

NATIONAL REVIEW ON BIODIVERSITY AND COMPANIES: CYPRUS

Unit of Environmental Studies

Research Center – Intercollege

46 Makedonitissas Avenue

P. O. Box 24005

1700 Lefkosia, Cyprus **CONTENTS**

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NATIONAL REVIEW ON BIODIVERSITY AND COMPANIES: CYPRUS¹

¹ This report was prepared by Cecelia C. S. Hannides, Ph.D.
Contact details: Department of Oceanography, University of Hawaii, Honolulu, Hawaii, 96822, USA,

1 OVERVIEW: BIODIVERSITY AND INDUSTRY IN CYPRUS

Cyprus, the third largest island in the Mediterranean, is home to a unique suite of flora and fauna and is located in one of the world's "biodiversity hotspots" (Myers et al., 2000). The great diversity of plant and animal species on Cyprus in part derives from a sharp altitudinal gradient of climatic conditions, extending from the warm and semi-arid environment of the central Mesaoria plain (average temperature 17-19°C, annual rainfall < 300 mm) to wet and cool conditions in the mountains of the Troodos massif (average temperature 9-13°C, annual rainfall to 1100 mm). High species diversity has also developed due to the island's constant isolation from the mainland, as it was formed through compression and uplift of oceanic crust within the Mediterranean Sea and was never directly connected to the surrounding European continent (McCallum and Robertson, 1990). Thus, although the island has only an area of 9250 km², it has evolved at least 170 endemic species and sub-species out of 1620 plant taxa (Medail and Quezel, 1997). The percentage of endemics can reach over 20% within the Troodos massif, where large numbers of endemic plants such as the cedar *Cedrus brevifolia* Dode and the golden oak *Quercus alnifolia* Poeh are found (Medail and Quezel, 1997). Important endemic fauna include the Cypriot moufflon, *Ovis orientalis ophion*, and several species of mammals, snakes, birds and insects (Kourtellarides, 1998; Makris, 2003; Cucchi et al., 2006). The total percentage of endemism on Cyprus, considering all taxonomic levels, is 7.4% and is considered one of the highest in Europe (Hadjisterkotis, 2007).

Biodiversity is vulnerable to the exponential increase in human populations and intense land overexploitation that is taking place on the island and in many southern Mediterranean countries, and may be particularly affected by high erosion levels and mass tourism in Cyprus (Medail and Quezel, 1997). In total, 30 mammal, bird, reptile, fish and plant species are listed on the 2007 IUCN Red List for Cyprus and thus are already considered critically endangered, threatened or vulnerable to extinction. Several of these plant species are endemics and have been listed in the Red Data Book of the Flora of Cyprus (Tsindes et al., 2007). The decline in many species has been linked to land development and deforestation, e.g., the Cyprus moufflon range is now restricted primarily to the Troodos forest, an area only 18% of its original habitat (Regato, 2008). In contrast, re-establishment of populations of Cyprus moufflon and the endemic Cyprus tulip (*Tulipa cypria*) and Kotschy's orchid (*Ophrys kotschyi*) has been observed in an unpopulated region of the island, the 180-km long UN-controlled buffer zone (Jarraud, 2008). The comeback of these rare species in the *de facto* wildlife sanctuary demonstrates the importance of regulating development and industry, and the impact these human activities can have on Cypriot biodiversity.

Because Cypriot flora and fauna include a large number of endemic species which may be threatened by development on the island, regulating industry impacts is an important objective of the Cyprus government. Four industry sectors dominate land use and economic activity on Cyprus, and are of the highest importance in terms of biodiversity conservation and environmental regulation. For the entire island these are: agriculture and food (6.4% of GDP, 8.9% of persons employed, 29.8% total land area), tourism (18.2% of GDP, 11.4% of persons employed), building and construction (16.2% of GDP, 12.0% of persons employed) and transportation and distribution (11.1% of GDP, 7.4% of persons employed; Fessas and Alkan, 2008). From the above breakdown, it is clear that heavy industry is not a major concern for biodiversity issues in Cyprus.

Although 94% of Cypriots consider protecting the environment very important (European Commission, 2007), a recent survey by RAI Consultants, Inc. has shown that Cypriot businesses do not take action concerning corporate environmental responsibility unless it is required by law (there is regulatory pressure) or “if everybody else does it” (there is peer pressure; Fessas and Alkan, 2008). Moreover most Cypriots are not familiar with the term “biodiversity”, with 84% of respondents in a recent poll saying that they had never come across the concept (Christou, 2008). Thus, industry impacts on biodiversity are regulated almost exclusively by the Cyprus government, and very few efforts are made towards biodiversity protection or research by the companies themselves. However, given the importance that Cypriots place on environmental priorities (European Commission, 2007), and the fact that business leaders cannot remain isolated from the environmental consequences of their activities due to the island’s small size, there is significant potential for the future development of corporate environmental responsibility practices in Cyprus.

2 NATIONAL REGULATIONS CONCERNING IMPACT ON BIODIVERSITY

Environmental policy and industry impacts on biodiversity are primarily regulated by the Cyprus government’s Ministry of Agriculture, Natural Resources and Environment (MANRE). MANRE is specifically responsible for: (1) carrying out environmental impact assessments, (2) drafting laws on pollution and waste management, (3) creating environmental awareness and training and (4) implementing international conventions and European Union (EU) legislation on the environment. These responsibilities are carried out primarily by the Environment Service of MANRE. Other departments within MANRE that contribute to environmental regulation include the Water Development Department, the Department of Agriculture, the Department of Fisheries and Marine Resources, the Department of Forests, and the Department of Veterinary Service. Many other government departments in Cyprus contribute directly or indirectly to environmental management, including the Ministry of the Interior’s Department of Town Planning and Housing (the planning authority of the government and in charge of imposing environmental conditions during the permit process) and the Ministry of Finance’s Planning Bureau (in charge of allocating resources for infrastructure needed to comply with environmental protection).

In 2004 Cyprus joined the EU, and in the drive leading up to accession EU environmental acquis was transposed into Cypriot law. MANRE, primarily through the

Environment Service, is responsible for ensuring the key environmental Directives of the EU are implemented in Cyprus. In terms of biodiversity conservation, the most important directives are those establishing the Natura 2000 network, that is the EU Council “Birds” Directive No. 79/409/EEC (Cyprus Law No. 152(I)/2003) and the EU Council “Habitats” Directive No. 92/43/EEC (Cyprus Law No. 153(I)/2003). In concert with the requirements of these Directives, a government committee designated seven sites in Cyprus totaling 788 km² as Special Protection Areas (SPA) and 36 sites totaling 711 km² as Sites of Community Importance (SCI). Moreover the committee recommended several Cypriot species be included in the annexes of the EU Habitat and Birds Directives. The Cypriot fauna that were included were the Egyptian Fruit bat (*Rousettus aegyptiacus*), the Cyprus moufflon, the Cypriot whip snake (*Coluber cypriensis*), the Cypriot grass snake (*Natrix natrix cypriaca*), the marine turtle (*Chelonia mydas*), the Cyprus tree creeper (*Certhia brachydactyla dorotheae*), the Kentish plover (*Charadrius alexandrinus*), the Masked shrike (*Lanius nubicus*), the Cyprus wheatear (*Oenanthe cypriaca*), the Cypriot coal tit (*Parus ater cypriotes*), the Cyprus warbler (*Sylvia melanothorax*) and the beetle *Propomacrus cypriacus*. The Cypriot flora that were included were *Arabis kennedyae*, *Astragalus macrocarpus* subsp. *Lefkarensis*, *Brassica hilarionis*, *Centaurea akamantis*, *Chionodoxa lochiaie*, *Crocus cyprius*, *Crocus hartmannianus*, *Delphinium caseyi*, Kotschy’s orchid (*Ophrys kotschyi*), *Phlomis brevibractea*, *Phlomis cypria* Post, *Pinguicula crystallina*, *Ranunculus kykkoensis*, *Salvia veneris*, *Scilla morrisii*, *Sideritis cypria* and the Cyprus tulip (*Tulipa cypria*).

Despite the importance of the Habitats and Birds Directives for the protection of biodiversity in Cyprus, the extent to which they will regulate the environmental impact of industry on the island is not clear. Firstly, human activity is not excluded from the Natura 2000 SPA and SCI sites, but development within this network will be limited and strictly regulated by management plans to ensure that it is sustainable. Management plans are not available at this time for most of the Natura 2000 network in Cyprus, as progress has been made for only 20-30% of the sites. However under Cyprus Law No. 153(I)/2003 (Habitats Directive) it notes that any development or industrial activity within Natura 2000 sites will be subject to impact assessment and, if an effect on the environment found, rejected. If the project must continue (if there is no other option), then another suitable Natura 2000 site must be established to replace the one that will be “lost” by the proposed project.

Outside of the Natura 2000 sites, the impact of development and industry on biodiversity on Cyprus is largely regulated through Environmental Impact Assessment (EIA) of industrial activities. This primarily occurs while obtaining permits for particularly polluting industries, for new installations or projects, or for additional site construction on existing large-scale projects. Industries involved in large-scale plans or programs may additionally be subject to Strategic Environmental Assessment (SEA) regulation, which involves pre-program assessment of potential environmental impacts and public consultation before final decisions are made. Because SEA are undertaken earlier in the decision-making process than EIA, they can be seen as a tool for sustainable development and may be used to minimize the impact of large-scale industrial activities on biodiversity.

2.1 BIODIVERSITY IMPACT ASSESSMENTS

2.1.1 NATIONAL REGULATIONS: CYPRUS

The impact of industry on biodiversity in Cyprus is largely regulated by EIA and SEA laws. These laws do not regulate impacts on biodiversity *per se*, but rather regulate the effect of industry or development on the environment, of which biodiversity is one important facet. For EIA of large-scale projects and particularly polluting industries, Cyprus has transposed the EU Council Directive 85/337/EEC (On the assessment of the effects of certain public and private projects on the environment) into law (Law on assessment of impact on the environment by certain projects, No. 140(I)/2005). This law has replaced and repealed an older Cyprus EIA Law No. 57(I)/2001 that existed since 2001. The new (2005) law was put in place to comply with new EU requirements on public participation and access to justice, and also to incorporate some changes for the better implementation of EIA in Cyprus. Since 2001, more than 300 projects were examined by the Environment Service (MANRE) in Cyprus.

Cyprus EIA law details the steps that must be carried out before a large-scale project or a particularly polluting industry is established in Cyprus. The EIA procedure involves a Competent Authority (CA, e.g., the Department of Town Planning), an Environmental Authority (EA), and an EIA Committee, which in Cyprus is chaired by the Environment Service (MANRE) and includes members from the Town Planning and Housing Department, Department of Labour Inspection, Ministry of Commerce, Industry and Tourism, Ministry of Communication and Works, Federation of Environmental and Ecological Organizations, Scientific and Technical Chamber of Cyprus, and two members appointed by the MANRE (Pantazi, 2006a). The EA in Cyprus is the Environment Service (MANRE). If an EIA is required for a certain project, that is, if the industry is listed in Annex I of Law No. 140(I)/2005 (see Section 2.1.2), an EIA must be conducted. If the industry is listed under Annex II, a decision on whether an EIA is required will be made after the Committee has reviewed a preliminary EIA study (PEIA) and has informed the EA that the project may have a significant environmental impact.

In Cyprus an EIA study is prepared by an independent consultant whose terms of reference are designated by the EA, or Environment Service (MANRE). The study should include a description of the existing environment, a description of the planned project, and an assessment of the potential environmental impacts. The final EIA is then reviewed by the EIA Committee, who advises the EA on the terms that should be included in the EA's Environmental Opinion of the project. The Environmental Opinion may specify terms or conditions to be included in the Planning Permit or the Approval granted by the CA (e.g., the Department of Town Planning). The EA may also decide that a project should not proceed due to the serious environmental problems that it will cause. In case of a disagreement between the EA and the CA (Department of Town Planning, or other), the issue is discussed at a Ministerial level and if an agreement cannot be reached, in the Council of Ministers. The end result of the EIA process is the approval or rejection of the proposed large-scale project or industry in Cyprus.

The EIA Law in Cyprus provides for the public to be informed in all the stages of the procedure as well as of the decision taken. The public is informed as soon as an EIA report is submitted to the Environment Service in at least two local newspapers. A period of 30 days

is allowed for every person to raise comments on the specific project. All the opinions or objection raised by the public are taken into consideration during decision making. The public is also informed about the decision taken. An important issue concerning the role of the public in the EIA process is the new provision concerning the right of access to justice. This provision gives the right to any interested person or organization that is not satisfied with the whole procedure undertaken to take the issue to court.

A case study for the implementation of the EIA law comes from the establishment of a desalination plants in Cyprus (Tsiourtis, 2004). Before constructing a seawater desalination plant, an EIA is required. The EIA studies completed for the Dhekelia and Larnaca desalination plants considered all environmental parameters, including marine environment, land, air, sound, taking into account the process, the chemicals, their byproducts and their effect. The environmental permit contained a series of conditions and restrictions on the plant in terms of its location, the chemicals to be used, the location of the seawater intake and brine discharge points, the laying and route of the seawater intake and brine disposal pipelines, the allowable noise levels, the architecture of the plant building, and the monitoring and checks on the marine, land and air environments.

Large-scale plans or programs that will affect the environment on Cyprus are subject to SEA regulation. For this purpose the EU Council Directive No. 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment has been transposed into the Cyprus Law on the Assessment of the Effects of Certain Plans and Programmes on the Environment (No. 102(I)/2005). The SEA Law generally provides for an environmental report on a “draft plan or program” during preparation and before adoption, the assessment of environmental impacts, a public consultation to give the public early and effective opportunity to comment, and states that the environment must be taken into account in decision making, i.e., the industry must consider reasonable alternatives (Pantazi, 2006b).

The steps involved with SEA legislation start with decision on whether or not a SEA is needed by the CA (e.g., Planning Bureau) involved in the plan or program adoption, potentially after consulting with EA, in this case the Environment Service (MANRE). If a SEA is required, an environmental report is prepared and is submitted to the EA, which includes the current state of the environment and the likely significant effects of the plan or program on biodiversity, human health, fauna and flora, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors and the environment (Pantazi, 2006b). The report also includes measures that may be taken to reduce or prevent environmental impacts, alternatives that the industry may consider, and monitoring strategies that should be implemented. Following the publication of the report by the EA in at least two public newspapers, the public is allowed to comment for a period of 35 days. At the same time assessment of the SEA is made by a governmental Committee chaired by MANRE and including representatives from the Ministry of Commerce, Industry and Tourism, Ministry of Transport and Works, Ministry of the Interior, Planning Bureau, Scientific and Technical Chamber of Cyprus, Federation of Environmental and Ecological Organizations, University of Cyprus and Technical University of Cyprus. Following the public hearing and formal assessment of the report by the Committee, an Opinion is formed by the EA (i.e., Environment Service, MANRE) and is delivered to the

CA, who makes the final decision on the plan or program. This final decision could involve modification of the plan or program as need to protect the environment. In the case of disagreement between the EA and CA on the plan or program, the Council of Ministers is consulted. Finally, the program is further monitored by the CA after its adoption.

For EU-wide purposes, SEA legislation has been noted as a good vehicle for ensuring biodiversity protection (European Environmental Bureau, 2005). This is because the EU SEA Directive (2001/42/EC) explicitly states that biodiversity must be taken into consideration in Annex I(f). For Cyprus, the EIA Law can also be seen as a mechanism for promoting biodiversity protection as biodiversity is included in the definition of “environment” in Law No. 140(I)/2005. Thus both the EIA and SEA Laws may be used to promote biodiversity protection and conservation on Cyprus.

2.1.2 ACTIVITIES AND INDUSTRIES AFFECTED: CYPRUS

Activities and industries that are affected by environmental regulation on Cyprus include are listed in the annexes of Cyprus Law No. 140(I)/2005. Annex I of Law No. 140(I)/2005 includes industries that most certainly will have a negative impact on the environment and for which an EIA study must be conducted. Annex II of Law No. 140(I)/2005 includes projects that might cause an impact on the environment and for which a preliminary EIA study must be prepared. This decision on whether the activity falls in Annex I or II, and whether an EIA must be prepared, is based on criteria such as project size, proximity to other installations, the use of natural resources or energy, the creation of waste, pollution and nuisances, or the risk of accidents during the use of substances or technologies (Pyrgou and Petrides, 2006). The EIA Law refers to projects from both the private and the public sector.

The specific activities and industries that are listed in Annex I of Cyprus Law No. 140(I)/2005, and for which EIA must be conducted, are largely similar to those listed in Annex I of the EU Council Directive 85/337/EEC. To strengthen protection of the environment on Cyprus, Law No. 140(I)/2005 has listed several additional industries or activities in its Annex I. Additionally the threshold level for several activities has been lowered in Annex I of the Cyprus Law. For example, in the EU Directive Annex I No. 2 is “thermal power stations [...] with a heat output of 300 MW or more”, whereas in the Cyprus Law Annex I No. 2 is “thermal power stations [...] with a heat output of 50 MW or more”.

The specific Annex I industries in Cyprus Law No. 140(I)/2005 are the following (activities cross-listed in the EU Directive are noted by their EU Annex I number):

- Crude-oil refineries and installations for the gasification and liquefaction of coal or shale (EU AI No. 1).
- Thermal power stations and nuclear power stations (EU AI No. 2).
- Installations for the reprocessing of irradiated nuclear fuel (EU AI No. 3).
- Integrated works for the initial smelting of cast-iron and steel and installations for the

- production of non-ferrous crude metals (EU AI No. 4).
- The dissolution of factories or warehouses that contain dangerous substances and dangerous chemical waste.
- Drilling wells for the storage of nuclear waste (EU AI No. 3b_v).
- Installations for the extraction of asbestos (EU AI No. 5).
- Integrated chemical installations for chemical production (EU AI No.6).
- Construction of lines for long-distance railway traffic and of airports, construction of motorways and express roads, construction of a new road of four or more lanes (EU AI No. 7).
- Inland waterways, ports, piers for loading and unloading (EU AI No.8).
- Waste disposal installations for the incineration, chemical treatment or landfill of hazardous and non-hazardous waste (EU AI Nos. 9 and 10).
- Groundwater abstraction or artificial groundwater recharge schemes (EU AI No.11).
- Works for the transfer of water resources between river basins (EU AI No.12).
- Dams (EU AI No.15).
- & 16. Waste water treatment plants (EU AI No.13).

- Extraction of petroleum and natural gas for commercial purposes (EU AI No.14).
- Pipelines for the transport of water (Not in EU AI).
- Pipelines for the transport of gas, oil, or chemicals (EU AI No16).
- Installations for the intensive rearing of poultry or pigs (EU AI No.17).
- Slaughterhouses with production greater than 50 tonnes per day.
- Fish farms with production greater than 50 tonnes per year.
- Industrial plants for the production of pulp from timber or similar fibrous materials, paper and board (EU AI No. 18).
- Construction and assembly of cars and motorcycles and production of car generators.
- Ship building and ship fixing yards.
- Factories for production and repair of aircraft.
- Quarries and open-cast mining (EU AI No.19).
- Peat extraction (EU AI No.19).
- Construction of overhead electrical power lines (EU AI No.20).
- Installations for storage of petroleum, petrochemical, or chemical products (EU AI No.21).
- Wind generators greater than 1 MW and photovoltaics greater than 100 kW.
- Hydroelectrical energy production units.
- Desalination units.
- Breakwaters and port jetties.
- Ski slopes and all relevant works.
- Marinas, fishing shelters and fishing harbors.
- Golf grounds (except minigolf).
- Genetically modified organism installations (where they would be produced or used).
- Building installations of land satellite stations.
- Building installations of radio or TV stations.
- Oil mills (presses).
- Shooting ranges.
- Installations for the processing and final disposal of animal waste.

Installations for the co-production of energy.

Any change to or extension of projects listed in this Annex where such a change or extension in itself meets the thresholds, if any, set out in this Annex (EU AI No.22).

The specific activities and industries that are listed in Annex II of Cyprus Law No. 140(I)/2005, and for which a PEIA and possibly an EIA would be conducted, are listed in Annex II. To strengthen protection of the environment on Cyprus, Annex II of the Cyprus Law has listed several industries in addition to those in the Directive. The industries are:

Agriculture, silviculture and aquaculture.

Extractive industry.

Energy industry.

Production and processing of metals.

Mineral industry.

Chemical industry (Projects not included in Annex I).

Food industry.

Textile, leather, wood and paper industries.

Rubber industry.

Infrastructure projects.

Tourism and leisure (EU AII No.12).

Other projects, including permanent racing tracks, installations for the disposal of waste (not listed in Annex I), waste-water treatment plants (not listed in Annex I), sludge-deposition sites, storage of scrap iron, test benches for engines, manufacturing of artificial mineral fibers, installations for the destruction of explosive substances, knackers yards, dismemberment of ships, mobile telephone antennas in protected or forested areas, water bottling units, game rearing units and the separation of more than 50 donums of land (EU AII No.11).

Any change or extension of projects listed in Annex I or Annex II, already authorized, executed or in the process of being executed, which may have significant adverse effects on the environment (change or extension not included in Annex I; EU AII No.13a)

Projects in Annex I, undertaken exclusively or mainly for the development and testing of new methods or products and not used for more than two years (EU AII No. 13b).

The scope of the SEA Law in Cyprus (Law No. 102(I)/2005) includes industry impacts on biodiversity and the environment for any plans or programs affecting agriculture, husbandry, forestry, fisheries, mining, energy, transport, waste management, water management, telecommunications, tourism, town and country planning and land use (Pantazi, 2006b).

2.2 MITIGATION AND COMPENSATION FOR BIODIVERSITY IMPACTS

Regulation of industry impacts on biodiversity in Cyprus takes place primarily within the constraints of the EIA and SEA Laws (No. 140(I)/2005 and No. 102(I)/2005,

respectively). The impact of new projects on biodiversity is evaluated by EIA and the impact of new plans or programs on biodiversity evaluated by SEA. When permission of the project or plan is granted, the permit usually stipulates a regular monitoring scheme that must be followed by the industry, and the results of this monitoring must be submitted regularly to the CA. Thus Cyprus Law dictates that biodiversity impacts (or at least environmental impacts) should be evaluated from the outset of a project, and the impact on biodiversity (or at least on the environment) should be monitored closely. Mitigation measures for effects on biodiversity can be included in the environmental permit upon completion of the EIA process (C. Pantazi, Environment Service, personal communication). The regulators of the permit (the CA) can also vary the terms and conditions of the permit or authorization granted, and can even cancel permits (Pyrgou and Petrides, 2006).

It is more difficult to regulate the impact of pre-existing industries on biodiversity and the environment in Cyprus. These industries include those which were established before the EIA process was regularized on Cyprus, i.e., before an integrated EIA system was approved by the Council of Ministers in 1991 and before Cyprus passed Law Nos. 140(I)/2005 and 102(I)/2005 to harmonize its' previous EIA system with EU Council Directives. It is very likely that there is no mandate for these industries to regularly monitor their impact on biodiversity. Biodiversity impacts from these activities may be monitored by MANRE, if possible, through the application of environmental permit laws, e.g., the granting of a waste management license (Law No. 90/72), a hazardous waste management license (Law No. 215(I)/2002, Article 19), a tipping permit or jettison permit (Law No. 56(I)/2003), a gas emissions waste permit (Law No. 187(I)/2002 and No. 56(I)/2003), or a disposal permit (water and land; Law No. 06(I)/2002). The above licenses are granted subject to conditions that the CA deems fit for the protection of public health and the environment (Pyrgou and Petrides, 2006). Cyprus is also subject to the Integrated Pollution Prevention and Control (IPPC) EU Council Directive 96/61/EEC, which may indirectly affect industry impacts on biodiversity. However, if the impacts of pre-existing industries on biodiversity cannot be monitored via the environmental permitting laws (listed above), then the EA in Cyprus (the Environment Service, MANRE) has no mechanism in place to change or monitor those impacts. This is a serious limitation of Cyprus Law in terms of environmental regulation (Christina Pantazi, Environment Service, personal communication).

2.3 ENFORCEMENT OF BIODIVERSITY REGULATIONS

Industries subject to environmental regulation must obtain the appropriate permit for its activities and waste discharges. That is, if an industry is categorized in Annex I or II of Cyprus Law No. 140(I)/2005, or if it must obtain a waste management or emissions permit, the appropriate procedures must be followed and a permit obtained. A person carrying on these activities without a permit is criminally liable. If a permit is obtained but the conditions of that permit are violated, that person is also criminally liable. Persons who are criminally liable for disobedience to environmental law are subject to imprisonment (less than three years), a fine (less than CYP 20,000), or both imprisonment and a fine (Law No. 215(I)/2002; Pyrgou and Petrides, 2006). Because there is no biodiversity-specific Cyprus Law, a company may not be imprisoned or fined specifically for "biodiversity damage". However if the environmental permit specifies certain actions to be taken to mitigate biodiversity

impacts, and those actions are not taken by the company, both the company and the CEO can be held criminally liable.

Civil liabilities may also arise in cases provided by the Law of Torts, i.e., as the result of tort of nuisance, negligence, trespass and/or breach of duty. In these cases the perpetrator or polluter may be called upon to repair the damage he/she or his/her company has caused, or, if the authorities have already repaired the damage, to pay for the amount spent to repair it (Pyrgou and Petrides, 2006). It is not clear how the Law of Torts would apply specifically to enforcement of biodiversity regulations.

The Authorities in charge of managing environmental impacts on Cyprus, that is the CA (e.g., the Town Planning Department), have wide powers under the environmental laws in terms of inspection and monitoring. The regulators have the ability to enter premises freely and without prior notice, to carry out tests, to take samples, to inspect and check equipment, to take photographs, and to request documentation. The police force is the body that assists regulators and inspectors in enforcing environmental laws on Cyprus. Specific provisions are laid out within the relevant laws as to when the inspector or regulator may be accompanied by a police officer. Even when a police officer is not present, criminal liability may arise if a person prevents an environmental inspector from carrying out his or her work (Pyrgou and Petrides, 2006).

If industry impacts fall outside of current environmental law on Cyprus, that is, if they are not subject to EIA or SEA procedures, are not required to have waste or emission permits, or do not occur within a Natura 2000 site, there is no mechanism in place to regulate or mitigate the effect of those activities on biodiversity. Thus enforcement of “corporate environmental responsibility” in Cyprus takes place primarily within a legal framework.

2.4 MANAGEMENT OF BIODIVERSITY IMPACT EVALUATIONS

In Cyprus the EA, or Environment Service (MANRE), provides an Environmental Opinion during the environmental assessment procedure to the CA (e.g. the Department of Town Planning). The CA grants the environmental permit and manages the industrial project (for EIA) or program (for SEA). This includes oversight of the monitoring activities required by the environmental permit.

3 MEASURES TAKEN BY COMPANIES CONCERNING BIODIVERSITY CONSERVATION AND RESEARCH

In general, industry and companies in Cyprus will not take action concerning environmental problems or biodiversity conservation unless it is required by law (there is regulatory pressure) or “if everybody else does it” (there is peer pressure; Fessas and Alkan, 2008). Thus the primary way in which industry impacts on biodiversity are controlled is through the Cypriot legal framework, that is, through EIA and SEA procedures and the environmental permit process (Section 2). However a small number of Cypriot companies do

address biodiversity questions. Additionally, the United Nations Development Program (UNDP) and the Chamber of Commerce in both Greek Cypriot and Turkish Cypriot communities are beginning to evaluate the implementation of the United Nations “Global Compact” in Cyprus, an initiative that promotes corporate environmental and social responsibility (Fessas and Alkan, 2008). Finally, the industry may comply voluntarily with ISO guidelines, for example the ISO 14000 environmental management guidelines. However these guidelines do not provide specific objectives concerning biodiversity, especially as biodiversity is characterized by an ‘irreversibility problem’ and thus cannot be treated easily as part of an Environmental Management System (Anderson et al., 2001).

3.1 COMPANIES AND IMPACTS ON BIODIVERSITY

3.1.1 COMPANY ACCOUNTING FOR IMPACTS ON BIODIVERSITY

If the environmental permit obtained by a company after following EIA procedure (Section 2.1) obliges that company to evaluate and mitigate their impacts on biodiversity, the company must follow these guidelines or they will be criminally liable (Section 2.3). In this system the company would report their impact on biodiversity in the context of environmental monitoring to the appropriate Authority, that is, the EA or CA.

Outside of legal requirements for environmental monitoring and environmental permits, there is very little accounting for company impacts on biodiversity in Cyprus. In part, this derives from the perception of Cypriot businesses that investing in corporate environmental responsibility outside of the dictates of environmental law would cost the company too much money (Fessas and Alkan, 2008). However new business initiatives, such as the United Nations Global Compact or the new ISO 26000 series that addresses Corporate Social Responsibility, could encourage more internal management of impacts on the environmental and biodiversity in Cyprus.

3.1.2 COMPANY MEASURES FOR MINIMIZING IMPACTS

Outside of the requirements of environmental permits (Section 2), Cypriot companies do take some measures to minimize environmental impacts. A recent survey by RAI Consultants, Inc., has shown that most companies have tried to implement procedures that reduce environmental impact through energy conservation (61% of all companies polled), waste minimization (59%), pollution prevention (62%), and using sustainable transport options (39%). However few companies (24%) believed that the sustainability of their products or services would give them an advantage in the marketplace.

The measures that most Cypriot companies have taken to “minimize impacts” only apply to the mitigation of environment effects in general. No companies have specifically addressed the minimization of biodiversity impacts unless requested to do it at the end of the EIA or SEA process. In part, this is due to the perception by most Cypriot businesses that they do not affect biodiversity. In a recent survey, 24 Cypriot companies admitted to having an impact on the environment, but only one categorized this impact as specifically affecting biodiversity (Fessas and Alkan, 2008). Moreover the Cypriot public and businesses may not understand what “biodiversity” means, as 84% of respondents in a recent poll said that they had never come across the concept (Christou, 2008). If Cypriot businesses do not understand the term “biodiversity”, they will not be able to comprehend its importance nor be able to guard against its loss on the island. Thus a major obstacle to the minimization of biodiversity impacts by industry on Cyprus may be a general lack of education concerning what biodiversity is and why it is important to environmental protection on Cyprus.

3.1.3 COMPANY CONTRIBUTIONS TO BIODIVERSITY CONSERVATION

There are no known direct contributions of companies towards biodiversity conservation in Cyprus. Companies may indirectly contribute towards the maintenance of biodiversity in Cyprus through the new “Golden Oak” program initiated by the Cyprus Chamber of Commerce (Marios Tsiakkis, Cyprus Chamber of Commerce and Industry, personal communication). This program, named after an endemic tree (*Quercus alnifolia*), supports the re-planting of burnt Cypriot forests and the greening of urban areas in Cyprus. The Cyprus Chamber of Commerce is currently finalizing the details of the program with the Commissioner of the Environment in Cyprus. However Carrefour, a French chain with department stores in Cyprus, has already contributed €35,000 towards the re-planting of a burnt forest near Limassol. While the object of this program is not specifically to conserve biodiversity in Cyprus, it is expected that reforestation and the greening of urban areas will contribute to some degree towards biodiversity maintenance in Cyprus, particularly since biodiversity loss on the island is linked to land development for construction or tourism.

3.2 BUSINESS AND BIODIVERSITY INITIATIVE

There is no national or regional Business & Biodiversity initiative on Cyprus.

3.3 BIODIVERSITY RESEARCH SUPPORTED BY COMPANIES

3.3.1 BIODIVERSITY RESEARCH ACTIVITIES IN PARTNERSHIP WITH THE PRIVATE SECTOR AND PUBLIC COMPANIES

As discussed in the preceding sections, there are very few companies who actively practice biodiversity conservation or try to minimize biodiversity impacts on Cyprus, unless specifically required to do so under EIA or SEA law. There are similarly few companies who have been involved in biodiversity research, either for conservation in general or for the mitigation or restoration of biodiversity impacts.

The only companies in Cyprus that are involved in management of environmental impacts in general are those that can be contracted to perform EIA or SEA for other companies. One of these, Atlantis Consulting Company, Ltd., has been involved in biodiversity research with government departments and other companies and universities on Cyprus and abroad. For example, Atlantis was contracted by the Cyprus Department of Geological Engineering to formulate a policy for the sustainable development of the mineral industry (i.e., the mining and quarrying industry). For this project they and partners audited 50 quarries and assessed environmental impacts of the mining operations, including biodiversity impacts. Atlantis was also involved in a vulnerability and threat analysis for 5 of the Natura 2000 sites on Cyprus. This analysis included suggesting a number of specific measures for the protection of flora and fauna in the sites and a function analysis of the Larnaca Salt Lakes (a Natura 2000 site). Atlantis furthermore has helped to develop management plans for Skoulli river and Alykos Potamos-Agios Sozomenos, two Natura 2000 sites on Cyprus. This involved detailed mapping of the species present and identification of threats to the targeted species and habitats. Thus at least one environmental consulting company in Cyprus is involved in biodiversity research with private sector and public companies. Other companies that conduct EIA studies in Cyprus include Aeoliki Ltd. and Epsilon Consulting Ltd., however it is not clear to what degree these companies have been involved in research specifically on biodiversity.

Apart from large companies involved in EIA and SEA studies on Cyprus, a few small companies are involved in marine environmental research. Such research endeavors include AP Marine Environmental Consultancy Ltd. and L & K Marine Research Lab Ltd. Although these companies traditionally focus on monitoring the environmental impacts of fish farms in Cyprus, they are also becoming more involved in research endeavors with Cypriot universities. However, it is again not clear if these marine consultancy companies specifically perform biodiversity research.

In summary, very little research on biodiversity is performed by Cypriot companies unless in the context of EIA studies or environmental monitoring. Most biodiversity research

on Cyprus is performed by the government or by universities.

4 ECOLOGICAL ENGINEERING

Ecological engineering is not currently practiced on Cyprus and is not applied to environmental impact assessment or mitigation of biodiversity impacts on the island.

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