are of various natures, may have ranges of different habits and are used to a variability of scenes and perhaps even of social circumstances. This, in turn, implies that any programme aimed at building environmental awareness of people should take into account these facts, and make allowances for a varied audience, with several forms of behaviors. Consumers, producers, local authorities and decision makers, the public, “experts” in localities or in scientific issues, constitute the community of Cyprus. Thus, environmental communication programmes should be designed in a mode that all parties can comprehend. All ‘groups’ should know what their environmental rights are, where they have access on, what environmental issues affect them directly or indirectly and how to contribute to the restoration process, and when to participate.

It is of vital importance to assess the present sensitivity of citizens of Cyprus on environmental issues, their knowledge, awareness and ability to participate in solutions that concern environmental problems. This can be done via the use of qualitative and quantitative tools, which will be applied to a certain number of people of various backgrounds and sectors. The results of the initial testing should then be treated by a behavioral model, which will present an evaluation of the present environmental attitudes of Cypriot citizens. The model should take into account the attitude of citizens, their personal subjective norms, certain perceptions, and intentions to act environmentally and will, in result, reveal the behavior of the individuals surveyed.

According to these results, the required environmental education programme for ensuring a successful environmental awareness and communication of citizens (community members, governmental officials, producers, decision makers...) of Cyprus could be constructed. This implies that material specific for their needs will then be prepared, which may include lectures, pamphlets, booklets, CD ROMS, etc.

It is very important to tackle issues dealing with the ability of people to access environmental information, with producers' responsibilities and consumers' rights, with decision makers' choices and public pressure on the political decisions. The Community of Cyprus and its market are significant and the awareness of the citizens is of vital significance in securing sustainable development. Our goal should be to set the appropriate foundations and processes of environmental communication in order the island Aphrodite chose as her playground and in which Shakespeare set Othello

to become a model in the movement of environmental awareness and to re-enforce the concept that when citizens are environmentally aware then they can act effectively on the various sustainable development issues.

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# ΟΙΚΟΝΟΜΙΚΗ ΕΠΙΘΕΩΡΗΣΗ

τ. 25/2001

Έκδοση της  
Διεύθυνσης Σχεδιασμού  
και Οικονομικής Ανάλυσης  
της  
ΕΜΠΟΡΙΚΗΣ  
ΤΡΑΠΕΖΑΣ

## Περιεχόμενα

Είναι συμμετρικές  
οι αποδόσεις  
των μετοχών στο ΧΑΑ;

\* \* \*

Η επίπτωση των δημοσίων  
υποδομών στην ελληνική  
οικονομία

\* \* \*

Λογιστικά πρότυπα,  
γνωστοποίηση πληροφο-  
ριών και επενδυτικές πολιτι-  
κές στην κεφαλαιαγορά  
κ.ά.

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