



UNIVERSITY OF MACEDONIA
Economic and Social Sciences



GUIDE FOR THE IMPLEMENTATION OF AN ECO-MANAGEMENT AND AUDIT SCHEME (EMAS)

**The ten steps toward the designation of the University of Macedonia,
Thessaloniki, as the first “green” university –according to EMAS- in Greece**



**Eco-Management and Audit Project
of the University of Macedonia**

Thessaloniki July 2005



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MESSAGE OF THE ECO-MANAGEMENT AND AUDIT SYSTEM'S MANAGER

The current “guide” is published on the occasion of the successful completion of the common efforts of our academic community for the certification of the University of Macedonia according to the EMAS Regulation. Since the University of Macedonia is the first public organization/ institution of the public sector in Greece which is certified according to EMAS, we believe that our experience, presented in a layman’s way and focusing on the major highlights of our effort, could be useful to any other organization or public body that wishes to follow the same path.

In general, we consider our experience as extremely positive, besides the many problems most of which are due to rigidities intrinsic to the public sector. We suggest, to any organization that is ready to take up the challenge of implementing an Environmental Management System, to consider not only the direct environmental benefits but also the indirect, the most important of which is the gradual change in the behavior and the mentality of all members of the organization’s community (in our case, the educational staff, the administrative and technical staff and the students). Considering all the benefits and costs of our venture, we warmly invite other universities and public sector’s entities to take up similar initiatives and we hope that this “guide” may be proven helpful.

Having achieved the “formal” objective of the certification of the University of Macedonia in accordance with the EMAS Regulation, I would like to thank all those who contributed to the materialization of this so ambitious and arduous goal in the last two years.

More specifically:

- *The Rectorial Authorities*, that is, our Rector, Professor Konstantinos Velentzas, the Vice Rector of Academic Affairs, Associate Professor Elias Kouskouvelis, the Vice Rector of Economic and Developmental Programs, Professor Konstantinos Margaritis, as well as the former Rector and presently General Secretary of the Region of Central Macedonia, Professor Georgios Tsiotras, for their unreserved support in each and every phase of the project and their active participation in laying out the important and pioneer commitments of our university, such as those epitomized in the text of the “Environmental Policy of The University of Macedonia”.
- *The members of EMAS System Final Users’ Group*, for their substantial and exceptionally useful suggestions and their perseverance against the difficulties entailed in the “building” of an easy to use and effective Eco-Management System. More specifically, these are: Vasso Dimarchopoulou – Supplies-Department, Anna Georgiadou and Varvara Kissa – Research Committee, Fotini Gouda and Aris Mitakos – Technical Service, Dimitris Stogiannis – Computer and Networks Centre and Venos Karatzoglou – Representative of the Special Educational and Teaching Personnel (S.E.T.P).



- *The Voluntary Environmental Support Groups of employees and students*, for their active participation in all project-actions, as well as their dynamism and unceasing enthusiasm.
- *The Vice Mayoralty for Cleanliness, the Vice Mayoralty for the Environment, and the Supplies-Department of the Municipality of Thessaloniki*, for their so very important support in the context of the Paper, Aluminum, and Batteries Recycling of the University of Macedonia and the construction of the “Environmental Education Pavilion” in the Municipal Park of Nea Elvetia.
- *The Company for the Development and the Management of the Property of the University of Macedonia*, and particularly so its Managing Director Professor Dimitrios Papadopoulos, for their support –moral as well as material- in all the different phases of the project’s realization.
- *The Sigma Consultants Ltd.*, for the technical support of all the stages involved in the design and implementation of the Eco-Management System.
- *The European Commission – Directorate General Environment, Program LIFE*, for the significant financial support of the project and the *LIFE External Monitoring Team*, for the useful recommendations in the course of the implementation of the project.
- *All the members of the academic community of the University of Macedonia*, for your actual participation in the project’s measures and activities.
- And last but not least, *Mrs. Sophia Gregou*, for the very successful general coordination of the different teams and actions through the EMAS Office.

In closing, I would like to wish that the certification of the University of Macedonia in accordance with the EMAS Regulation is only the beginning for setting new and higher goals the realization of which will lead to its distinction as a model of academic environmental excellence at the European level –apart from the one it already enjoys as the first “green” university in Greece.

Eco-Management and Audit System’s Manager

Assistant Professor
Eftichios Sartzetakis



1. INTRODUCTION

The University of Macedonia, Economic and Social Sciences is the first university in Greece and one of the very few in Europe that has proceeded into the design and implementation of an Eco-Management and Audit Scheme along the European model of EMAS, in the context of the EMAS-EDIN/LIFE02 Project (2002-2005). The other contributors and partners in the Program are the Company for the Development and the Management of the Property of the University of Macedonia S.A., the Sigma Consultants Ltd., and the Municipality of Thessaloniki. The main objective of the program is to build the basic underpinning that will form the foundation for an unceasing effort to decrease the environmental impact of the university on the urban core of the city of Thessaloniki that embraces it. Such underpinning is comprised by the recording of the current environmental consequences of the university's operation and of the requisite measures for their attenuation, the undertaking of immediate actions with respect to the most serious problems, and the training of students and personnel so that they will actively participate in the endeavor. It is the program's ambition to constitute a model of environmental conduct and dissemination of information so much for the citizens of Thessaloniki as for other educational institutions, organizations and agencies of the public and private sector.

The writing of the present manual goes beyond the narrow limits of one more "due to be delivered" task in the context of the LIFE Program, as it endeavors to provide in a simple and schematic way a chronicle of this interesting and innovative experience of the University of Macedonia, embellished with real instances, comments and useful practical advice. It has not been deemed purposeful to attempt a lengthy reference to each partial phase of the implementation of an Eco-Management System, since there already exist important and thorough instruments for the design and implementation of Eco-Management and Audit Schemes (EMAS) –most noteworthy of which is the excellent "*EMAS Toolkit for small organizations*"¹ of the International Network for Environmental Management-INEM)². Instead, exceptional importance was given to the full emergence of the "lessons" gained by the University in the process of this ambitious undertaking, by means of gradually unfolding our valuable experiences derived even from our own mistakes.

We hope that the present manual will become a useful and handy "guide" for other academic institutions and organizations of the broader public sector that

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1. URL: http://www.inem.org/new_toolkit/, where one can find simple directions for the implementation of a per EMAS Eco-Management System, with a plethora of auxiliary instruments and practical examples.
 2. The International Network for Environmental Management (INEM) –a non-profit international association of national organizations dealing with issues of eco-management and sustainable development– aims at the support enterprises for the improvement of their environmental and economic performance.



will decide to materialize a similar undertaking, as well as a source of motivation for them so that they will keep going and finally carry out this meaningful endeavor. The EMAS Office of the University of Macedonia remains at the disposal of all who are interested, offering its know how for the purpose of the further dissemination of the basic principles governing the environmental management and other friendly to the environment practices, aiming at the transubstantiation of the concept of sustainable development into praxis.

On behalf of the Writing Team
Dr. Sophia Gregou
Coordinator of the EMAS Office

1.1. Glossary

Before getting into the experience of the University of Macedonia in the implementation of an Eco-Management and Audit Scheme (EMAS), we considered it proper to present the reader with some brief description of concepts and terms – according to the EMAS Regulation (EC/761/2001) – that will be used hereafter.

- ***Eco-Management and Audit Scheme (EMAS)***: A European Community system of ecological management and audit, which allows for the willful participation of organizations in the evaluation and improvement of their environmental performance and the provision of relevant information to the public and other interested parties. The eco-managemnt system constitutes part of the overall management system of the organization and includes the organizational structure, the design, the responsibilities, the practices, the processes, the procedures and the resources for the laying out, implementation, accomplishment, revision and maintenance of the environmental policy.
- ***Environmental Policy***: The objectives and action principles of the organization with respect to environmental issues, including the compliance to all relevant regulatory requirements regarding the environment and the commitment for a continual improvement of environmental performance; environmental policy provides the framework for the establishment and revision of the environmental objectives and targets.
- ***Environmental Performance***: The outcomes of an organization's management of its environmental aspects.
- ***Continual Improvement of Environmental Performance***: The process of enhancing, year by year, the measurable results of the environmental management system related to an organization's management of its major environmental aspects on the basis of its environmental policy and environmental objectives and goals. The enhancing of the results need not take place in all spheres of activity simultaneously.
- ***Prevention of Pollution***: The utilization of processes, practices, materials, or products which avoid, reduce, or control pollution, such as recycling, treatment, process changes, control mechanisms, efficient use of resources and ma-



terial substitution.

- **Environmental Review:** The initial thorough analysis of the environmental issues, impact and performance relevant to the activities of an organization.
- **Environmental Aspect:** An element of an organization's activities, products, or services that can interact with the environment. A significant environmental aspect is that which has or can have significant environmental impact.
- **Environmental Impact:** Any change in the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.
- **Environmental Program:** The description of the measures (responsibilities and means) that have been taken or are under consideration for the accomplishment of the environmental objectives and targets, as well as the setting of deadlines for such accomplishment.
- **Environmental Objective:** The overall environmental goal arising from the environmental policy, that an organisation sets itself to achieve, and which is quantified where practicable.
- **Environmental Target:** A particular and detailed performance requirement, quantified wherever this is possible, which is applied within the organization or sections of it, is issuing from the environmental objectives, and has to be determined and maintained so as for the materialization of these objectives to become possible.
- **Environmental Audit:** A means of management which involves the systematic, documented, recursive, and objective evaluation of the organization's performance, its management system, and the processes it follows for the protection of the environment, which aims at: (i) the facilitation of the administrative control of practices that might have an impact on the environment, (ii) the evaluation of the organization's compliance with the environmental policy, objectives and targets included.
- **Audit Cycle:** The period of time during which all the activities of the organization are being audited.
- **Environmental Auditor:** A person or a team from outside the organization's personnel, acting on account of the organization's top management, possessing, on a personal or collective level, all the necessary cognizance, and being sufficiently independent from the activities under audit so as to be able to judge objectively.
- **Environmental Statement:** Presentation of the results accomplished by the organization with respect to its environmental objectives and targets and to the requirement for continual improvement of its environmental performance, taking into consideration the need of all interested parties to receive information.
- **Accredited Environmental Verifier:** Person or organization, not bound to the organization under verification that has been accredited so as to carry out EMAS verifications.
- **Accreditation System:** System for the accreditation and supervision of the environmental verifiers, which is subjected to the administration of an impartial



institute or organization, has been prescribed or constituted by the member state (accreditation body), has adequate resources and competencies at its disposal, and applies appropriate procedures for the execution of the tasks and duties stipulated by the regulation concerning the aforesaid system.

1.2. Why EMAS?

To the legitimate question “why should an organization get involved in the process of implementing an Eco-Management and Audit Scheme according to the EMAS Regulation”, the obvious response is because it has an honest interest in the **reduction of its environmental impact**, the minimization of any likelihood to cause major environmental pollution, and its potential to contribute in its own way and on a local level toward the establishment of a model of sustainable development.

At the same time, we must not ignore the fact that there also occur some remarkable **economic benefits** from a) the optimum usage of natural resources, b) the conservation of water and energy, c) the improvement of the hygiene and safety and the subsequent reduction of labor accidents, d) the promotion of environmentally friendlier methods and means for the commuting of personnel and the transportation of products, e) the more appropriate waste management and the recycling of materials and packaging,, f) the presentation of suppliers and subcontractors with the concept of environmentally friendly buildings, g) the avoidance of fines related to the violation of the national or European legislation in force and h) the modernization and amelioration of overall management of the organization.

Most important of all, however, is the **enhancement of the public image** of the organization and its elevation to a model of environmentally friendly conduct, so much for the local community and its public agencies as for the private sector and various social partners. In actual practice, this means: a) a higher morale shared by the employees, b) better acceptance and recognition on the part of public agencies and authorities, c) comparative advantages vis-à-vis banks and insurance companies and d) comparative advantage in relation to future “green” competitions.

We want to believe that a future European community of people with a sturdy orientation toward sustainable development will most certainly bring the pioneers to the forefront of prominence and reward them with prizes of “environmental excellence” and grants in return for trustworthy “green” credentials (such as the EMAS).

For more information one can consult the “*Cost–Benefit Study for the Implementation of an Eco-Management and Audit Scheme in the University of Macedonia*” available through the EMAS Office and the university’s web page.

1.3. Getting Acquainted with the University of Macedonia

The University of Macedonia was established in 1990 and is the evolution of the old Graduate School of Industrial Studies (GSIS). The GSIS inaugurated its opera-



tion during the academic year 1957/58 as the “Higher School of Industrial Studies of Thessaloniki”. Today, there operate eight (8) departments of undergraduate studies in the University of Macedonia: Department of Economic Science (OS), Department of Business Organization & Administration (BOA), Department of International & European Economic and Political Studies (IEEPS), Department of Accounting and Finance (A&F), Department of Applied Informatics (AI), Department of Educational & Social Policy (ESP), Department of Balkan, Slavonic and Oriental Studies (BSOS), and Department of Music Science and Art (MSA). In addition to the undergraduate departments, the University of Macedonia offers also seven (7) interdepartmental postgraduate programs: Master’s in Economics, Master’s in Business Administration (M.B.A.), Master’s in Information Systems (M.I.S.), Master’s of the Department of Applied Information, Master’s of the Department of Accounting and Finance, Master’s in International and European Economic and Political Sciences, and Master’s in Educational and Social Policy.

The physical premises of the University of Macedonia are located on proprietary ground of a total size of 12.226,25 m², surrounded by Egnatia Avenue, 3rd September Street, and Gregoriou Lampraki Street. The University is situated within the limits of, and in close proximity to, the centre of the Municipality of Thessaloniki, to which it also belongs administratively. More specifically, the university is built on the area demarcated by the Aristotle University of Thessaloniki, the site of the International Fair of Thessaloniki, the Third Military Corps, and the 424 General Military Hospital. The construction of the building was completed in 1991, while quite recently there has been added a new auditorium, which has a capacity of 500 seats and the potential to be used both as a Conference Centre and as space for the organization of cultural events.

The University’s total population of registered students who attend studies at the undergraduate as well as the postgraduate level is 13.310 (statistics of academic year 2004 – 2005). The respective academic personnel of the University of Macedonia is consisted of 307 members. More specifically, 146 members of the Teaching and Research Personnel (T.R.P.), 109 members teaching under the Presidential Decree 407/80, 22 members of the Special Educational and Teaching Personnel (S.E.T.P), 1 member of the Special Teaching Personnel (S.T.P). The total size of the academic community is complemented by 29 members of the Special Technical personnel (S.T.P) and 236 members of the administrative personnel, persons working under contracts of indeterminate duration and office (statistics of the academic year 2004–2005). Moreover, the University of Macedonia is the context for the operation of the following additional services –by means of long-term collaboration with external associates and subcontractors: a restaurant for the students and personnel of the university, a luncheonette, a small photocopy centre and a bookstore.

As it can be immediately perceived, in the case of the University of Macedonia there are covered a series of favourable criteria for the introduction in the context of its activities of an Environmental Management System. More specifically, these are: a) the university’s relatively small size (compared with the Aristotle University

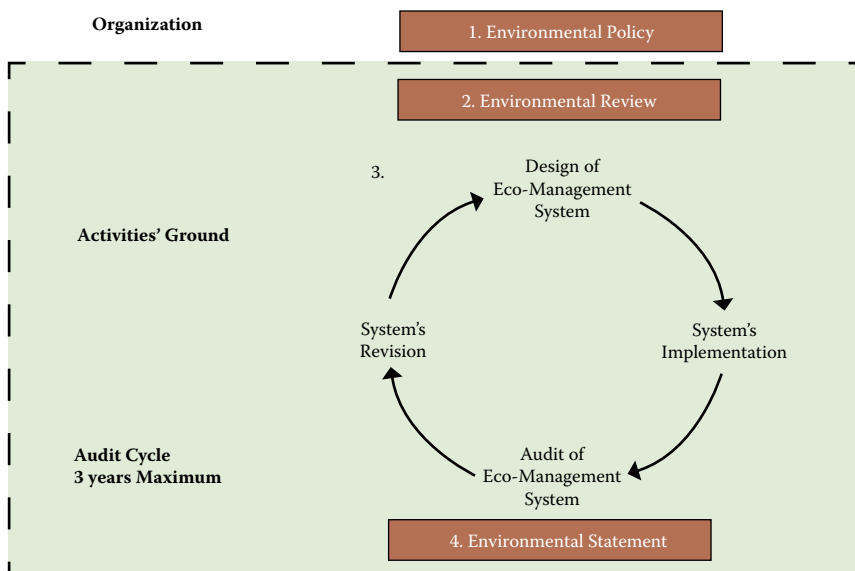


and its 40,000 students), b) the university's autonomy in terms of it being housed in proprietary premises, and most of all c) the absence of unmanageable waste and hazardous by-products (e.g., absence of laboratories using reactants or toxic and hazardous waste).

This fact, combined with both the firm will of the Rectorial Authorities and the fortunate coincidence of the approval of the co-financed European Program EMAS-EDIN/LIFE02, came to constitute the basic prerequisites for the design and implementation of an Eco-Management and Audit Scheme according to EMAS in the University of Macedonia in the period 2002-2005.

2. STAGES OF DESIGNING AND IMPLEMENTING AN ENVIRONMENTAL MANAGEMENT SCHEME (EMAS) IN THE UNIVERSITY OF MACEDONIA

The Environmental Management System that the University of Macedonia decided to adopt is based on the principle of the accomplishment of continuous environmental improvement, in accordance with the European Regulation EMAS (761/2001: Eco – Management and Audit Scheme). The main stages for the development –and constant improvement– of the EMAS System constitute in essence a recursive chain process, as it is schematically presented below:





The following table lists the basic steps taken for the implementation of the EMAS, which are analytically presented in the remaining of this chapter:

Step 1	⇒ Institution of Environmental Policy by the Institute's Rectorship.
Step 2	⇒ Development of Appropriate Organizational Structure .
Step 3	⇒ Carrying out an Environmental Review .
Step 4	⇒ Formation of an Environmental Legislation Database
Step 5	⇒ Establishment of Environmental Objectives & Targets for the improvement of the environmental performance of the organization.
Step 6	⇒ Formation of Environmental Programs for the accomplishment of the set Environmental Targets.
Step 7	⇒ Development, documentation and operation of the Eco-Management System .
Step 8	⇒ Environmental Audit και System's Revision .
Step 9	⇒ Writing and publicizing of Environmental Statement .
Step 10	⇒ Verification of the Eco-Management System and registration in the formal registers of EMAS.

2.1. Step 1 Institution of Environmental Policy

The primary and foremost step toward the implementation of an Eco-Management and Audit Scheme is the institution of an Environmental Policy on the part of the institute's highest administrative body. This statutory document prescribes both the basic principles as well as the priorities of the organization in relation to environmental issues. In other words, it constitutes the organization's public commitment to the constant amelioration of its operation.

The environmental commitments of the University of Macedonia are epitomized in the Environmental Policy text as follows:

The Macedonia University of Economic and Social Sciences envisages its upgrading into an "academic institution of environmental excellence", aiming at the maximization of its social, scientific and cultural contribution by means of transubstan-



tiating the concept of sustainable development into action.

For the realization of this vision, the University of Macedonia sets the following aims: (a) the constant reduction, in as far as this is attainable, of the environmental impact of its operation by means of (i) energy and natural resources conservation (ii) opting for environmentally friendly supplies and (iii) preventing pollution, (b) the enhancement of the range and quality of the environmental education it provides as well as of its environmental activity and (c) the environmental sensitization of its personnel and students, and, more generally, the promotion of friendly to the environment forms of behavior.

In the course of the materialization of its environmental vision and goals, the University commits itself to:

- 1. Constantly ameliorate, as much as this is technically feasible, the environmental performance of the Institution's activities, as well as the functioning of its Eco-Management System. Proceed into appropriate actions so as to prevent the pollution and the environmental aggravation.*
- 2. Promote effective ecological practices in the context of the operation of all the departments, committees and organizations of the institution, in full compliance with the environmental legislation in force and in accordance with relevant and widely accepted sound practices.*
- 3. Design, develop and integrate into its academic curriculum new courses with environmental content, at both the undergraduate and graduate level.*
- 4. Raise the sensitivity of its personnel and students in order for them to actively participate in ecological activities, and train the personnel on issues pertaining both to ecological practices and energy conservation as well as to Eco-Management and Audit.*
- 5. Constantly, and in as far as this is technically feasible, reduce the consumption of energy, water and paper by implementing active interventions for the conservation of energy and natural resources, by adopting efficient waste-management systems and proper practices of internal functioning and communication, and, finally, by investigating the possibility as well as the financial benefit of future employment of alternative forms of energy.*
- 6. Adopt environmental criteria with respect to its supplies of goods and services, to the point that this is practically feasible, refraining from the usage of harmful substances, products and processes in all occasions that this is possible. Adopt environmental criteria in the selection of subcontractors, taking into consideration the environmental consequences of the realization of restorative or constructional works on the university's edifice and surrounding area.*
- 7. Constantly improve the working environment of the institution for the purpose of ensuring the good health and safety of its personnel and students.*
- 8. Explore and encourage forms of student and personnel transportation to the university such that can minimize negative environmental consequences.*
- 9. Designate and develop special smokers' spaces in all the communal and work premises of the institution.*
- 10. Collaborate with local, national and international-level agencies for the dis-*



semination of environmental policies.

Finally, the University of Macedonia will attempt to infuse its environmental vision with flesh and blood by laying out the technical specifications of the ideal environmentally friendly university, with the aim of putting them into effect during the construction of its future premises.

The present text is distributed to all the students and members of the institution's personnel and to whomever else is interested. It is also available online at www.uom.gr/emas. For more information, please contact the EMAS Office of the University.

The final text of the Environmental Policy of the University of Macedonia was first approved by the Eco-Management and Audit System's Manager *and* then was submitted for approval to the Rector's Council, where it was unanimously approved by the Council's **No. 16/3-2-2004** decision. Finally, it was submitted for approval to the highest collective body of the university, the Senate, where it was also approved unanimously by the Senate's **No. 10/3-6-2004** decision.

■ Which are the EMAS requirements?

According to Supplement I-A.2. Environmental Policy of the EMAS Regulation (EC/761/2001):

The highest administrative body must lay down the environmental policy of the organization and ensure that this:

- (a) is appropriate to the nature, scale and environmental impacts of its activities, products and services;*
- (b) includes a commitment to continual improvement and prevention of pollution;*
- (c) includes a commitment to comply with relevant environmental legislation and regulations, and with other requirements to which the organisation subscribes;*
- (d) provides the framework for setting and reviewing environmental objectives and targets;*
- (e) is documented, implemented and maintained and communicated to all employees;*
- (f) is available to the public.*



■ Useful Advice

- Use as a reference point similar Environmental Policy texts from agencies with the same or approximate field of activities.
- Although the text should have a broad scope and be as general as it can, avoid, if possible, pompous commitments that go beyond the activity sphere of your organization or are immoderately ambitious.
- Try to integrate into your commitments as many aspects of your organization's activity spectrum as possible.
- Make sure that you have included all the requirements of the EMAS Regulation.

How was the Environmental Policy text formulated?

The occasion for the extension but most of all the systematization of the environmental activities of the University of Macedonia has been the successful proposal for funding in the context of the LIFE-Environment Program. The core of the proposal, under the Scientific Responsibility of Assistant Professor Eftichios Sartzetakis and with the hearty support of the Rectorial Authorities and especially of the then Rector Professor Georgios Tsiotras, concerned the establishment of an Eco-Management and Audit Scheme according the EMAS Regulation, for the first time in an academic institution in Greece. Upon the approval of the program, the ardent will of the Rectorial Authorities was initially expressed through the entrusting of the role of Eco-Management and Audit System's Manager to the Assistant Professor Eftichios Sartzetakis in September 2002 and then with the creation of the EMAS Office in February 2003.

At the time, the transformation of the institutional leadership's intentions into Environmental Policy could follow two routes. Either the formation of the environmental policy by a very small nucleus of persons and its simple announcement to the members of the academic community or its issuing from within public deliberations and dialogue among the representatives of all the official agencies and the immediately involved parties, and then its confirmation by the political leadership.

The University of Macedonia opted for the more difficult route of the participatory formulation of its Environmental Policy's text by first addressing an open invitation to the members of all the collective organs of the institution's employees and students. The draft of the Environmental Policy's text was formulated by the EMAS Office, as the outcome of thorough bibliographic research and review of relevant texts outlining the Environmental Policy of Academic Institutions already applying Environmental Management Systems. Then, this text was distributed to the official collective bodies of the university to be commented on. The participation of employees and students through their formal collective organs in the meetings initiated by the Environmental Management Office was exceptionally meager



(5-6 persons per meeting). Thus, there emerged the need for the creation of a vital nucleus of environmentally sensitive individuals, in order for it to function in a consultative manner in the context of the EMAS Office. It was this initial nucleus that created the Voluntary Environmental Support Group of the university (~30 individuals) in November 2003, composed by members of the administrative, technical, and educational personnel, members of the Teaching and Research Personnel (TRP) and students of the university³.

The Voluntary Environmental Support Group participated actively in the formulation of the essential points of the Environmental Policy text, putting forward issues that they would like to see included in the environmental planning of the institution for the upcoming years. For example, the employee-representatives expressed the desire for emphasis to be given on issues concerning the hygiene and safety at work and the continuous improvement of the working environment, the student-representatives considered the introduction into the curriculum of new courses with environmental content as particularly important, while the members of the Teaching and Research Personnel stressed the issue of the dissemination of practices and courses to other agencies of the public and private sector.

At this point, it is worth noting that the question of whether the text of the Environmental Policy should contain a reference to the issue of smoking prohibition in the university (though explicitly banned by the legislation in force) became a field of confrontation since the majority of the employees and students are smokers themselves. As a result, the option finally favoured was for the emphasis to be given on the necessity to create special and designated areas for the smokers. If otherwise, the Environmental Management Project would most likely turn out to be a boisterous failure, loosing its first fervent –albeit smoking– supporters well before its initiation.

✓ What we did right:

The political leadership created the appropriate mechanisms and communication channels to carefully listen to the wishes and particularities of the academic community in its entirety, so as for the Environmental Policy text to represent the “common voice” of all.

3. In November 2004 there was formed an autonomous Voluntary Environmental Support Group of Students, which today approximates the 70 members.



What we amended in the course of things:

Upon the recommendation of the Environmental Verifier during the phase of the Preliminary Verificational Review, the following amendments were made:

- Beyond the general objectives, the prevention of pollution and the constant improvement of the university's environmental performance were included in the explicit commitments of the university.
- With respect to the university's commitments for constant reduction of the environmental impact of its operation and for constant reduction in the consumption of energy, water and paper, there was added the phrase "in as far as this is technically feasible".

2.2. Step 2

Development of the Appropriate Organizational Structure

For the materialization of the Environmental Policy of the institution and the operation of its Environmental Management System there was created an appropriate organizational structure, consisting of: the Environmental Council, the Eco-Management and Audit System's Manager, the Environmental Team, the Office of EMAS, the EMAS System's Final Users Group, the Voluntary Environmental Support Group of Personnel and the Voluntary Environmental Support Group of Students. The Environmental Council, the Eco-Management and Audit System's Manager, and the EMAS Office act as an advisory committee for the Rectorial Council of the University, while the Eco-Management and Audit System's Manager and the members of the Environmental Team have been appointed by the Rectorial Council's decisions **No. 16/3-2-2004** and **No. 13/9-12-2003** respectively.

The Environmental Council meets at least twice a year and has the jurisdiction to: (a) Lay down the Environmental Policy of the Institution and prescribe the Environmental Objectives of the Environmental Management System, (b) Review and approve the Manual and the Procedures of the Environmental Management System as well as the Annual Programs for the Environmental Education of Personnel and Students, (c) Make decisions with respect to the dissemination of information, in terms of its content vis-à-vis its recipients, on the basis of the recommendations of the Eco-Management and Audit System's Manager, (d) Assign responsibilities to institutional members, signing the respective Responsibility Assignment forms, (e) Endorse the Environmental Statement and use it so as to follow the course of the system's performance, (f) Study the Annual Aggregate Report, identify points that need to be changed and assign the realization of such changes to the Environmental Team, (g) Decide which environmental standards and specifications are used by the institution with respect to material supplies and subcontracts, (h) Carry out the annual Review of the System and determine future actions, (i) Constitute the Students' Training Team, appoint the persons



Responsible for the Environmental Education and Maintenance as well as the Internal Auditors, (j) Promote the observance of the Hygiene and Safety Legislation, appoint the Safety Technician and the Labor Physician, and take the necessary measures to face emergency situations in accordance with the relevant legislation and the recommendations of the aforementioned technician and physician, (k) Appoint the Coordinators and the members of the Emergency Team and support the relevant training of the personnel.

In its turn, the Environmental Team meets whenever this is required and has the jurisdiction to: (a) Carry out the drafting and preparation of all the documents of the Environmental Management System and keep the Central Informational System updated, (b) Present the Environmental Council with recommendations regarding modifications in the Environmental Management System and undertake their implementation upon the relevant approval, (c) Keep the Environmental Council updated on issues regarding the institution's compliance with the Environmental Legislation, through the Eco-Management and Audit System's Manager, (d) Identify the existing needs with regards to the environmental education and awareness of the personnel and design the corresponding Annual Program of Environmental Education, (e) Support the Eco-Management and Audit System's Manager in the entirety of his mission and carry out the internal distribution of information relating to the Environmental Management System, (e) Draft the environmental specifications regarding subcontracting as well as the environmental standards for the material Supplies of the institution and recommend their adoption to the Environmental Council, (f) Undertake the identification and assessment of the Environmental Aspects of the institution, (g) Lay down the specific Environmental Goals, taking into consideration the general Environmental Objectives and the existing situation, and (h) Observe the Environmental Indicators and decide on their basis whether there exists a need for changes in the programs or the goals.

Finally, the Eco-Management and Audit System's Manager: (a) Supervises the whole operation of the Environmental Management System and the working-out of the procedures, (b) Monitors the drafting, release, updating and distribution of all the documents of the Environmental Management System, (c) Organizes, monitors and evaluates the training of the personnel, (d) Coordinates the activities, assigns the responsibilities and monitors the functioning of the Environmental Team, (e) Keeps the original issues of the Environmental Management Manual, the Environmental Procedures, and the Environmental Forms in a special archive of printed material, (f) Records the Proposals of the members of the institution in a special book and takes on the responsibility for the external communication of the University αναλαμβάνει with agencies and individuals not immediately involved with the institution, (g) Is responsible for the drafting, updating, verification and publication of the Environmental Statement, (h) Convenes at least once a month with the Environmental Team and endorses the proceedings of these meetings, (i) Summons the Environmental Council on a regular basis for the annual review and on an extraordinary basis upon his personal judgment, (j) Ap-



proves the Final Schemes for Environmental Programs and writes the Aggregate Environmental Program, (k) Writes the Aggregate Report of the Internal Audits, after a comprehensive examination of the System, (l) Identifies the environmental aspects of extraordinary junctures and notifies the Environmental Council, the Emergency and Environmental Teams, as well as the institution's Coordinators, and designs modes of limiting the negative environmental consequences of extraordinary junctures on the basis of the corresponding reports.

■ Which are the EMAS requirements?

According to Supplement I-A.4.1 Structure and responsibilities of the EMAS Regulation (EC/761/2001):

- a) Roles, responsibility and authorities shall be defined, documented and communicated in order to facilitate effective environmental management.*
- b) Management shall provide resources essential to the implementation and control of the environmental management system. Resources include human resources and specialised skills, technology and financial resources.*
- c) The organisation's top management shall appoint (a) specific management representative(s) who, irrespective of other responsibilities, shall have defined roles, responsibilities and authority for
 - (i) ensuring that environmental management system requirements are established, implemented and maintained in accordance with this International Standard;*
 - (ii) reporting on the performance of the environmental management system to top management for review and as a basis for improvement of the environmental management system.**



■ Useful Advice

- For the position of the Eco-Management and Audit System's Manager, choose someone who –apart from formal qualifications and competencies– has the ability to also lead as a model of environmentally friendly conduct for the organization.
- Safeguard the maintenance of open communication channels among the main elements of the organizational structure and primarily between the institution's leadership and the Eco-Management and Audit System's Manager.
- Try to involve as many key-persons as possible out of every different organizational department, who should, in turn, act in an augmentative way for their team and associates.
- Provide the Eco-Management and Audit System's Manager and the members of the EMAS System's Final Users Group with the sanction of the highest hierarchical rank.

How was the Organizational Structure of the Environmental Management System constituted?

During the initial phase of designing the EMAS system, the main managerial role was fulfilled by the Team for the Management and Coordination of the EMAS-EDIN/LIFE02 Project, relying primarily on the Project Manager of the EMAS-EDIN and with the support of external collaborators–technical consultants. Very soon, however, it was perceived that the only guarantee for the viability of the endeavor, even after the termination of the Community's subsidy, would be its organic integration into the permanent operative mechanism of the university. Upon recommendation of the Project Manager of the EMAS-EDIN and by decision **No. 16/3-2-2004** of the Rector's Council, the new organizational structure of the System of Environmental Management was ratified, consisting of: (a) the Environmental Council of the University of Macedonia, (b) the Eco-Management and Audit System's Manager, who is to a member of the Environmental Council and act as the connecting link between the Council and the teams responsible for the operation of the System (c) the EMAS Office, (d) the Environmental Team, (e) the EMAS System's Final Users Group, (e) the Voluntary Environmental Support Group of the Personnel and (f) the Voluntary Environmental Support Group of Students.

Apart from its operation in the context of the Environmental Management Project, the Environmental Council has a broader role, as it is to constitute the highest administrative authority of the University of Macedonia on Environmental and Sustainable-Development issues και have the task of coordinating all activities oriented toward the aforesaid issues. Specifically, President of the Environmental Council is the University's Rector, Professor Konstantinos Velentzas, while the position of the honorary President has been joyously accepted by the previous Rector



of the University of Macedonia and presently General Secretary of the Region of Central Macedonia, Professor Georgios Tsiotras⁴. The remaining members of the Environmental Council are the: *Eco-Management and Audit System's Manager*, *Environmental Education Responsible*, *Hygiene & Safety Issues Responsible* (Technical-Service Representative) *Environmental Projects Responsible* (Vice Rector for Economic Programs and Development), *Environmental Legislation Responsible* (Legal-Service Representative), Representative of the Association of Administrative Employees, Representative of the Special Technical Staff Union, Representative of the Association of the Teaching and Research Personnel, Representative of the Students' Association, Representative of the Environmental Support Group of Employees, Representative of the Environmental Support Group of Students and the EMAS Office Coordinator, operating as the Council's Secretaryship. Although the considerably broad structure of the Environmental Council (14 members) was initially criticized, thought to be potentially liable for a relative inelasticity of the Council's functionality, actual practice has proved it useful for, on the one hand, the ample supply of the Council with fresh ideas, and, on the other, the publicizing and spreading of the Council's decisions both to the entirety of the academic community as well as to the local community.

In its turn, the Environmental Team consists of the: Eco-Management and Audit System's Manager, Technical Department's Representative, Technical Maintenance Responsible (Technical Service), Representative of the Research Committee, Representative of the Supplies-Department, EMAS Office Coordinator, Representative of the Teaching and Research Personnel (TRP), Representative of the Special Educational and Teaching Personnel (S.E.T.P), Legal Service Representative and Representation of the university's Computer Centre (10 members), consisted in practice of the EMAS System's Final Users and Auditors and assisted by the Voluntary Environmental Support Group of Students (~70 members). The voluntary participation of a small and yet exceptionally high in terms of its qualifications executive force of the university in the role of the virtual "managers" of the System constitutes a special success of the project.

It is worth noting, at this point, that all the 10 aforementioned individuals (including two members of the Voluntary Environmental Support Group of Students) who attended the Educational Program of the Environmental Management and Audit Systems were successful in the respective certified examinations and they were awarded the title of "Internal Environmental Auditor" according to IRCA (International Registry of Certified Auditors).

4. The fact that the honorary President is a public political figure offers us access to the Mass Media, thus contributing to further publicity. For example, the first meeting of the Environmental Council (10/5/2005) and the symbolic ritual of tree-planting in the courtyard of the University were covered by both the local press and the local TV station, while if it were for an exclusively inter-university gathering, this would probably hardly reach even the fine print sections of the newspapers.



✓ What we did right:

There were included all the official collective bodies of the organization (associations of administrative personnel, TRP personnel, students, special technical staff union, voluntary support groups of personnel and students), so as for all the active agents of the university's academic community to be able to not only make suggestions but also participate in the decision making process.

What we amended in the course of things:

A proposal was submitted to the Rector's Council, approved by decision **No. 16/3-2-2004**, for the creation by the Ministry of National Education and Religious Affairs a new organic position of a "*Total Quality Assurance and Environmental Management Coordinator*". By means of this initiative, the Environmental Management of the university will be incorporated in a broader spectrum of "Ensuring Total Quality», with the simultaneous safeguarding of the smooth operation and constant improvement of the EMAS System.

The tasks of the *Environmental Management Coordinator* include the:

- Coordination and secretarial support of the activities of the EMAS Office.
- Monitoring of the correct operation of the EMAS System and submission of recommendations for the constant improvement of the system.
- Organization of training seminars for the university's personnel on issues relating to hygiene, safety, and reduction of environmental consequences.
- Organization of Environmental Education seminars for the university's students.
- Coordination and support of the Educational Program of the "Environmental Sensitization and Awareness Pavilion" on the ground of the Municipal Park of Nea Elvetia.
- Monitoring of the correct implementation of the paper-recycling program and putting forward suggestions for the expansion of the recycling program.
- Submission of recommendations for energy related interventions in the university's buildings and mode of operation, aiming at the reduction of environmental consequences.
- Coordination and organization of events, training seminars, and meetings for the publicization and promotion of the project.
- Provision of secretarial support to the Environmental Council of the university.



What requires further work...

Constant effort for the participation of increasingly more individuals from all the departments and services of the institution, so as for the optimal management of the system to stop being in the hands of the few and select and become a collective cause, as it is so characteristically implied in the promotional campaign of the Environmental Management System for the academic year 2005-2006 “The EMAS for all of US”!⁵

2.3. Step 3

Carrying out the Environmental Review

In the course of carrying out the **Environmental Review**, the organization’s operations with respect to the environment (**Environmental Aspects**) were analytically examined. The identification of the Environmental Aspects is effected through the analysis of the Flow of Materials with the use of an Environmental Equilibrium. The environmental consequences are distinguished into direct or indirect, depending on whether the causing activities are subject to the audit carried out by the university’s administration. Consequently, indirect activities are considered to be the subcontracted services of cleaning, dining, and building-maintenance, as well as the transportation of personnel and students to the institution.

The environmental aspects of the University of Macedonia are hierarchically ranked in terms of their significance into the four categories⁶ of: Negligible, Small, Medium and High - Significance. The classification is made on the basis of the following four criteria: Severity of Impact, Likelihood–Frequency of the Impact’s occurrence, Legislation, and Expressed Interest of Social Agents. The first criterion concerns the severity of the impact with respect to the global and local environment, the immediately concerned and the employees, while the second concerns the likelihood – frequency of the impact’s occurrence or magnitude. The third criterion concerns the existence or not of special and relevant Community or national legislation. The fourth criterion has to do with the impact of the University’s activities on the Institution’s employees and personnel, the Senate and other administrative bodies, as well as on the local community and agencies.

5. The EMAS in Greek (ΕΜΑΣ) is pronounced like “us”.

6. Useful guidelines and examples for the identification and assessment of the environmental aspects are give in the publication of the European Commission *Guidance on the identification of environmental aspects and assessment of their significance*, available online at: http://europa.eu.int/comm/environment/emas/documents/guidance_en



■ Which are the EMAS requirements?

According to Supplement I-A.3.1 Environmental Aspects of the EMAS Regulation (EC/761/2001):

- a) *The organisation shall establish and maintain (a) procedure(s) to identify the environmental aspects of its activities, products or services that it can control and over which it can be expected to have an influence, in order to determine those which have or can have significant impacts on the environment.*
- b) *The organisation shall ensure that the aspects related to these significant impacts are considered in setting its environmental objectives.*
- c) *The organisation shall keep this information up-to-date.*

According to Supplement VII Environmental Review of the EMAS Regulation (EC/761/2001):

An organisation that has not supplied the necessary information needed to identify and assess the significant environmental aspects according to Annex VI must establish its current position with regard to the environment by means of a review. The aim should be to consider all environmental aspects of the organisation as a basis for establishing the environmental management system. The review should cover five key areas:

- a) *legislative, regulatory and other requirements to which the organisation subscribes;*
- b) *an identification of all environmental aspects with a significant environmental impact in accordance with Annex VI, qualified and quantified as appropriate, and compiling a register of those identified as significant;*
- c) *a description of the criteria for assessing the significance of the environmental impact in accordance with Annex VI, point 6.4;*
- d) *an examination of all existing environmental management practices and procedures;*
- e) *an evaluation of feedback from the investigation of previous incidents*

■ Useful Advice

- Use your organization's Occupational Hazard Study (if there is one) as a starting point for the composition of Environmental Review.
- Ask the assistance of Technical Consultants with expertise on environmental issues for both the identification of all the environmental aspects of your organization and their correct assessment.
- Involve representatives of the Technical Service, as well as the Safety Technician



of your organization for the correct portrayal of the existing situation, potential weaknesses and ways of handling them.

- Ask for and record the opinion of the rest of your organization's personnel regarding the identification of sensitive environmental activities and possible environmental consequences.
- Use the help of agencies offering their services without any fee, such as the Hellenic Institute of Health and Safety at Work and the Fire Department, for the purpose of carrying out measurements and drawing up an emergency plan.

How was the Environmental Review carried out?

A basic tool for the identification of the environmental aspects of the university's operation by the Consulting Firm in collaboration with the Technical Service of the university has been the university's Study of Occupational Hazard commenced in the spring of 2003. In the context of this study and with the help of the members of the Voluntary Environmental Support Group there were completed – door-to-door – approximately 60 questionnaires from a representative sample of the institution's personnel (mostly administrative and technical) for the investigation of safety issues in the university's working areas. In this way there became possible to record observations, possible problems and defects, but most of all suggestions for the improvement of the environmental performance of the organization.

The Occupational Hazard Study was further enriched with two successions of measurements of physical parameters (Temperature, Relative Humidity, Lighting, Ventilation) conducted by the Hellenic Institute of Health and Safety at Work in July 2003 and March 2004. In addition, a new series of questionnaires (~100 questionnaires) were administered in the spring of 2005 by the Hellenic Institute of Health and Safety at Work in collaboration with the Voluntary Environmental Support Group for the purpose of bringing up to date the data of the Occupational Hazard Study.

✓ What we did right:

For the complete recording and identification of both the environmental aspects of the institution's activities as well as the importance attributed to them by the entirety of the academic community, we asked for the opinion of not only "experts" but also of a sample of the organization's employees.



What we could have done better...

Much faster involvement of all the services of the institution, so as for the review to have been finished sooner and in a more complete way, with an enlistment of all possible environmentally friendly interventions ordered hierarchically in terms of both benefit and cost.

2.4. Step 4

Creation of the Environmental Legislation Database

One of the basic EMAS requirements is the compliance with the national and Community legislation in force. The creation and the regular updating of a –relevant to the organization’s activities– database of Environmental Legislation is a laborious and time-consuming process. At the same time, however, it is a process that can secure a significant economic benefit for the organization by helping it to avoid paying fines related to the non-compliance with the relevant legislation.

In the spring of 2004, the University of Macedonia, with the help of the Consultants’ Firm, composed a detailed bank of Environmental Legislation concerned with issues of General Interest (Atmosphere, Hygiene and Safety, Noise, and Solid and Liquid Waste), which is available through the website of the University’s Environmental management Project (URL: <http://www.uom.gr/emas/>). The updating of the Environmental Legislation Database takes place on at least an annual basis. It is done by the Legal Service of the institution, with the assistance and technical support of members of the Voluntary Environmental Support Group of Students (2-3 individuals) and of the EMAS Office.

■ Which are the EMAS requirements?

According to Supplement I-A.3.2. Legal and other requirements of the EMAS Regulation (EC/761/2001):

The organisation shall establish and maintain a procedure to identify and have access to legal and other requirements to which the organisation subscribes, that are applicable to the environmental aspects of its activities, products or services.

According to Supplement I-A.6. Review by the administration – 1 Compliance to the standing provisions of the EMAS Regulation (EC/761/2001):

The organizations must be in position to prove that:

- a) are aware of all the environmental legislation in force, as well as of the implications of the provisions of such legislation for the organization,*
- b) have ensured the observance of the environmental legislation and*
- c) have put into action procedures that allow it to meet the relevant requirements on a continuous basis.*



■ Useful Advice

- Use, as a reference point, existing banks of environmental legislation available also through the Internet (e.g., Websites of the European Community, the Technical Chamber, the Hellenic Institute of Health and Safety at Work, the Ministry of the Environment, Physical Planning & Public Works, the Ministry of Development, and that of the Environmental Management Project's of the University of Macedonia).
- Subscribe to existing databases of environmental legislation, selecting the specific fields that interest you (e.g., Jurisprudence).
- Refer to the Legal Service of your organization (if in existence) for the regular feeding and updating of the environmental legislation bank.
- Create the necessary mechanism for the updating of the relevant Environmental Legislation, on at least an annual basis.

How does the updating of the Environmental Legislation Database take place?

We went through a period during which the position of the Manager of the University's Legal Service remained vacant, due to a bureaucratic delay in its filling by the responsible Ministry. During this period, the Consultants' Firm and the EMAS Office proceeded into the training of a small group of volunteer students (2-3 individuals), members of the Voluntary Environmental Support Group of Students, for the technical support of the periodic updating of Environmental legislation bank, under their general supervision and guidance.

In the present phase, the same trained group of members of the Voluntary Environmental Support Group of Students keeps on attending to its tasks –at least once a year– under the close supervision and guidance of the Manager of the University's Legal Service, who: a) Tracks down the legislative regulations and provisions that concern the organization and informs about them the Eco-Management and Audit System's Manager and the Environmental Team, while at the same time he/she puts forward recommendations to the Environmental Council of which he/she is a member and b) Updates –with the help of the aforesaid group of persons from the Voluntary Environmental Support Group of Students- in fixed periods of time the Nomological Database of the University.

More specifically, the Manager of the University's Legal Service keeps him/herself up to date regarding those legislative regulations and provisions in force that concern the environmental aspects of the University of Macedonia, through the following sources of information:

- Electronic databases of Communal and national legislation.
- Informative publications on legislative issues (books, journals, newsletters, Issues of the Governmental Gazette).
- The local Environmental Directorate of the Prefectural Self-Administrative Authority.



- The local Regional Directorate of the Ministry for the Environment, Physical Planning & Public Works.
- Legal Data Bases on the Internet, such as the websites of the:
 - European Union,
 - Technical Chamber,
 - Ministry for the Environment, Physical Planning & Public Works,
 - Ministry of Development.

✓ What we did right:

Shifting the process of updating the Environmental Legislation Database from the cognizance of the Consultants' Firm to that of the Legal Service of the organization, with the technical support of the Voluntary Environmental Support of Students

2.5. Step 5

Establishment of Environmental Objectives & Goals

Very often there seems to be some confusion between the terms “Environmental Objective” and “Environmental Goal”. Although interconnected, the two concepts have a different meaning. On the one hand, the term “Environmental Objectives” represents the more general and broader environmental pursuits of the organization, while, on the other, the term “Environmental Goals” expresses the gradual movement toward the accomplishment of specific goals, through measurable and tangible results within an unambiguous and fixed timetable. For example, an important environmental objective is the saving of electric energy, while an environmental goal is the reduction of the consumption of electric energy per employee and operative hours of the organization by 2.5% for the following year. Consequently, the establishment of **Environmental Objectives & Goals** constitutes the first step for the specification of the explicit commitments of an organization for the improvement of its environmental performance, and forms the basis for the designing of corresponding Environmental Programs.

The Environmental Goals of the University of Macedonia were formulated by the Environmental Team, were initially approved by the Eco-Management and Audit System's Manager and were then subjected to the process of their definitive approval during the 1st Meeting of the Environmental Council (10/5/2005).



■ Which are the EMAS requirements?

According to Supplement I-A.3.3. Objectives and goals of the EMAS Regulation (EC/761/2001):

- a) *The organisation shall establish and maintain documented environmental objectives and targets, at each relevant function and level within the organisation.*
- b) *When establishing and reviewing its objectives, an organisation shall consider the legal and other requirements, its significant environmental aspects, its technological options and its financial, operational and business requirements, and the views of interested parties.*
- c) *The objectives and targets shall be consistent with the environmental policy, including the commitment to prevention of pollution.*

■ Useful Advice

- Try to be specific with respect to the environmental pursuits of your organization, using appropriate and easy to measure indicators that can express with the highest possible accuracy your specific environmental performance.
- Exhibit restraint and realism with regards to your anticipations. It is better to exceed your scheduled goal than to not be in a position to materialize it.
- Define clear time limits for the accomplishment of your environmental goals in relation to the activity cycle of your organization.
- Take into consideration the suggestions if the members of your organization who are directly related to the activity sphere that each separate goal falls into.

How were the Environmental Objectives and Goals established?

The starting point for the establishment of the Environmental Objectives was, of course, the Environmental Policy of the University of Macedonia, in combination with the identified Environmental aspects of the organization's operation and the subsequent assessment of their significance. The major difficulty, however, was the translation of these environmental objectives into measurable magnitudes that we could monitor with accuracy and in regular time intervals, the establishment, that is, of the specific environmental goals.

For example, while the environmental objectives regarding the reduction in the consumption of electric and thermal energy were absolutely clear, these objectives could not be easily translated into measurable and reliable specific environmental goals. To initially selected indicators were "the per employee and per student consumption of electric and thermal energy", as evidenced on the invoices concerning the consumption of electric energy (electricity bills) and thermal energy (invoices for the purchase of petroleum). This specific way, however, could not



take into account the intensity of the usage of the lecture halls and laboratories of the institution, which has seen a dramatic increase in the last years, after the addition of three new Departments, the incessant operation of specialization and continuous education Programs in the afternoon and evening hours, and the use of the university's rooms by the Open University during the weekends. When it was found out that through the on-line System for the reservation of the university's lecture halls and labs there could become possible the regaining of the total number of hours per month of institutional operation, "the consumption of electric and thermal energy per hour of institutional operation" was recommended as an additional indicator. The further improvement of the aforementioned indicators would allow for the inclusion of additional factors such as the constant increase in the use of air-condition units in the offices and lecture halls, direct measurements etc. In conclusion, the process of selecting the appropriate environmental goals was a phase of experimentation and constant improvement, through successive work-meetings of the Environmental Team.

Specifically, the Environmental Goals of the University of Macedonia for the period 2005-2006 are the following:

- *Reduction in the consumption of electric energy per hour of operation of the teaching spaces of the university by 2%, as compared to the academic year of 2004-2005.*
- *Reduction in the consumption of thermal energy per hour of operation of the teaching spaces of the university by 2%, as compared to the academic year of 2004-2005*
- *Reduction in the specific per employee consumption of paper by 5% as compared to the academic year of 2004-2005.*
- *Recycling of 20% of the thrown away paper.*
- *Refilling of the ink cartridges used by 15%.*
- *Organization of (a) a new training cycle for users and auditors of the EMAS system, (b) two (2) educational excursions for the members of the Voluntary Environmental Support Group of Employees, (c) theoretical and practical training of the members of the teams of civil defense, (e) new cycles of information campaigns for the new recycling programs of the university, and (e) preparation and distribution of additional informative-educational material.*
- *Organization of (a) two (2) additional cycles of Environmental Education seminars for the students, (b) three (3) additional events-actions for the environmental sensitization of students and (c) attendance of courses of environmental content by at least 150 students.*
- *(a) Realization of e additional seminars on Hygiene and Safety, (b) Their attendance by at least 120 employees, (c) Maintenance of a system of Hazard Analysis and Critical Control Point (HACCCP) in the space of the restaurant and (d) Preparation and distribution of additional informative-educational material*
- *Organization of two (2) more one-day conferences of environmental content and participation in two (2) one-day conferences on environmental management and education.*



- *Commencement of the Program of Environmental Education for Students of Primary– Secondary Schools by the end of 2005, in a specially constructed Kiosk of the Municipal Services of Thessaloniki in the park of Nea Elvetia, and attendance of the relevant lectures by at least 350 students.*
- *Submission of at least two (2) proposals for participation in European or National Programs related to Environment and Education.*
- *More comprehensive promotion of –and information about– the Program of Aluminum Recycling for both Personnel and Students, and a more active participation of all in this program.*
- *Commencement of two (2) new Recycling Programs, Recycling of Batteries and Recycling of Electric and Electronic Equipment by 50%.*
- *Adoption of ecological criteria in the selection and evaluation of products and internal and outside services, to the point that this will be practically feasible and purposeful. Priority for the year 2005 is the attainment of the following: usage of environmentally friendly detergents by the cleaning workers, purchase of recycled paper up to 5% of the total quantity, usage of environmentally friendly coolants, purchase of low-energy-consumption lamps and electronic equipment (Energy Star, Energy Category: A-B).*

For further details regarding the Environmental Objectives and Goals of the University of Macedonia, please consult the Environmental Statement of the Institution, available also through the WebPages of the university.

✓ **What we did right:**

There has been extended a considerable effort for a realistic tracing of the organization's pursuits regarding the improvement of its environmental performance.

What we amended in the course of things:

Upon a recommendation of the Environmental Verifier –during the phase of the Preliminary Verificational Review– the Environmental Goals were put on a “per academic year” basis, for their best possible monitoring during the annually repeated reviews.



Μετά από πρόταση του Επαληθευτή Περιβάλλοντος -κατά τη φάση της Προ-επιθεώρησης Επαλήθευσης- έγινε αναγωγή των Περιβαλλοντικών Στόχων ανά ακαδημαϊκό έτος, ώστε να είναι δυνατόν η καλύτερη παρακολούθηση τους κατά τη διάρκεια των ετήσιων επαναληπτικών επιθεωρήσεων.

2.6. Step 6

Formation of Environmental Programs

For the attainment of the Environmental Goals, specific action plans are drawn up, with analytical descriptions of partial measures and interventions, timetables of materialization, assignment of responsibilities and jurisdictions, as well as specific human and economic resources, which are called **Environmental Programs** of the organization.

The Environmental Programs of University of Macedonia have been formulated by the members of the Environmental Team, through a process of initial design, practical testing and final review. The ultimate form of the Environmental Programs was initially approved by the Eco-Management and Audit System's Manager, and then submitted for its final approval to the 1st Meeting of the Environmental Council (10/5/2005).

■ Which are the EMAS requirements?

According to Supplement I-A.3.4. Programs(s) of environmental management of the EMAS Regulation (EC/761/2001):

- a) *The organisation shall establish and maintain (a) programme(s) for achieving its objectives and targets. It shall include:
 - i) designation of responsibility for achieving objectives and targets at each relevant function and level of the organisation;
 - ii) the means and timeframe by which they are to be achieved.*
- b) *If a project relates to new developments and new or modified activities, products or services, programme(s) shall be amended where relevant to ensure that environmental management applies to such projects.*

■ Useful Advice

- Create open working teams for the final formulation of the partial Environmental Programs of your organization, with the involvement and active participation of all the immediately interested parties.
- Validate the assignment of responsibilities and jurisdictions for the materialization of partial Environmental programs with the sanction of the highest hierarchy.



cal rank of the organization, so as for the implementation of these programs to be incorporated in the daily operation of the organization.

- Secure both the necessary funds and the necessary human resources for the successful completion of the Environmental Programs of your organization.
- Subsume the technical programs to the regular budget of your organization.
- Lay down a specific and realistic timetable for the materialization of the Environmental Programs of your organization.
- Create the appropriate internal audit and review mechanism for your Environmental Programs, based on the assessment of their course of materialization.

Which were the problems and difficulties that turned up during the implementation of the Environmental programs?

▷ 2.6.1. Program 1: Electric Energy Saving

The Program includes mainly a series of energy saving interventions in the refrigerating and lighting system of the university, such as: (a) Installation of electric sluice valves in the refrigerating system, (b) Installation of manually operated butterfly valves as pre-circulatory insulation instruments, (c) Replacement of faulty circulators, (d) Checking, maintenance and optimum regulation of the air conditioning, and (e) Gradual replacement of illuminators with low consumption lamps. Consequently, their materialization is totally dependent on the securing of corresponding financial and human resources. Despite the fact that the necessary funds had been tied up through both the EC subsidization and the participation of the university in the context of the Program EMAS-EDIN/LIFE02, a reduction in the university's subsidy on the part of the Ministry of national Education and Religious Affairs forced the Technical Service to temporarily "freeze" the energy related projects. The solution came in the form of a temporary loan from the Company for the Development and the Management of the Property of the University of Macedonia, (project partner), a fact that finally allowed the beginning of the works. The gradual continuation and completion of the works took necessarily a rather longer time than that originally anticipated, in direct connection with the available money-flows from university's regular budget. Moreover, due to the direct interconnection of the interventions with the functioning of the refrigerating system, these had to be realized during the university's break periods.

Integral part of the program had been the very important activities of environmental sensitization and education of the university's personnel and students on simple energy-saving practices, in cooperation with the Technical Service and EMAS Office. In actual practice, there has been incontestably proved that the transition to environmentally friendlier practices on the part of the university's employees and students (e.g., turning off lights and electric appliances when leaving their work space, better regulation and use of air-conditions, avoiding to overload the electric circuit) can very well have results equally important with those of "expensive" technical interventions. Consequently, we believe that many more



important steps can be taken in the area of employee behaviour-modification in the context of future efforts for the environmental sensitization and education of the personnel.

▷ 2.6.2. Program 2: Thermal Energy Saving

The Program includes mainly the following energy-related interventions in the university's heating system: (a) Installation of electric sluice valves for the monitoring of the heating circuits in the boiler-room, (b) Installation of automatism and of an electric switch board in the boiler-room, (c) Replacement of spherical sluice valves for insulation, (d) Replacement of faulty circulators, (e) Replacement of parts of the piping, (f) Pilot installation of thermostatic valves and calorimeters in offices for the individual adjustment of the temperature by the user, as well as direct measurement of the consumed energy. Moreover, the program includes the regular maintenance and the monitoring of the proper functioning of the three boilers of the university, the monitoring of petroleum- (crude oil) consumption and of the emitted pollutants, and the environmental sensitization and education of personnel and students.

As in the case of the Program of *Electric Energy Saving*, the annual cutbacks in the university's regular budget and the limitation of using only the break periods of the university for the planned interventions in the heating system have been the major reasons for the delay in the completion of the works. In this case too, the effect that the familiarization with and training about simple practices of environmentally friendlier usage of the heating system had on the daily behaviour of the employees was very substantial (e.g., rational adjustment of the radiators in accordance with the outdoor temperature, turning off the radiators upon leaving their work space, prudent usage of the radiators in combination with the "smart" usage of solar heating), while even more significant steps can be taken in the future.

▷ 2.6.3. Program 3: Reduction in the Consumption of Paper

This particular Program is based entirely on the formation of new environmentally-friendly modes of conduct, mostly on the part of the university's employees, such as: (a) Prompting for the utilization of both sides of the paper when printing or making photocopies, (b) Training of the personnel on the correct use of printers and photocopiers, (c) Reproduction of students' notes after the determination of the exact number needed, (d) Increased use of electronic mailing, (e) Re-use of scrap paper for draft works, (f) Reproduction of pamphlets after the determination of the exact number needed, (g) Installation of personal codes on the photocopiers, and (h) Maintenance of paper-use records by name or Department.

The voluntary character of the EMAS implementation necessitates the avoidance of explicit demands on the part of the top administration. As a consequence, the whole initiative is based on the positive disposition and the extent of environmental consciousness of the employees. In the case of a public Greek organization, the situation is even more difficult since every effort toward fashioning



new alternative modes of conduct is often met with not only indifference but also refusal for any –even the slightest– additional effort, phenomenon known as the “public-functionary mentality syndrome”. This program promoted an “environmentally-friendly behaviour guide” with the blessings of the Rectorial authorities and sought to invest in the constant sensitization and environmental education of the institution’s personnel. Yet, the most effective means has been proved to be the continuous publicizing and public acknowledgement and rewarding of positive models of environmentally friendly behaviour, mainly in the person of members of the university’s Voluntary Environmental Support Groups.

▷ 2.6.4. Program 4: Paper Recycling

The Program, with the collaboration of the personnel, the university’s Cleaning Service and the Recycling Service of the Municipality of Thessaloniki, includes the following actions: (a) paper collection in its sources of origination (offices, photocopiers, lecture halls and laboratories), (b) removal of the paper from its sources of origination and piling in the central selectors, (c) weighing and collection of the paper by the Recycling Service of the Municipality of Thessaloniki.

At first, the expected combination of ignorance and indifference toward the paper-recycling program on the part of both employees and students was clearly present. This, however, was dealt with a humorous campaign for the “reception” of the new big blue selector baskets for paper-recycling, a campaign unfolded with the cooperation of the Voluntary Environmental Team (creation and hanging or posting of handmade banners in central and much-frequented areas of the university), which was followed by an invitation for the distribution of small blue recycling baskets, accompanied by a tempting decorative plant and informative pamphlets, in the context of the celebration of the Universal Environment Day in 2003. Later, and in the course of this recycling effort, there was raised the issue of the quality and the degree of employee and student– involvement in the recycling program, as it was found out that the baskets were filled with everything but paper (e.g., rubbish, soft drink cans, food leftovers and many more ... At that point, a number of sensitizing stratagems were put into action, such as the manual sorting out of the baskets’ contents by the Eco-Management and Audit System’s Manager and the Coordinator of the EMAS Office themselves, video-clip projections, depicting environmentally disgraceful scenes from the university on a giant screen in the university’s luncheonette, personal motivating messages attached on the baskets, T-shirts with humorous messages worn by the members of the Environmental Team (e.g., “Don’t treat your paper as if it were garbage”, “For your sins to be absolved, dispose of your rubbish properly” etc., ...) with impressive until now results!

Worth mentioning here is the exceptional collaboration of the university with the Recycling Service of the Municipality of Thessaloniki, the ever ready and available officers of which made a substantial contribution during the planning stage of the program and continued to offer their technical support for its implementation



thereafter. Under the same spirit, there are still held periodic meetings providing information on the new recycling programs of the Municipality, which are then applied by the university as pilot projects. What becomes evident from all the above is the special importance a good collaboration with local agencies has for the successful accomplishment of difficult tasks, such as those of recycling and environmental waste management.

▷ 2.6.5. *Program 5: Refilling – Reuse of Inkwells*

The Program includes: (a) Briefing of the personnel and (b) Collection of toners and inkwells by the university's Supplies-Department. The limited participation of the personnel is counteracted with constant repetitive briefings regarding the existence and operation of this program, in the context of the broader campaign for the environmental sensitization of the personnel. The possibility of financial counterincentives has been suggested as a probable means for further augmentation of the relevant participation.

▷ 2.6.6. *Program 6: Environmental Sensitization – Training of Personnel*

The Program contains a series of environmental sensitization and education actions, such as: (a) General Environmental sensitization and awareness-raising, (b) Training in environmentally sound practices of everyday life, (c) Ecological activities and events, (d) Training in the system of environmental management, (e) Training of internal auditors and (f) Users' Training in the informational system of environmental management.

As already mentioned, the limited involvement and participation of the personnel in the university's environmental management - activities has been one of the most crucial issues for the successful accomplishment of the project. The disappointing results of the first and initially conventional publicizing events, in the form of educational seminars and open theoretical discussions, pointed at the necessity for "alternative" approaches and motivational stimuli. For example, interlinking environmental education with simple practices of everyday life, with the parallel translation of environmental consequences into tangible dimensions that exercise a direct effect on each and every one of us ("Rotating seminars on simple energy-saving practices and environmentally friendly actions in the work space"). Also, provision of practical training useful for dealing with critical instances and unanticipated exigencies within and outside the university ("First Aid Seminars in collaboration with the Hellenic Red Cross" and "Practical exercise in the use of fire-protecting and fire-fighting tools"). And, finally, provision of additional motivational stimuli in the form of environmentally oriented educational excursions to areas of exceptional natural beauty, invitations to luncheons or dinners and cozy recreational gatherings as well as offerings of small souvenirs as reminders of seminar participation.



▷ 2.6.7. Program 7: Environmental Sensitization – Training of Students

The Program contains an extensive range of activities aiming at the sensitization and training of students, such as: (a) General Environmental sensitization and briefing, (b) Training in sound environmental practices of everyday life, (c) Ecological activities and events and (d) Educational day-conferences, seminars, courses, excursions.

The manner of approaching the students was very different and one that yielded very encouraging results from the very beginning. An important contribution to this end was the design and realization of a groundbreaking for the Greek reality seminar series of Environmental Education under the title “Environment, Economic and Administrative Sciences”, which presented in a concise way (total duration 10 hours) the possibilities for the application of sustainable development practices in the context of the administration and management of a business corporation. This seminar constitutes an introduction to subjects such as those of Environmental Accounting, Environmental Management Systems, Reverse Logistics and Environmental Economics. The student turn-out was rather enthusiastic for the first three seminar cycles, although it dropped dramatically afterwards. The subsequent evaluation of the seminars indicated the need to renew the instructors by including successful administrative executives from well known businesses as well as the need for the closer interlinking of the seminars with the local job market, the realization of which has been planned to commence in the fall of 2005.

An important role was also played from the very beginning by the Voluntary Environmental Support Group of Students (~70 individuals), the members of which keep on contributing substantially –through their enthusiasm and creative imagination– to the designing of successful and unconventional sensitization-events with the use of image, sound and multimedia applications. Even in this case, however, it is considered necessary to provide motivating stimuli in the form of environmentally oriented educational excursions, appreciation dinners and recreational gatherings, and symbolic compensations for the work and technical-support groups.

▷ 2.6.8. Program 8: Improvement of Hygiene and Safety Conditions

The Program consists of the following actions: (a) Implementation of interventions aiming at the improvement of the Hygiene and Safety in the work and study areas, (b) Seminars on Hygiene and Safety and distribution of relevant educational material, and (c) Maintenance of the values of natural agents within the limits prescribed by the relevant legislation.

In the case of the program for the improvement of the Hygiene and Safety conditions, the involvement of the university’s employees was clearly greater, expressed by both their actual participation in the research that was conducted on the subject of work conditions and their laying down of complaints and putting forward suggestions for the improvement of the existing work conditions. The major problem encountered by the institution regarding issues of Hygiene and Safety is



the complete absence of a Safety Technician and a Labour Physician, despite the relevant and explicit legal requirements. The reasons for the particular noncompliance relate to the classic problems of the Greek Public Administration. More specifically, the University of Macedonia has formally applied to the Ministry of National Education and Religious Affairs for the approval of a relevant fund for the filling of the aforementioned vacant positions, but the application was rejected on the grounds that these positions should be financed by the university itself in the form of work contracts.

▷ *Program 9: Raising Environmental Awareness – Sensitization of citizens and students*

This Program covers a broad spectrum of activities and contains the following: (a) Environmental Sensitization events, (b) Environmental Training for students of primary and secondary schools, (c) Organization of day conferences on environmental awareness and information dissemination, (d) Participation in day conferences and congresses of an environmental and educational character, (e) Promotion of ecological activities through the Mass Media, (f) Creation of a data basis of environmental education programs from primary and secondary schools, lyceums, environmental organizations and public agencies.

The most important action –though also the most complex as it was proved in the process– was the construction of a model “Environmental Education Pavilion” in collaboration with the Municipal Authorities of Thessaloniki. The main problems encountered in this case occurred as a result of: (a) The change of the Vice Mayor for the Environment and Green Space during the materialization of the project, (b) the lack of coordination among the different services of the Municipality, (c) The refusal of the relevant to the project municipal employees to assume their responsibilities, (d) The refusal of the Forestry Department to allow the construction of the Kiosk in the originally chosen space (Municipal Zoo) and the necessity to select a new spot (Municipal Park of Nea Elvetia in the Charilaou area) and (e) The bureaucratic inelasticity with regards to the promulgation of automatic public tendering for the allocation of the project to the lowest bidder and for the provision of relevant supplies through the existing mechanism of the local self-government.

The fully equipped and furnished “Environmental Education Pavilion” is expected to be inaugurated in Autumn 2005, thanks to the generous, spirited and weariless efforts of the Supplies-Department of the Municipality of Thessaloniki. Once more, it became triumphantly manifest that the only salvation from the claws of the Greek bureaucracy is the support of key-persons in germane positions that have the necessary will and disposition to “accomplish their mission”.

▷ *2.6.10. Program 10: Submission of Proposals – Participation in European - National Programs of Environmental Content*

The EMAS Office has undertaken the responsibility to research, prepare and sub-



mit relevant proposals in the context of national and European Programs, as a supplementary source of financing the maintenance of the EMAS system even after the completion of the LIFE Program. Presently there has been approved the European Program “Virtual Copernicus Campus” in the context of the e-Learning Program, European Commission, Directorate - General for Education and Culture, for the creation of a European e-Learning Platform on issues of sustainable development, with the collaboration of 5 European Universities, pioneering in the areas of environmental management, sustainable development and e-Learning.

The critical factor of success for this particular program is the availability of relevant proclamations for national and European programs, which is a direct function of political concurrences and strategic planning on national and European level.

▷ **2.6.11. Program 11: Recycling of Aluminum**

The Program of Aluminum Recycling is a pilot operation on only two specific areas of the university, that is, in the university’s restaurant and small luncheonette where there takes place the selling and buying of tin canned soft drinks. Despite the installation of special yellow baskets for the recycling of aluminum (with a characteristic opening on the lid), and the clear sign “Only Aluminum”, the up to this moment results are disappointing. The movement of the basket outdoors, where the students usually consume the soft drinks they buy, has resulted in a small improvement in terms of participation. The relevant corrective measures include a new campaign for the University’s Recycling Programs, with the simultaneous commencement of the Recycling Programs for Glass, Plastic, Batteries and Electric and Electronic Equipment in Autumn 2005.

▷ **2.6.12. Program 12: Recycling of Batteries**

As with the Aluminum Recycling Program, the Program for the Recycling of Batteries is a pilot operation on three specific areas of the university, that is, outside the EMAS Office, in the library, and outside the Office of the Research Committee, with the use of special transparent recycling baskets in the shape of a giant battery and with the sign “Only Batteries”. The participation of mostly the employees is quite considerable and it is worth noting that the majority of the employees bring in for recycling the old batteries from their homes! The informative campaign of this Program will also take place at the same time with the commencement of the other new Recycling Programs of the University, in Autumn 2005, when the Recycling Service of the Municipality of Thessaloniki will be in position to manage the volume of batteries that will have been collected, their transfer, that is, to an appropriate battery-management agent abroad.

▷ **2.6.13. Program 13: Recycling of Electric Items and Electronic Equipment**

This specific Program has an exceptionally pioneer character in Greece, consider-



ing that the relevant national legislation was still in the process of being formulated when its operation was designed by the University of Macedonia. After a relevant market research, the EMAS Office pinpointed the one and only company in northern Greece that had the capacity to manage discarded electronic equipment. The commencement of this company's collaboration with the university's Centre of Computers and Networks presuppose the corresponding permission by the Legal Service of the institution. When this permission was granted, with a relative delay due to the summer vacations of 2004, the relevant national legislation had already changed and the management of electric and electronic equipment could be carried out only through the new National Agency "Appliances Recycling S.A." and certified intermediary "recyclers" in each region. This newly established mechanism will most probably be in a position to manage electric and electronic equipment in northern Greece in the Fall of 2005, with the significant contribution of the Association of Local Authorities of the Greater Thessaloniki (which is one of the main partners of the "Appliances' Recycling S.A." The university has already proceeded in the necessary communication with the aforementioned Association, and for the moment all the withdrawn material is being stored in a space provided by the university.

▷ 2.6.14. Program 14: Ecological supplies of goods – services

The part concerning the issue of "green supplies" is one of the most difficult in terms of its implementation, because of the legal and bureaucratic rigidity characterizing the Greek Public sector. The existing legislation imposes a selection-term on the basis of the criterion of the "financially advantageous buy", a fact that creates additional problems since the environmentally friendlier products are usually 20-25% more expensive than the respective conventional ones⁷. Moreover, the introduction of very specific environmental standards (e.g., the implementation of an Environmental Management System by the supplier of the products or the sub-contractor of services or the existence of an Ecological Label on a product) can have the effect of giving a rather "photographic" character to the bid and thus making it invalid, since there are very few suppliers in the Greek market with products that cover such prerequisites.

Today, the University of Macedonia does not make use of ecological standards in the selection and evaluation of the supplied products and services. However, through the collaboration of the EMAS Office and the Supplies Department, there have been taken all the necessary preparatory steps for the actual commencement of the gradual implementation of this program before the end of 2005. A safeguard for the facilitation of this demanding endeavor is the political will of the Rectorial

7. In actual practice, the expensiveness of the environmentally friendly products is fictitious, since it constitutes a function of their low demand. For example, the difference between the price of recycled paper when compared to that of conventional paper is in the order of 0,15- 0,20 € per packet of 500 sheets. Yet, the final difference in their purchase price may go up to 0,80 – 1,10 € per packet of 500 sheets, as a function of the discount offered by the supplier in relation to the total quantity of each product.



Authorities and the unceasing support of the proposals of the EMAS Office for the introduction of environmentally friendlier standards with the simultaneous elevation of this effort to a permanent and integral part of the university's operation.

For further details regarding the Environmental Programs of the University of Macedonia, please consult the Environmental Statement of the Institution, available also through the website of the university.

✓ **What we did right:**

The final formulation of the partial Environmental Programs of the institution was carried out after the pilot phase of their operation, their assessment in actual praxis, and their review on the basis of their results.

What we amended in the course of things:

- A greater weight was given to activities of environmental sensitization and education, even within the clearly “technical programs”, since, as discovered in actual practice, the “human behaviour” factor is the one which ultimately determines the success of the environmental activities.
- The implementation of the partial Environmental Programs was pursued through the involvement of as many persons as possible, in an effort to build a crucial mass of individuals acting as “role models” of environmentally friendly behaviour with regards to each separate program.
- There were exerted continuous efforts to develop and secure valuable allies and supporters from within a number of persons holding decision making positions (i.e., (responsible for Technical Services, Supplies Departments etc.) either by means of direct personal discussions or/and through parallel meetings with the Rectorial Authorities.

2.7. Step 7

Development, documentation and operation of the Eco-Management Scheme (EMAS)

This phase consists of the specification, through appropriate procedures, of all the necessary activities for the satisfaction of the requirements of the EMAS Regulation (i.e., spheres of responsibility, personnel training, provision of information to all interested parties, internal audit of environmentally oriented operation). The Eco-Management System has been structured so as to be composed of three levels divided as follows:



(a) *Strategic Level*: This consists of the Handbook of Environmental Management, describing the organizational structure and the environmental policy of the institution and referring to the procedures of the Eco-Management System.

(b) *Tactical Level*: This level is comprised by the general and specific procedures regarding the Eco-Management System, as in the following chart:

EP 100	Environmental Procedures	EP 250	Selection – Inspection of Sub-Contractors
EP 110	Document Control	EP 260	Supplies of materials and Equipment
EP 120	Legislative Requirements	EP 310	Waste Management
EP 130	Assignment of Responsibilities	EP 320	Paper recycling
EP 140	Training of Personnel	EP 330	Aluminum Recycling
EP 150	Training of Students	EP 340	Energy Management
EP 160	Collective Bodies	EP 350	Recycling of Batteries
EP 170	Internal – External Communication	EP 410	Monitoring of Environmental Indicators
EP 180	Internal Audits	EP 420	Calibration of Instruments – Devises
EP 190	Reviews – Modifications	EP 430	Equipment Maintenance
EP 210	Environmental Audit	EP 440	Corrective and Preventive Actions
EP 220	Environmental Objectives and Goals	EP 510	Hygiene and Safety
EP 230	Environmental Programs	EP 520	Coping with Unanticipated Exigencies & Circumstances
EP 240	Environmental Statement		

(c) *Operational Level*: This level of documents includes: all the Printed Material on the Environment, such as the Guidelines and the Records of the System as well as all the legislative texts, regulations and permits.

The entirety of the Environmental Procedures and of the relevant Documents – Records of the Eco-Management System is contained in the Informational System created specifically for the Environmental Management Program –EMAS- of the University of Macedonia. Central goal of the operation of this Informational System is the continuous monitoring and control of the effectiveness characterizing the implementation of the System. This makes possible the assessment of both



the total performance of the System as well as that of its partial procedures and programs. An additional goal is the elimination of the consumption of paper implied by the distribution of Procedure transcripts and the completion of relevant forms, as well as the maintenance of these documents in an electronic archive. The access to this Informational System is the exclusive privilege of the appointed by the Environmental Council users of the System. The reading and completion of the forms is carried out electronically through the Internet (URL: <http://www.emas.uom.gr/>) and the access is limited to only the users of the system.

■ Which are the EMAS requirements?

According to Supplement I-A.4.2. Training, sensitisation and competence of the EMAS Regulation (EC/761/2001):

- a) The organisation shall identify training needs. It shall require that all personnel whose work may create a significant impact upon the environment, have received appropriate training.*
- b) It shall establish and maintain procedures to make its employees or members at each relevant function and level aware of: i) the importance of conformance with the environmental policy and procedures and with the requirements of the environmental management system; ii) the significant environmental impacts, actual or potential, of their work activities and the environmental benefits of improved personal performance; iii) their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the environmental management system, including emergency preparedness and response requirements; iv) the potential consequences of departure from specified operating procedures.*
- c) Personnel performing the tasks which can cause significant environmental impacts shall be competent on the basis of appropriate education, training and/or experience.*

According to Supplement I-A.4.3. Communication of the EMAS Regulation (EC/761/2001):

- a) With regard to its environmental aspects and environmental management system, the organisation shall establish and maintain procedures for: i) internal communication between the various levels and functions of the organisation; ii) receiving, documenting and responding to relevant communication from external interested parties.*
- b) The organisation shall consider processes for external communication on its significant environmental aspects and record its decision.*



According to Supplement I-A.4.4. Documentation of the Eco-Management System of the EMAS Regulation (EC/761/2001):

The organisation shall establish and maintain information, in paper or electronic form, to:

- (a) describe the core elements of the management system and their interaction;*
- (b) provide direction to related documentation.*

According to Supplement I-A.4.5. Document audit of the EMAS Regulation (EC/761/2001):

- a) The organisation shall establish and maintain procedures for controlling all documents required by this International Standard to ensure that: i) they can be located; ii) they are periodically reviewed, revised as necessary and approved for adequacy by authorised personnel; iii) the current versions of relevant documents are available at all locations where operations essential to the effective functioning of the environmental management system are performed; iv) obsolete documents are promptly removed from all points of issue and points of use, or otherwise assured against unintended use; v) any obsolete documents retained for legal and/or knowledge preservation purposes are suitably identified.*
- b) Documentation shall be legible, dated (with dates of revision) and readily identifiable, maintained in an orderly manner and retained for a specified period. Procedures and responsibilities shall be established and maintained concerning the creation and modification of the various types of document.*

According to Supplement I-A.4.6. Operational audit of the EMAS Regulation (EC/761/2001):

- a) The organisation shall identify those operations and activities that are associated with the identified significant environmental aspects in line with its policy, objectives and targets.*
- b) The organisation shall plan these activities, including maintenance, in order to ensure that they are carried out under specified conditions by: i) establishing and maintaining documented procedures to cover situations where their absence could lead to deviations from the environmental policy and the objectives and targets; ii) stipulating operating criteria in the procedures; iii) establishing and maintaining procedures related to the identifiable significant environmental aspects of goods and services used by the organisation and communicating relevant procedures and requirements to suppliers and contractors.*

According to Supplement I-A.4.7. Alertness and response to conditions of emergency of the EMAS Regulation (EC/761/2001):

- a) The organisation shall establish and maintain procedures to identify potential for*



and respond to accidents and emergency situations, and for preventing and mitigating the environmental impacts that may be associated with them.

b) The organisation shall review and revise, where necessary, its emergency preparedness and response procedures, in particular, after the occurrence of accidents or emergency situations.

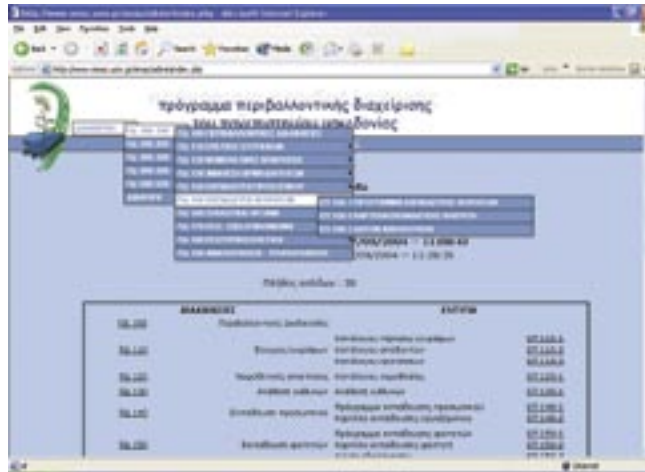
c) The organisation shall also periodically test such procedures where practicable.

■ Useful Advice

- Have the immediately interested parties (users of the system's procedures) get involved in the final formulation of the procedures concerning them. Their observations and comments may prove particularly useful for the proper design of the system.
- Incorporate the Environmental Management System EMAS to the existing management processes of your organization.
- Simplify –as far as this is possible– the system's procedures and printed forms so as to avoid pointless bureaucracy and the managerial inflexibility of the system.
- Provide continuous practical training to the users, especially during the pilot phase of the system's implementations.

How was the Informational System of the Environmental Management Put into Action?

Parallel to the process of designing and developing the Eco-Management and Audit Scheme (EMAS), the Department of Applied Informatics of the University of Macedonia carried out the analysis, design, and development of an innovative and groundbreaking for the Greek reality specialized Informational System for the technical support of the EMAS. This Informational System represents and exceptionally user-friendly Internet application, addressed exclusively to the users of the System and offering the possibility of presenting the complete set of the system's procedures and of filling in on-line all the forms relevant to the system, with a parallel electronic archive of all the new entries and of their older and revised versions, as well as of the important for the system documents (environmental policy, environmental objectives and goals, environmental programs, procedures, meeting proceedings, reports of internal audits, environmental statement, annual review of the system etc.).



As anticipated, at first the users of the environmental system received this new informational system with skepticism and a secret fear for the potential complexity and dysfunctionality of the “pilot” software. Very soon, however, and due to the relative familiarity of all the users with products of informatics as well as their continuous practical training in collaboration with the Consulting Firm (at least 1 hour per week), the Informational System was proved to be a most useful and valuable tool. More specifically, the Informational System constitutes an ideal educational means for the prospective new users of the EMAS, both for the direct and concise information it provides regarding the complete structure and operation of the system as well as for the practical and tangible application of the operation by means of creating and maintaining an archive of factual data.

Once more, the contribution of the Voluntary Environmental Support Group of Students was considerable since its members offered substantial help in collecting and entering into the system the main volume of data, so that what remained to be done by the majority of the users was to only carry out the further updating of the system.

✓ What we did right:

The direct involvement of the ultimate users in all the design, development, and documentation stages of the system conducive to their being upgraded from mere “helpers” to essential “contributors” to the whole endeavor!



What we amended in the course of things:

The continuous investigation of the potential for the expansion of the existing system resulted in the identification of the possibility to broaden the University's Program of Recycling and Alternative Waste Management with the addition of the following new "pilot" projects: (a) Recycling of Electric Batteries, in collaboration with the Municipality of Thessaloniki, which will most probably start in the Fall of 2005 and (b) Recycling of Electric and Electronic Equipment, in collaboration with the Association of Local Authorities of the Greater Thessaloniki and the "APPLIANCES RECYCLING S.A.", which is to also start in the Fall of 2005.

2.8. Step 8

Carrying out the Environmental Audit and the Scheme's Revision

The environmental audit of the Eco-Management System includes both the daily process of monitoring and measuring as well as the periodic internal audits of the system and its annual revision.

More specifically, it is imperative to create a mechanism for the **monitoring and measuring** of both the significant environmental consequences of the organization as well as the specific procedures related to these consequences, such as the periodic calibration of the monitoring instruments and the continuous feedback with respect to the existing legislative requirements (e.g., measurement of emissions of aerial pollutants in accordance with the relevant legislative requirements and examination of the reliability of such measurements). In this way, there becomes possible the tracking down of any potential **non compliances**, which require, in turn, the corresponding **corrective actions** for the solution of the problem and the avoidance of its recurrence, as well as the corresponding **preventive actions** for the avoidance of any potential deviations.

One more important and integral part of the system's monitorship is the maintenance of the relevant **environmental records**, comprised of all the recorded data regarding the environmental performance of the organization, all kinds of records considered as prerequisites by the relevant legislation and regulations in force, as well as all the data recorded in the course of the evolution of the environmental management system with respect to its measurable parameters and goals.

The **audit of the environmental management system** is the crucial safeguard for the continuous monitoring of the System's compliance with the requirements of the EMAS regulation. The annual **administrational review** is carried out on the basis of the findings of the internal audits, a fact that presupposes the examination on the part of the organization's highest hierarchy of the overall course of the environmental management system under the prism of the system's constant improvement. Every review of the system represents the windup of one cycle of its operation and the beginning of a new cycle, upon the establishment of new environmental objectives and goals and the formulation of the corresponding environmental programs.



■ Which are the EMAS requirements?

According to Supplement I-A.5.1. Monitorship and measurement of the EMAS Regulation (EC/761/2001):

- a) *The organisation shall establish and maintain documented procedures to monitor and measure, on a regular basis, the key characteristics of its operations and activities that can have a significant impact on the environment. This shall include the recording of information to track performance, relevant operational controls and conformance with the organisation's environmental objectives and targets.*
- b) *Monitoring equipment shall be calibrated and maintained and records of this process shall be retained according to the organisation's procedures.*
- c) *The organisation shall establish and maintain a documented procedure for periodically evaluating compliance with relevant environmental legislation and regulations.*

According to Supplement I-A.5.2. Non conformance and corrective and preventive action of the EMAS Regulation (EC/761/2001):

- a) *The organisation shall establish and maintain procedures for defining responsibility and authority for handling and investigating nonconformance, taking action to mitigate any impacts caused and for initiating and completing corrective and preventive action.*
- b) *Any corrective or preventive action taken to eliminate the causes of actual and potential nonconformances shall be appropriate to the magnitude of problems and commensurate with the environmental impact encountered.*
- c) *The organisation shall implement and record any changes in the documented procedures resulting from corrective and preventive action.*

According to Supplement I-A.5.3. Records of the EMAS Regulation (EC/761/2001):

- a) *The organisation shall establish and maintain procedures for the identification, maintenance and disposition of environmental records. These records shall include training records and the results of audits and reviews.*
- b) *Environmental records shall be legible, identifiable and traceable to the activity, product or service involved. Environmental records shall be stored and maintained in such a way that they are readily retrievable and protected against damage, deterioration or loss. Their retention times shall be established and recorded.*
- c) *Records shall be maintained, as appropriate to the system and to the organisation, to demonstrate conformance to the requirements of this International Standard.*

According to Supplement I-A.5.4. Audit of the Eco-Management Scheme of the EMAS Regulation (EC/761/2001):



- a) The organisation shall establish and maintain (a) programme(s) and procedures for periodic environmental management system audits to be carried out, in order to:*
- i) determine whether or not the environmental management system*
 - 1) conforms to planned arrangements for environmental management including the requirements of this International Standard; and*
 - 2) has been properly implemented and maintained; and*
 - ii) provide information on the results of audits to management*
- b) The organisation's audit programme, including any schedule, shall be based on the environmental importance of the activity concerned and the results of previous audits.*
- c) In order to be comprehensive, the audit procedures shall cover the audit scope, frequency and methodologies, as well as the responsibilities and requirements for conducting audits and reporting results.*

According to Supplement I-A.6. Administrational Review of the Eco-Management Scheme of the EMAS Regulation (EC/761/2001):

- a) The organisation's top management shall, at intervals that it determines, review the environmental management system, to ensure its continuing suitability, adequacy and effectiveness. The management review process shall ensure that the necessary information is collected to allow management to carry out this evaluation. This review shall be documented.*
- b) The management review shall address the possible need for changes to policy, objectives and other elements of the environmental management system, in the light of environmental management system audit results, changing circumstances and the commitment to continual improvement.*

■ **Useful Advice**

- Design a simple and functional mechanism for the auditing of your system. The EMAS requirement for constant improvement can only be secured by your being able to anticipate and prevent your mistakes, and if this is not possible, by your swift intervention with relevant corrective actions.
- Attach the appropriate importance to the Internal Audit process by means of the direct involvement and substantive participation of the members of the highest hierarchy of your organization.
- Provide the internal auditors with continuous practical training, especially during the pilot phase of the system's implementation.



How were the Environmental Review and the Revision of the System Realised?

All the users of the environmental management system (10 individuals, members of the administrative, technical and teaching personnel and representatives of the Voluntary Environmental Support Groups of Students) received training on the Management and Audit of Environmental Management Systems in the spring of 2004. As a consequence, the system's users themselves are also the Internal Environmental Auditors of the University of Macedonia, with each one of them being responsible for an audit-sector that is different from that of his/her immediate cognizance as a user of the system. For example, the representative of the Supplies Department audits the EMAS Office with regards to the procedures for the training of personnel and students, while in her turn the Director of the EMAS Office audits the representative of the Technical Service with regards to the Hygiene and Safety procedures and the procedures for Dealing with Unanticipated Exigencies. In this way, all the users acquire a general view of the system, and even of those procedures that have nothing to do with their occupational duties and their role as users of the environmental management system. It is worth noting, at this point, the substantive involvement of the Eco-Management and Audit System's Manager in the role of an Internal Auditor, a fact which, apart from lending prestige to the whole process, allows for a first hand assessment of the system's weaknesses and difficulties.

The first Internal Audits of the system were carried out by two-member teams, in the presence of a representative of the Consultant Firm, with the help of indicative check-lists of points to be audited, and in the context of a very relaxed and friendly climate. As it became evident, this particular approach assisted both auditors and users in perceiving the significance of their own role toward the proper operation of the system. Gradually, each one of the auditors developed his/her own style during the audits, enriched the original check-list of basic points to be audited and put forward suggestions for the improvement of the procedure under his/her audit.

During the period of internal audits there were also established weekly informative meetings, in the form of meals offered by the institution and shared by all the Internal Auditors and the Eco-Management and Audit System's Manager. In this way, the group of Internal Auditors were given the opportunity to discuss the problems they encountered during the first audits, share ideas and appropriate practices, and, most importantly, feel that they belong in a "team" which has a substantial role to perform and which enjoys the appreciation and support of the highest hierarchy of the institution.



✓ **What we did right:**

The double role of being both Users of the System and at the same time Internal Editors, gave all those directly involved the opportunity to have a holistic and in-depth view of the whole initiative, and thus the opportunity to value the importance of their own contribution.

What we amended in the course of things:

The first review of the system, which was submitted for approval to the 1st Meeting of the Environmental Council of the University of Macedonia (10/5/2005), contained the following suggestions with regards to corrective and preventive actions:

- Gradual adoption of Environmental Standards for the proclamations of the Supplies department.
- Decretory determination of the consulting role of the EMAS Office toward the Supplies Department of the university in relation to the introduction of environmentally friendly terms in its future proclamations.
- Promotion of the new Programs for the recycling of Electric Batteries and Aluminum.
- Commencement of the Program for the Recycling of Electric – Electronic Equipment. Incorporation of the corresponding procedure into the Environmental Management System.
- Allocation of the necessary funds for the materialization of additional energy saving projects.
- Further training of the personnel on issues relating to the operation of the Environmental Management System and to Hygiene and Safety.
- Organization of additional events for the sensitization of the personnel and students.
- New application to the Ministry of National Education and Religious Affairs for the filling of the vacant positions of a Safety Technician and a Labor Physician.
- Activation of Teams for Unanticipated Exigencies.
- Finding an appropriate agent for the management of the oil and fat wastes of the restaurant.
- Proclamation of an Organic position for the Director of the EMAS Office.
- Filling of the vacant position of the Director of the Legal service.



2.9. Step 9

Writing and publicizing the Environmental Statement

An environmental statement represents the basic means of informing the general public about the environmental performance of an organization, in the context of an Eco-management and Audit System. This information is submitted to the responsible agent (Environmental Verifier), it is verified and then publicized. The environmental statement constitutes a primary requirement of the EMAS regulation and one of the pivotal differences of this regulation when compared with the international model of environmental management ISO14001. The primary aims of the Environmental Statement are: (a) The public disclosure of the successful paradigms as well as the weaknesses and future goals of an organization in the context of the implementation of an environmental management system, (b) The development of a motivating stimulus for the active participation of an organization's personnel in environmentally friendly actions and events, (c) The official recording of the organization's environmental actions and of its respective environmental performance, (d) The strengthening of the commitment of the organization's highest hierarchical authorities to the implementation of an environmental management system and (e) The subserving of a future redesign of the system in the context of the principle of constantly improving the environmental performance.

The choice regarding the specific mode of publicizing the Environmental Statement is the exclusive responsibility of the organization itself and it is directly contingent upon the type of public it is addressed to and the funds available. For example, it could take the form of an expensive leather-bound edition or the simpler one of an electronic document in the Internet⁸.

■ Which are the EMAS requirements?

According to Supplement III-3.2. Environmental Statement of the EMAS Regulation (EC/761/2001):

The environmental statement is a tool for communication and dialogue with the public and other interested parties regarding environmental performance. The organisation shall consider the information needs of the public and other interested parties when writing and designing the environmental statement. The minimum requirements for this information shall be as follows:

a) a clear and unambiguous description of the organisation registering under EMAS and a summary of its activities, products and services and its relationship to any parent organisations as appropriate;

8. The European Commission has published a useful guide for the drawing up and publicizing of the Environmental Statement in accordance with the EMAS regulation, under the title "Guidance on the EMAS environmental statement", which is available at URL: http://europa.eu.int/comm/environment/emas/documents/guidance_en.htm



- b) the environmental policy and a brief description of the environmental management system of the organisation;*
- c) a description of all the significant direct and indirect environmental aspects which result in significant environmental impacts of the organisation and an explanation of the nature of the impacts as related to these aspects (Annex VI);*
- d) a description of the environmental objectives and targets in relation to the significant environmental aspects and impacts;*
- e) a summary of the data available on the performance of the organisation against its environmental objectives and targets with respect to its significant environmental impacts. The summary may include figures on pollutant emissions, waste generation, consumption of raw material, energy and water, noise as well as other aspects indicated in Annex VI. The data should allow for year-by-year comparison to assess the development of the environmental performance of the organisation;*
- f) other factors regarding environmental performance including performance against legal provisions with respect to their significant environmental impacts;*
- g) the name and accreditation number of the environmental verifier and the date of validation.*

■ Useful Advice

- Determine from the very beginning the public your Environmental Statement is addressed to and adopt the analogous style and language for the text.
- Use as a point of reference Environmental Statement texts of other organizations with a corresponding breadth of activities and environmental pursuits.
- Enrich the text of your Environmental Statement with the inclusion of tables and charts, in order for the relevant information to be provided in direct and schematic way.
- Chose a low-cost but at the same time very accessible manner to publicize your Environmental Statement through the Internet.
- If there are available financial resources, opt for not only the printing of your environmental statement but also its translation into a language of broader usage in the context of the European Union.

How was the Environmental Statement drawn up?

The draft plan of the Environmental Statement of the University of Macedonia was formulated by the Consultant Firm, on the basis of the informational material and the data gathered during the full course of the implementation of the eco-management and audit system. After that, the first phase of its critical reading was carried out by the Eco-Management and Audit System's Manager and the EMAS Office Coordinator.

The final formulation of the text took place after the acceptance and incorpora-



tion in it of the suggestions made by the Environmental Verifiers with regards to improvements, as these had arisen during the system's pre-audit. In other words, the option chosen was that of the direct assignment of the task to "technocrats" with expertise in Environmental Managements Systems, thus aiming at a final product of high quality and in full accordance with the requirements of the EMAS Regulation.

✓ **What we did right:**

The Community subsidy of the LIFE Program offered us the "luxury" of having the Environmental Statement printed in the form of a very mindfully prepared edition, as well as that of its translation into English, available on-line through the websites of the Project itself and of the University of Macedonia. In this way, the Environmental Statement of the University of Macedonia is the first such statement of a public academic institution available in the English language.

What we amended in the course of things:

In accord with the suggestions of the Environmental Verifiers, the final draft plan of the Environmental Statement was reformulated as follows:

- For the identification of the direct and indirect environmental aspects of the university's activities, services or products, there were also taken into account potential circumstances of unanticipated exigencies.
- In the assessment of the university's environmental impacts, all the criteria listed by the European Regulation of EMAS were taken into consideration, such as: the severity of the impact, the likelihood of the impact, the legislation and the interest expressed by different agencies (Senate, employees, students, local community), with the simultaneous specification of the score-range for each one of these.
- The reformulation of the Environmental objectives, goals, and Programs was made on an annual basis, aiming at the facilitation of their respective audits during the annual re-auditing on the part of the Environmental Verifier.
- There took place a further documentation regarding the access to legislative sources and the acquisition of information on legal and other requirements.
- There was provided a schematic presentation of the position of the EMAS Office and of the Eco-Management and Audit System's Manager in the context of the general Organizational Structure of the University of Macedonia.



2.10. Step 10

Verification of the Eco-Management and Audit Scheme (EMAS)

The last stage for the implementation of an Eco-Management System is its verification by an independent and accredited Environmental Verifier. This same verification constitutes also the simultaneous certification of the reliability of such system and of the organization itself.

More specifically, during the process of the **Verification of the Environmental Management System**, an independent and external to the organization accredited Environmental Verifier examines the Environmental Policy of the organization, its system of management, the internal audit procedures and the Environmental Statement in relation to the requirements of the EMAS Regulation. In case of compliance, the Environmental Verifier verifies the elements contained in the Environmental Statement of the organization.

Finally, for the organization to be registered in the **official EMAS records**, its verified Environmental Statement must be submitted to the relevant to the EMAS Qualified National Agency, accompanied by a completed form containing at least the minimum amount of information prescribed in Appendix VIII, and with the simultaneous payment of any possible required registration fees in accordance with article 16. When then National Agency is convinced –on the basis of the documents it has received (and mostly through investigations carried out by the responsible executive authority with regards to whether the organization complies with the nationally relevant environmental legislation)– that the organization fulfils all the requirements of the regulation at issue, it registers the said applying organization and assigns to it a registration number. The use of the EMAS logos certifies the existence of a verified system of environmental management and, correspondingly, the publicization of the verified environmental information.

The **EMAS logo** can be used by the organizations in the following cases: on verified and validated informational material, on verified environmental statements, on correspondence sheets of registered organizations, on informational material that advertises the organization's participation in the EMAS, on adds promoting relevant environmental products, activities, and services. On the contrary, the EMAS logo should not be confused with that of the Eco-Label and for this reason it cannot be used as a label on products or on product packaging and in combination with contrasting claims about other products, activities and services.





■ Which are the EMAS requirements?

According to Supplement V-5.4.1. Duties of Environmental Verifiers of the EMAS Regulation (EC/761/2001):

The function of the environmental verifier is to check, without prejudice to the enforcement powers of Member States in respect of regulatory requirements:

(a) compliance with all the requirements of this Regulation: initial environmental review if appropriate, environmental management system, environmental audit and its results and the environmental statement;

(b) the reliability, credibility and correctness of the data and information in:

- the environmental statement (Annex III, point 3.2 and point 3.3),

- environmental information to be validated (Annex III, point 3.4).

The environmental verifier shall, in particular, investigate in a sound professional manner, the technical validity of the initial environmental review, if appropriate, or audit or other procedures carried out by the organisation, without unnecessarily duplicating those procedures. Inter alia, the environmental verifier should use spot-checks to determine whether the results of the internal audit are reliable.

According to Supplement V - 5.6. Frequency of the Verifications of the EMAS Regulation (EC/761/2001):

In consultation with the organisation the environmental verifier shall design a programme to ensure that all elements required for registration with EMAS are verified in a period not exceeding 36 months. In addition the environmental verifier shall at intervals not exceeding 12 months validate any updated information in the environmental statement. Deviations from the frequency with which updates shall be performed may be made under circumstances laid down in Commission guidance adopted in accordance with the procedure laid down in Article 14(2).

■ Useful Advice

- Make sure that you get into contact with the Environmental Verifier at least two months before the desired verification date, so as to allow for the existence of ample time in order to carry out of the Pre-audit of the system and proceed to the necessary corrective actions that will follow.
- In your agreement with the Environmental Verifier, include the cost of the respective pre-audit, the annual re-audits, as well as the costs corresponding to the registration into the EMAS records.
- Make sure that the scope of the Environmental Verifier's accreditation (NACE codes) covers also the classification of the economic activities of your organization. If otherwise, he/she must apply as timely as possible to the National Accreditation Agency for the relevant extension of the scope of his/her accreditation.



- Take into consideration that the process followed by the responsible National Agency in order to examine the existence of complaints regarding the non-compliance of the organization with the appropriate environmental legislation –that is the process of proving that the organization fulfils all the requirements of the regulation at issue– can be rather time-consuming (up to a full year).
- Make sure that you make proper use of the EMAS logo in accordance with article 8 of the EMAS Regulation.

How did the Verification of the Environmental Management System take place?

As anticipated, in the case of the University of Macedonia, which was the first Greek university to be verified according to EMAS, there was no available Environmental Verifier with as an extended accreditation scope as that required for the verification of “Higher Educational Institutions” (NACE Code: 80.30).

For the purpose of accelerating the whole process (since the verification of the system was one of the basic ‘due to be delivered’ tasks in the context of the EMAS-EDIN/LIFE02 Program) the National Accreditation Agency investigated the possibility of the following solutions: (a) The extension of the scope of the Environmental Verifier’s accreditation in parallel conjunction with the verification process of the University of Macedonia and (b) The automatic broadening of the scope of the Environmental verifier’s accreditation on account of the less significant environmental consequences of the university when compared with the fields already included in the scope of his existing license in force (e.g., accreditation for chemical industries and manufacturing firms). In the end, the choice opted was that of the second solution

The final verification of the Eco-Management and Audit Scheme of the University of Macedonia was successfully realized in July 2005. The respective application for its registration into the official EMAS records is to be submitted in September 2005, following the approval of the extension of the Environmental verifier’s accreditation by the National Accreditation Agency.



3. CRITICAL FACTORS OF SUCCESS

The two-year experience of the implementation of an Eco-Management and Audit Scheme in accordance with the EMAS Regulation in the University of Macedonia (2003-2005) has made evident a series of parameters of vital importance for the successful outcome of such undertaking:

- **Clear and explicit political will and unceasing actual support on the part of the highest hierarchical authority**

The highest level of administration ought to actively declare its support of not only the Manager of the System but also of its users and internal auditors, by means of securing for them the necessary preconditions for the unimpeachable and continuous performance of their duties. Apart from the clear and explicit assignment of responsibilities and duties, and apart from the constitution of the Environmental Policy, the political will of the highest administrative hierarchy is made practically evident through mostly the active participation of the highest administrative executives in the daily activities entailed in the implementation of an EMAS System (e.g., participation in events connected with the publicization of the system, the environmental training, the internal auditing etc.).

- **Securing the necessary financial resources**

The reservation of a part of the organization's regular annual budget for the materialization of its annual Environmental Programs may very well seem self-evident but unfortunately this is not so in actual practice. More often than not there is a need for supplementary funds provided through the participation in national and European Environmental Programs. For this reason, it is wise to allow for a considerable proportion of the System's Management Team to get engaged in the researching, preparation and submission of relevant proposals. Alternatively, there should take place an investigation of the possibilities to create Sponsorship Programs, and particularly so for the activities pertaining to the environmental sensitization and awareness of the general public.

- **Active Voluntary participation of Employees**

The activation of a vital mass of people working for the organization to the direction of their voluntary participation in the Environmental management Program can be assisted by relatively non-conventional and alternative actions such as:

- ✓ Creation of voluntary teams from among active representatives of official bodies and other key-persons, who will act in an augmentative manner so as to motivate the rest (e.g., Voluntary Environmental Support Groups of the University of Macedonia)
- ✓ Periodic personal intradepartmental meetings aiming at the recoding of needs and/or suggestion on the part of the personnel
- ✓ Participation of the employees in formulating the program of future project events and benefits
- ✓ Prompting on the part of the University's Administration for a more active participation of the employees in the activities and events of the project



- ✓ More powerful initiatives for participation in the activities of the project (e.g., symbolic remuneration, benefits in kind-excursions etc.)
- ✓ Organization of social and recreational events for the purpose of reinforcing the sense of “team-belonging” to the users and internal auditors of the system.
- **By-passing the bureaucracy of the organization and other involved agencies**
- ✓ Organic incorporation of the managerial bodies of the Environmental Management System into the operative mechanism of the organization and formal sanctioning of their jurisdiction by the highest hierarchy of the organization.
- ✓ In the event of the existence of a partner-agent from the public sector, apart from the commitment of this agency’s leadership, it is imperative that there will be a specific individual or group of individuals that will hold the coordination as well as the necessary power to mobilize the bureaucracy of this public agency. The active involvement of this (these) individual(s) must take place in the earliest possible stage.



EPILOGUE

Concluding the current guide it would be useful to view the undertaking of the University of Macedonia under a wider European perspective, comparing our experience with similar cases of other European academic institutes and universities.

Currently there are 12 academic institutes (universities and technical colleges) implementing an Eco-Management and Audit Scheme according to the EMAS Regulation. The majority of them are located in Germany (A total of 10 universities/technical colleges: *Open University (FU) of Berlin, University of Paderborn, University of Bielefeld, Technical College of Bremen, University of Bremen, Technical College (FH) of Zittau/Görlitz, Technical University of Dresden, Technical College of Lübeck, University of Lüneburg, Technical College of Landshut*), in addition to the *Designskolen Kolding* in Denmark and lastly the *University of Göteborg* in Sweden. Furthermore, we should not overlook the academic institutes that have implemented an EMAS System at an earlier period (e.g., Technical University of Berlin, 2000: Max-Volmer-Institut and Technical College Furtwangen, 1996)⁹, or the ones that are implementing an Environmental Management System (EMS) according to the international standard ISO14001 (e.g., the University of Mälardalen in Sweden) or lastly the ones that are implementing a non-certified EMS (e.g., the consortium of the 18 universities and technical colleges “Higher Education Partnership for Sustainability-HEPS” in United Kingdom¹⁰).

An initial comparison of the special characteristics of the “green” universities in the European Union reveals –besides **the strong political will of the highest hierarchical authority**- the following common elements:

- **A high degree of maturity in the “environmental-friendly” mentality of the local community:** Cities with long tradition in environmental awareness issues and environmental-friendly practices may create a fertile ground for the massive participation of all local actors, especially of the youngest members of the community, in similar activities and initiatives. Thus, it becomes evident that it is extremely difficult to promote ideas, such as environmental management and total quality management, in cases that even the elementary perception of recycling and energy saving practices are missing.
- **The existence of capable and inspired promoters as “driving forces” of the initiative:** The successful design and implementation of an EMS may require a collective effort, but the initiation of the venture has very often a purely anthropocentric character, being favored by coincidences such as the presence of the right people in the right positions.
- **Assuring of the self-sustainability of the Eco-management Project:** Besides the external sources of financing (such as national and European Proj-

9. The relevant data derives from the presentation of Mr. Joachim Müller “*Environmental Management in German Institutions of Higher Education: Lessons learnt and steps towards sustainable management*”, Lüneburg, June 23-24, 2005.

10. http://www.forumforthefuture.org.uk/aboutus/heps_page1509.aspx



ects), the Eco-Management Project shall gradually invest in the exploitation of self-financing possibilities (e.g., through the provision of consulting services to other interested parties, or the utilization of the profits of the energy saving and recycling programs). An impressive example is the case of the University of Lüneburg, where the profits from the energy and natural resources saving and the recycling programs are sufficient to support a full-time position for an EMAS Coordinator. Moreover, a series of environmental projects –such as the energy self-efficiency of an entire building due to solar energy- are financially supported by subsidies from the member of the academic community.

The obvious remark that the University of Macedonia has merely accomplished an extremely small first step creates additional responsibility in order to intensify our efforts aiming at constantly higher and more difficult goals. The “major bet” remains to succeed in the further promotion and the wider acceptance of the ideas of environmental management and sustainable development, not only by the academic community, but also by the wider local community. The role of the European Universities may and must be substantial, surpassing the dry transmission of knowledge and know-how by joining their voices -through networking (e.g., “*The University Network for Sustainability-COPERNICUS CAMPUS*”¹¹ in Europe and the “*University Leaders for a Sustainable Future - ULSF*”¹² in north America)- for the promotion of the sustainable management of the planet as the only future alternative.

11. <http://www.copernicus-campus.org/>

12. <http://www.ulsf.org/>



USEFUL INFORMATION

- **EMAS-Helpdesk – European Commission, Directorate General -Environment:**
c/o Bradley Dunbar Associates, Scotland House, Rond-Point Schuman 6 – 8th floor, B-1040 Brussels, Belgium, voice mail: +32-2-2828454,
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- **EMAS Committee – Ministry of the Environment, Physical Planning & Public Works – Department of International Relations and Issues of the European Union:**
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- **For small - medium businesses:**
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Personal Website: <http://macedonia.uom.gr/~esartz>



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- 2001: The Commission's Recommendation of September 7th, 2001, regarding directions for the implementation of the regulation (ER) no. 761/2001 of the European Parliament and Council for the willful participation of organizations in the Community's System of Eco-Management and Audit (EMAS) [announced under the number αριθμό E(2001) 2503], *Official Gazette no. L 247 of 17/09/2001 pp. 0001 – 0023*.
- 2001: The Commission's Decree of September 7th, 2001, regarding directions for the implementation of the regulation (ER) no. 761/2001 of the European Parliament and Council for the willful participation of organizations in the Community's System of Eco-Management and Audit (EMAS) [announced under the number αριθμό E (2001) 2504], *Official Gazette no. L 247 of 17/09/2001, pp. 0024 – 0047*.
- 2002: Amendment of the regulation (ER) no. 761/2001 of the European Parliament and Council of March 19th, 2001, for the willful participation of organizations in the Community's System of Eco-Management and Audit (EMAS) (EE L 114 of 24.4.2001), *Official Gazette no. L 327 of 04/12/2002 pp. 0010 – 0010*.
- 2003: The Commission's Recommendation of July 10th, 2003 regarding the guidelines for the implementation of the regulation (ER) no. 761/2001 of the European Parliament and Council for the willful participation of organizations in the Community's System of Eco-Management and Audit (EMAS), with respect to the selection and use of environmental Performance indicators, *Official Gazette no. L 184 of 23/07/2003 pp. 0019 – 0032*.
- 2005: (in press): *Environmental Statement of the University of Macedonia*, University of Macedonia Editions, Thessaloniki.
- 2005: (in press): *Cost – Benefit Study of the Environmental management System of the University of Macedonia*. University of Macedonia Editions, Thessaloniki.



URL

International

http://europa.eu.int/comm/environment/emas/index_en.htm

The official WebPage of the EMAS, European Commission, Directorate General-Environment, constitutes the “bible” of the implementation of EMAS, including useful reference texts, educational material, advice, examples, statistical data and all the news on recent proclamations for relevant European competitions and conferences.

<http://www.inem.org/>

The WebPage of the International Network for Environmental Management (INEM), contains a multiplicity of bibliographic references, editions and examples, as well as useful on-line “tools” for the assessment of environmental performance and implementation of Environmental management Systems.

Greek

<http://www.minenv.gr/1/11/113/11309/g1130900.html>

The Website of the Authority Responsible for EMAS-Department of International Activities and Issues of the European Union of the Ministry of the Environment, Physical Planning & Public Works contains useful general information on the EMAS Program, library of legislative texts and guidelines, and new financing programs for the implementation of EMAS.

<http://www.axiosvios.gr/>

The WebPage of the Portal of the Ministry of Development on issues of Sustainable Development constitutes a useful point of reference and source of information for entrepreneurs and future investors, with a search-engine offering the possibility to look for relevant terminology, legislation, present situation, economic initiatives, and development prospects in each one of the Greek regions.

<http://www.esyd.gr/>

The WebPage of the National Accreditation System S.A. provides useful general information as well as a list of accredited certification agencies.

<http://www.uom.gr/emas/> and <http://www.greenuniversity.gr/>

The WebPage of the Environmental Management System of the University of Macedonia provides a thorough description of the process of implementing an Eco-Management and Audit System according to EMAS in the University of Macedonia, with useful informational and educational material, access to an wide legislative database with Greek as well as European Environmental Legislation, a database on Environmental Education, conference proceedings, news and photographic material.



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