José Rocha Ferreira

ENVIRONMENTAL SUSTAINABILITY IN PORTUGUESE MIDDLE AND HIGH-SCHOOLS

ATTITUDES, PERCEPTIONS AND IMPLEMENTATION

Science and Technology Department

UNIVERSIDADE ABERTA

Lisbon, December 2014

Dissertação apresentada para cumprimento dos requisitos necessários à obtenção do grau de Mestre em Cidadania Ambiental e Participação, realizada sob a orientação científica da Ex.ª Professora Dr.ª. Sandra Sofia Ferreira da Silva Caeiro, professora auxiliar da Universidade Aberta.

UNIVERSIDADE ABERTA

Lisbon, December 2014

Declaro que esta dissertação é o resultado da minha investigação pessoal e independente. O seu conteúdo é original e todas as fontes consultadas estão devidamente mencionadas no texto, nas notas e na bibliografia.

O candidato,

_____

Lisboa, 09 de Dezembro de 2014

Declaro que esta Dissertação se encontra em condições de ser apresentada a provas públicas.

A orientadora,

_____

Lisboa, 09 de Dezembro de 2014

The main hope of a nation lies in the proper education of its youth

Erasmus

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Obrigado Antero. Obrigado Elisabete. Para ti filhota.

RESUMO

Tendo em conta os atuais desafios ambientais, sociais e económicos com que os cidadãos se deparam numa base diária, existe uma exigência imposta aos jovens de hoje e decisores do futuro no que concerne à sua preparação para lidar com os desafios de sustentabilidade ambiental vindouros. Impõe-se por propósitos ambientais, sociais e económicos, uma análise do atual estado da educação na sua componente ambiental, não estritamente curricular, e numa etapa menos destacada - o terceiro ciclo e ensino secundário.

O atual estudo explora de uma forma global a sustentabilidade ambiental implementada e percecionada nas instituições de ensino de terceiro ciclo e ensino secundário Portuguesas, recorrendo a uma análise quantitativa e qualitativa. Os resultados do presente ensaio, discussão e conclusões, suportam-se num conceito de triangulação de dados. A recolha de dados baseou-se na aplicação e estudo de um inquérito por questionário enviado por correio eletrónico às diversas instituições de ensino do país e na realização e análise de um conjunto de entrevistas telefónicas a instituições selecionadas, tendo por base a primeira recolha dos dados do questionário.

A discussão realizada e resultados obtidos, pela baixa taxa de retorno, não permitem compreender de forma fiável o panorama nacional, mas deixam antever grande heterogeneidade e o pequeno número de iniciativas ambientais realizadas pelas instituições escolares. A reduzida sensibilização em relação à temática é também comum. A sustentabilidade ambiental implementada é muitas vezes mínima, tendo frequentemente na sua génese a simples redução de custos, sem qualquer planeamento ambiental e integração associados. A interação entre as entidades de ensino e o tecido empresarial envolvente, juntas de freguesia, câmaras municipais e mesmo governo central, em relação a iniciativas de sustentabilidade ambiental, é diminuta. A existência de sistemas de gestão ambiental é escassa e frequentemente muito simplificada. Falta de motivação, orientação e fraca sensibilidade ambiental são problemas reconhecidos. No curto e médio prazo, no entanto, muitas soluções estão disponíveis, sendo propostas neste trabalho.

PALAVRAS-CHAVE: 3º Ciclo e ensino Secundário, Ambiente, Comunidade escolar, Inquéritos, Sustentabilidade, Sistema de gestão ambiental.

ABSTRACT

The environmental, social and economic issues that citizens face in every-day life demand from the youth of today, - tomorrow decision-makers -, an adequate preparation to deal with the upcoming challenges. A study about the current non-curricular environmental education in middle and high-school institutions is essential at this time of great environmental challenges.

This study explores the implemented environmentally sustainable measures and the attitudes toward them in Portuguese middle and high-school educational institutions, using both quantitative and qualitative analysis. This work´s results, discussion and conclusions, are supported through data triangulation. The relevant pillars of this investigation were the implementation and study of an e-mailed questionnaire survey to the several educational institutions in the country and the analysis of twenty two telephonic interviews, conducted to selected institutions based on data collected on the questionnaire.

Given the low return rate of questionnaire responses, it was not possible to reliably understand the national panorama in this area of study. The data that were collected, however, pointed to a wide variety of implemented procedures, initiatives and knowledge, with a disappointing trend toward very little environmental awareness, commitment and responsibility, throughout Portuguese schools.

Implemented environmental sustainability in Portuguese schools is often reduced to simple cost-reduction measures, with no other planning or integration. The interaction between educational institutions and the business and corporate structure of the region, as well as with municipalities, city-hall´s and even the central government, is almost non-existent. The implementation of environmental management systems is uncommon and usually oversimplified. Lack of motivation, guidance, and weak environmental awareness are recognized problems in Portuguese schools. In the short and medium-term, however, many solutions are available and are proposed in this work.

KEYWORDS: Environment, Environmental management system, Middle and high-school, Surveys, Sustainability, School community.

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LIST OF ACRONYMS AND ABBREVIATIONS

. ABAE = Associação Bandeira Azul da Europa / European "Blue Flag" Association

.DGAE = Direção Geral da Administração Escolar / School Administration Central Management

. DGEEC = Direção Geral de Estatísticas da Educação e Ciência / Portuguese Education and Science Statistics Management

. EAS = Environmental Accounting System

. EMAS = Eco-Management and Audit Scheme

. EMS = Environmental Management System

. ENE = Estratégia Nacional Energética / National Energy Strategy

. ESD = Education for Sustainable Development

. ETMLD = Environment, Territory Management and Local Development Ministry

. EU = European Union

. *fr* = Relative frequency distribution

. GDP = Gross Domestic Product

. ISO = International Organization for Standardization

. ISO 14001 = Part of the ISO 14000 group, sets out the rules for Environmental Management Systems

. LBA = Portuguese Lei de Bases do Ambiente / Main Environmental Law

. MEC = Ministério de Educação e Ciência / Portuguese Education and Science Ministry

. PDCA = Plan-Do-Check-Act cycle

. PNAC II = Plano Nacional para as Alterações Climáticas / National Plan for Climate Change

. PNAEE = Plano Nacional de Ação para a Eficiência Energética / National Energetic Efficiency Action Plan

. RCCTE = Regulamento das Características de Comportamento Térmico em Edifícios / Thermic Performance of Buildings Regulation

. RCM = Resolução de Conselho de Ministros / Council of Ministries Resolution

. RSECE = Regulamento de Sistemas Energéticos de Climatização em Edifícios / Energetic and Acclimatization Systems Regulation

. SDC = Sustainable Development Coordinator

. SCE = Sistema de Certificação Energética e da Qualidade do ar / National Air Quality and Energy Certification System

. SDO = Sustainability Development Office

. SDW = Solid Domestic Waste

CHAPTER 1 – INTRODUCTION AND FRAMING OF THE WORK: WHY A STUDY ABOUT ATTITUDES, IMPLEMENTED AND PERCEIVED ENVIRONMENTAL SUSTAINABILITY IN PORTUGUESE MIDDLE AND HIGH SCHOOLS?

1.1 – STUDY CONTEXT

Private and public teaching institutions in Portugal, and all over the world, undoubtedly represent a privileged place to communicate ethical principles and knowledge to a large group of individuals, future pillars and leaders of our societies. At the same time, educational institutions are, by the large number of persons that in a daily basis depend on them, and by the somehow large, old an inefficient buildings where many are housed, heavy economic and environmental mechanisms. They are so mainly due to the excessive energy and water use, as well as CO_2 and Solid Domestic Waste (SDW) production. *Parque Escolar*, a Portuguese public company created in 2007 with the purpose of restoring and remodeling (in terms of usability and overall quality) many of the Portuguese public middle and high schools, should have been responsible for improvements in the environmental area. It was of little help in resource use management. Massive air conditioning systems were installed as well as increased number of bathrooms and covered areas (Custódio, 2011). Because of these changes, the costs of maintenance of schools tripled in many situations[1].

Adding to the already mentioned facts, Short (2010) defends in one of his studies[2] what some of us already know through common sense: This century will be one of continued global population growth, technological advancement, and subsequent burdens on the natural world from consumer demands. This author also defends that (…) *a population capable of understanding the complexity of environmental issues and actively participating in their resolutions is vital. The ultimate goal of environmental educators should be to facilitate the creation of this active citizenry*. Supporting even more this author ideas is also

[1] "Parque Escolar – Consumos energéticos triplicaram nas escolas requalificadas". "i" Newspaper. 07th March 2011.

[2] *Status In Environmental Education and Environmental Quality (2009 – Pub. 2010)*

the fact that a sustainable future is today much more than a choice or even an option, it's an inevitability. More than just offering higher degree courses in the area, full universities are now dedicated to the subject of sustainability, new business practices and environment[3].

In the last few years in Portugal several dozen of "environmentally friendly school activities", field studies and "educational programs" were developed and applied, with the aim to foster a deeper understanding of the environmental impact, economic sustainability and the need to ingrain active citizenship values in all of those who learn and work in educational institutions. Names like "Eco-Escolas", "Escola Energia", "EnerFixe", "Projeto Twist", "EEGS" or "GEEO" are some designations and acronyms that represent a small amount of the many projects implemented in schools. From kindergarten to high school, most of them had the purpose of evaluating and introducing "ecologically correct behaviors" and a corporate culture of respect for the environment and resource use.

Common sense tells us that a strict management of organizational structures brings competitive advantages, efficiency, and the consequent cost reduction, improving the image of the institution and it´s societal acceptance along the way. Given this, it can be asked: Is the effort made in the recent past having a real impact on our schools and our country´s sustainable development and economy? Or is most of the work ending in token attempts to show that the school has done something, when actually almost nothing has changed and there´s little more to show than written reports? Wouldn't it be that aiming for a sustainable future in schools can be translated in added value for the society and for those that live in it, allowing for anticipation of upcoming challenges? Can it not be said that international recognition of actions, products and human capital coming from a country, is a way to promote the country itself and preserve its environmental, social and economic values? Aren´t these the goals and values that the country should strive to achieve in our educational institutions?

Non-structured and participated observation of the author during 12 years of experience working in different educational institutions, throughout Portugal mainland, and the awareness of the continually increasing pressure on the environment, with the urge to act, was the initial motivation to pursue this research. The focus on middle and high-school institutions is linked not only with an important part of the author´s professional experience

[3] Please explore the example of SUMAS – Sustainability Management School, in Switzerland (http://www.sumas.ch/)

and interest, but also with the fact that only a small number of scientific research focus this schooling years. The need to frame and control the research in terms of time and population was also important.

1.2 – STUDY OBJECTIVES AND RESEARCH QUESTION

In the last few years in many schools the (…) *promotion and development of activities that backup a bigger energetic efficiency and endogenous resource use, as well as the development of several techniques and procedures leading to the efficient use of energy and local sustainable development* (Gaio, 2009). But up to what level and what percentage of schools and students fit this category? With what impact? What is the lasting impact on these institutions after the aforementioned programs have been implemented? Will students, parents, teachers, principals or local governments act accordingly to the conclusions and dynamism implied in many of the aforementioned initiatives? Why or why not? If action is being taken what would be needed to lead that commitment and behavior to the majority of the schools´ populations? Would a dedicated Environmental Management System (EMS) help? Trying to answer these questions is the main goal of this dissertation. Although buildings construction and associated environmental directives, as well as sustainable forest management, can be related with the environmental impact of some of the institutions analyzed, this was not the focus of this work.

The results of this study will contribute to a better understanding of the actual "state-of-the-art" in terms of Portuguese middle and high-schools environment sustainability initiatives and their possible results for a better environmental performance of the institution and their users. This study intends not only to help understand the commitment, knowledge, resources and motivation of those involved with the teaching institutions in a daily basis, but also comprehend the importance of an EMS as applied to traditional middle and high-school facilities in Portugal. Procedures and suggestions will arise from the obtained results, discussion and conclusions.

This study will closely investigate the global question of "how is environmental sustainability being perceived and implemented in middle and high-school institutions in Portugal". After investigating the different perspectives of study an analysis model will be built based on triangulation of data, supported by data collection through e-mailed questionnaire, telephone interviews and results discussion based in literature.

This study is organized in six chapters as follows:

Chapter one will explore globally the study objectives, context and research question.

In the second chapter the state-of-the-art of this research will be explored, including the legal framework that supports criticisms in the environmental management area related with schools, as well as the overall importance of Portuguese middle and high school facilities in terms of environmental and economic footprint, leading to the objectives of this investigation and research questions. Next, it will be discussed recent school environmental sustainability initiatives. Lastly, it will be explored the importance and actual application of EMS in middle and high school institutions and investigate other studies done in this area.

The third chapter will be dedicated to the research methods, data collection, processing, presentation and treatment, leading to results and discussion.

In the fourth chapter, results will be presented, framing the future discussion and leading to conclusions that shall structure a deeper analysis and comprehension of the topic.

In chapter five a comprehensive discussion will be made, attempting to embrace all the aspects of the research done, discuss possible improvements and, frame the conclusions.

Finally, in the sixth chapter, an overall evaluation will be made, leading to conclusions where strengths and weaknesses will be analyzed and suggestions for improvements and further research will be made.

CHAPTER 2 – STATE-OF-THE-ART

2.1 – LEGAL FRAMEWORK AND THE IMPORTANCE OF IMPLEMENTING ENVIRONMENTAL SUSTAINABILITY IN MIDDLE AND HIGH-SCHOOLS

Portuguese public environmental strategy related with education states that educational policy should aim for environmental awareness through "education for sustainable development" (Law n. º 19/2014, April 14th, 4th article). Also, participative citizenship and accountability, having in mind environmental protection and overall environmental quality improvement, are well defined goals for the present and near future (*ibid*).

Portuguese environmental law - *Lei de Bases do Ambiente* (LBA), 19/2014 from April 14th, declares in its second article that (…) environmental rights should be achieved through sustainable development promotion, supported in suitable management (…) of natural resources, aiming for the development of a low carbon society and a "green economy", rational and efficient in the use of natural resources. In the same article it is also stated that several levels of decision should be used (local, national, European and international) and (…) mobilization and coordination of all the citizens and social representatives should be made, in a participated process supported in active environmental citizenship.

In Portuguese law 19/2014, from April 14th, third article, seven specific principles arise, naming:

a) Sustainable development (…),

b) Intra and inter-generational responsibility (…),

c) Precaution and prevention (…),

d) Polluter-pays principle (…),

e) User-pays principle (…),

f) Responsibility (…),

g) Recovery programs (…).

These seven principles and their importance should be highly understood by all stakeholders in the schools and explored in national and international school curricula. Furthermore, they should be supported by the schools mission statement and management policies. A proper look over the Portuguese LBA leads the reader to basic curricular and managing guide lines, for institutions to follow for upcoming environmental challenges in decades to come. In addition, it is clear the need to create a healthy socially nourishing environment, and look onward to the social and cultural development of communities and general improvement of our quality of life. More specifically, the LBA calls for:

a) The right to healthy environment and quality of life (Chapter II, 5th article),

b) The right to participate in environmental decisions and to access environmental information detained by public entities (Chapter II, 6th article),

c) The obligation to protect, preserve and respect the environment (Chapter II, 8th article),

d) The appreciation of natural resources, goods and services from ecosystems, namely related to water, air, ocean, biodiversity, soil, underground and landscape components (Chapter III, 10th article),

e) The need to cross-over and integrate the environmental policies with other sectorial policies (Chapter IV, 13th article),

f) The need to implement environmental planning instruments at local, regional, national or sectorial level, framing environmental goals and actions, identifying responsible individuals and institutions and guiding its own execution and funding (Chapter V, 16th article),

g) The obligation to develop environmental assessment, assuring that future decisions will incorporate physical, economic, social, cultural and political impact. Ideal scenarios and different options should be considered (Chapter V, 18th article),

h) The obligation to use environmental performance continuous improvement instruments and to promote eco-efficiency, innovation and the adoption of Environmental Management Systems (Chapter V, 20th article).

UNESCO´s 2005-2014 Decade of Education defined Education for Sustainable Development as follows: *The role of education for sustainable development (ESD) is to help people develop the attitudes, skills, and knowledge to make informed decisions for the benefit of themselves and others, now and for the future, and to act upon those decisions.* This definition holds great responsibility in terms of activities and curriculum developed and moral and ethical decisions made in our schools.

Documents like the Portuguese *Plano Nacional de Ação para a Eficiência Energética* (PNAEE), with its origins from documents such as Directive number 2006/32/EU, from April the 5th, structure programs today that aim to improve the energy efficiency of the public buildings, increase the importance of renewable energies and change "behavioral patterns" in our communities, incentives that were the starting point for many of the initiatives that were seen in our teaching institutions over the last few years. PNAEE and other important documents implementation will be discussed ahead, and to them should be paid close attention, since they are at the forefront of policy on environmental sustainability. In addition to the PNAEE, there are several other noteworthy documents, including:[4]:

- SCE – The national air quality and energetic certification system – Decree-law nº 78/2006, April the 4th, resulting from the transposition to national Laws of EU directive n. º 2002/91/EU, December 16th 2002, relating to the energetic performance of buildings.
- RCCTE – Regulating the thermic performance of buildings, resulting from the Decree-law n. º 80/2006, April the 4th.
- RSECE – Regulating energetic and acclimatization Systems, Decree-law n.º 79/2006, April the 4th

Despite efforts to bring awareness to the public, all the different studies, guidelines and legal understandings of instruments like the PNAEE, the *Plano Nacional para as Alterações Climáticas*[5] (PNAC II) or the National Energy Strategy[6] (ENE), authors like Copley (2008), Gomes (2009), Namacau (2011) or Orr (nd), question the existence of a gap

[4] All the referred Decree-laws can be explored in http://www.dre.pt/sug/1s/diplomas.asp

[5] The Plano Nacional para as Alterações Climáticas was approved by the Resolução de Conselho de Ministros (RCM) n.º 104/2006, in August 23rd

[6] Approved by the RCM n.º 169/2005, October the 24th

between the study of all these documents and their actual implementation and application in our educational system.

Like Moreira da Silva, Portugal´s environment, energy and territory management minister (2013) stated, (…) *the actual problems or economic crisis should be no excuse to postpone or fail in preparing a sustainable future, but one more reason to act, since the facts are more than enough to prove how serious climate changes are and studies point to the fact that it can be much more inexpensive (5 to 230times…) to act than not to act, being on the mitigation or adapting to the actual problems*. In his last public interview, this minister was the one calling the attention for the fact that (…) *the changes cannot be confined to certain public or private companies, since there is a behavioral dimension* (in the holistic approach of this process) *that represents an essential cultural change (…).* Who then, is in a better position to lead this cultural change than the educational institutions?

Despite the aforementioned, by no means can be said that our schools should be managed in a strict corporate way. When implementing new regulations and procedures the overall feel of the school can easily be forgotten. Human relations and happiness, above all, must exist in a healthy education. Once this is established, only then can the school successfully implement the sustainability measures that are suggested in this work. Soleimani and Tebyanian (2011) have shown in one of their studies[7] that student's lack of happiness (extrapolated for all the schools´ stakeholders) can lead to *deficiency in flourishing of intelligence, creativity and education achievement*. This situation leads the reader to an obvious question: How will the schools principals/board of directors be able to create that "happy" environment? The findings from the same authors tell us that a very positive correlation exists between what they call "the four dimensions of creativity" and the overall happiness of the school, namely:

a) Initiating (ability to)

b) Flexibility

c) Motivation

[7] *The relationship between principal´s creativity and school happiness in secondary schools at Semnan City*, ICEEPSY, 2011, p 146

d) Endure

Not only do these “creativity dimensions” demand for a competent managing team and associated staff, but also simple improvements such as increasing light in the classroom, ensuring that there are proper heating and cooling systems, colorful classrooms and courtyard paintings, proper and well maintained green areas, can make school a happier place. It goes without saying that these welcomed efforts and changes also put pressure on the institution and country resources and environmental sustainability, as well as in the expectations of the student body to contribute to making their school a better place. Common sense tell us that the more bureaucratic and old-style a school is, the less attractive the school environment will be, which is why innovative school management, new ideas and proactive planning should be fostered. Accordingly to Soleimani and Tebyanian (2011), nevertheless, school principals´ motivation and new ideas are not enough to create happy environments that will allow for the implementation of those ideas. Instead, motivation of the staff, readiness to accept several proposals and provide proper feedback and conditions for the engagement of the personnel will lead to attractive school environments.

Increasing environmental sustainability in today´s educational institutions demands, with no doubt, serious work and commitment.

2.2 - ENVIRONMENTAL AND SUSTAINABILITY INITIATIVES APPLICABLE TO EDUCATIONAL INSTITUTIONS

An approach that sustains the need for a strict analysis of the environmental management being done in the educational institutions is the one supported by the European Union (EU) regulation number 1221/2009, from November 25th 2009, suspending EU regulation number 761/2001 and the decisions 2001/681/EU and 2006/193/EU, structuring the volunteer involvement of organizations in a communitarian Eco Management and Audit System (EMAS). This involvement should by no means be restricted to private or resourceful institutions.

Decision number 1600/2002/EU from July 22nd 2002 should also be taken into account, mainly because it identifies the need for the strengthening of volunteer partnerships between private and public companies as a beneficial approach to accomplishing the environmental goals of the near future. Again, the importance of involvement in an EMS and the incentive to analyze and publish detailed reports verified by external authorities about the sustainable development of institutions and their environmental performance is highlighted.

Pinheiro (2009) and Videira *et al* (2007) suggest several instruments and general principles in the search for environmental sustainability that can, in an ideal situation, be applied to middle and high school institutions. Those principles are:

- To value local dynamics and promote the best possible integration in terms of soil, natural ecosystems, surrounding landscape and heritage;
- To foster the efficient use of resources;
- Reduce when possible the impact of effluents, atmospheric emissions, SDW, noise and light/thermal pollution, with the purpose of ensuring environmental quality focusing on environmental comfort in the areas of air quality, heat, luminous and acoustics comfort;
- To promote sustainable socio-economic experiences, integrating life cycle costs, economical diversity, social interaction, involvement and control;

- Ensure the best sustainable use of the built existing spaces through environmental management and innovation.

A careful evaluation and monitoring of these criteria throughout an established period of time in national schools is called for, with the purpose of a "benchmark" environmental management system approach and obviously from an environmental sustainability point of view. The environmental impact and sustainability of educational institutions, in a similar way as any private or public company, can be monitored. Their adverse or benefic environmental changes, total or partially resulting from its activities, products and / or services, can be supervised, controlled and improved.

From an environmental management point of view, applicable in a teaching institution, three main tools can be appropriate: The EMAS, ISO 14001 norm, and, the education-oriented tool, *Eco-School* program. All of the three support themselves in the PDCA[8] cycle (Plan-Do-Check-Act) with a retroactive approach (Fig. 2.1). In all the aforementioned tools, at first, after a cautious observation, a group of objectives and processes are established to achieve desired goals, originating an outcome (product/results) that should be critically analyzed. Studying those results against expectations and searching for deviations will allow to understand the causes and the implementation of corrective measures. These measures will improve the initial plan and prepare for the next cycle or they will indicate areas where special attention needs to be given.

[8] Also called the "OPDCA" cycle, where the added "O" stands for observation.

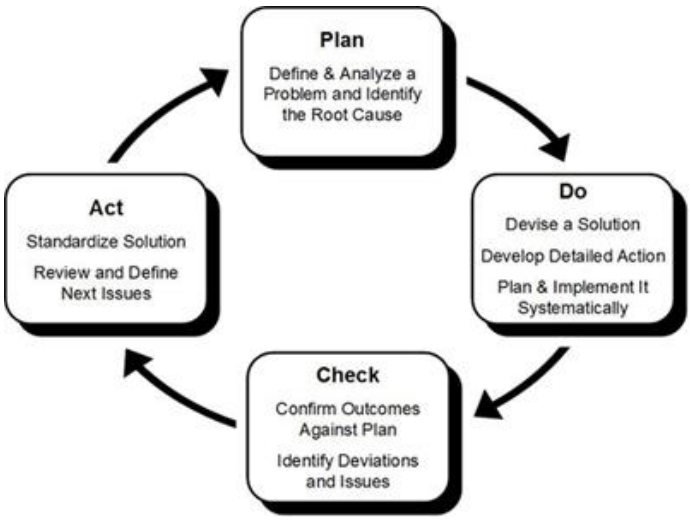

Figure 2.1 – The PDCA cycle positive feedback loop graph. *Source:* Allen, 2012.

EMAS represents (…) *an EU management instrument developed by the European Commission for companies and other organizations to evaluate, report and improve their environmental performance (...)* (EMAS, 2014). Currently with more than 4500 associated companies, accordingly to the EMAS website, the Eco Management and Audit Scheme intends to promote a continuous improvement in terms of environmental performance of institutions through the implementation of Environmental management Systems. Every organization should proceed to the evaluation and promotion of an "open dialog" with the public, as well as the active participation of the stakeholders in the environmental decisions. In terms of benefits, can be expect an organization to add value to its internal control, costs savings and improved public image.

As for ISO 14001, it corresponds to a set of international (and voluntary) environmental standards witch give the requirements for quality EMS´s in institutions. ISO (International Organization for Standardization) is an independent, non-governmental membership organization and the world´s largest developer of Voluntary International Standards[9]. The certification is not a requirement for the implementation of the standards themselves, and the process can even be an internally controlled set of procedures following a "spiral" logic, having in mind the best environmental management of the institution. Nevertheless, confirmation of the progress by independent external entities will without

[9] www.iso.org, 2014

doubt add value to the process in the sense that it brings value and credibility to the organization. In Portugal, as well as all over the world[10], the ISO 14001 standards are having high acceptance (Fig. 2.3) what shows the importance given by institutions and general public to the development, application and certification of effective environmental processes.

Apart from its different origins (European Committee for worldwide Standardization – EMAS / International Organization for Standardization – ISO 14001), the main differences between EMAS and ISO 14001 relate with the broader spectrum of action (in terms of business, companies and worldwide recognition of ISO 14001), the general tighter control over contractors and suppliers, verified public statements and obligation of initial environmental review imposed by EMAS. The frequency and methodology of audits in both systems also varies. A better understanding of the differences between ISO 14001 and EMAS Systems can be achieved exploring Annex I.

Eco-School initiative is an international program with *Agenda XXI local* based methodology and the aim to guarantee active participation of all children in the building of sustainable communities (ABAE, 2014). Somehow far from the seriousness and focus of other developed EMS, *Eco-School* program allows the essential procedures as a starting point for the environmental development of the Portuguese educational system: to collect relevant (comparable) information about the environmental performance of institutions; to distinguish process and product; to compare and scale performances throughout the years and "against" other organizations.

[10] Accordingly to the ISO Survey 2013 report, the number of ISO 14001 certifications all over the world grew 6% between 2012 and 2013.

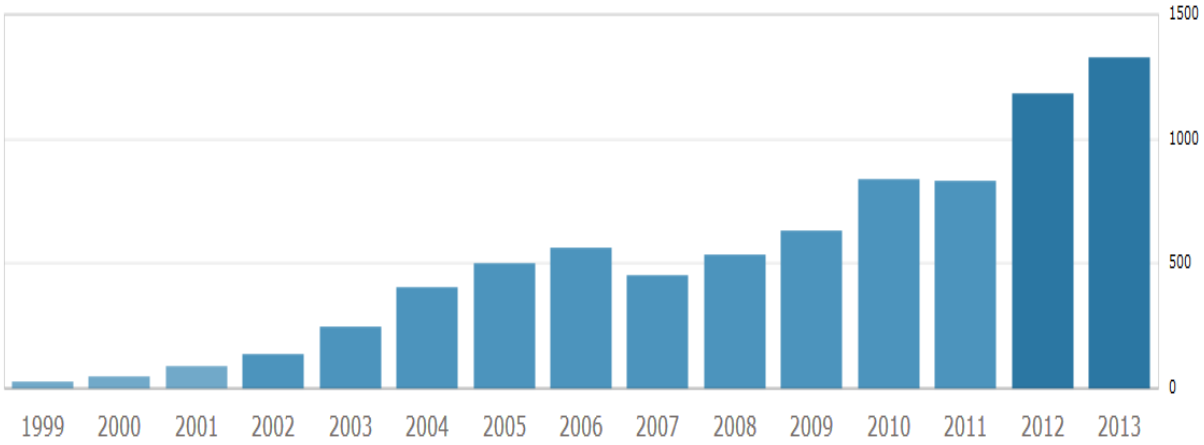

Figure 2.2 – Evolution of ISO 14001 certificates in Portugal. Source: ISO, 2013.

Flexibility, according to Bero (2012) is the key when dealing with EMS in educational institutions, and a comprehensive step-by-step approach like the one suggested in Fig. 2.3 can be the methodology to implement in our national educational institutions.

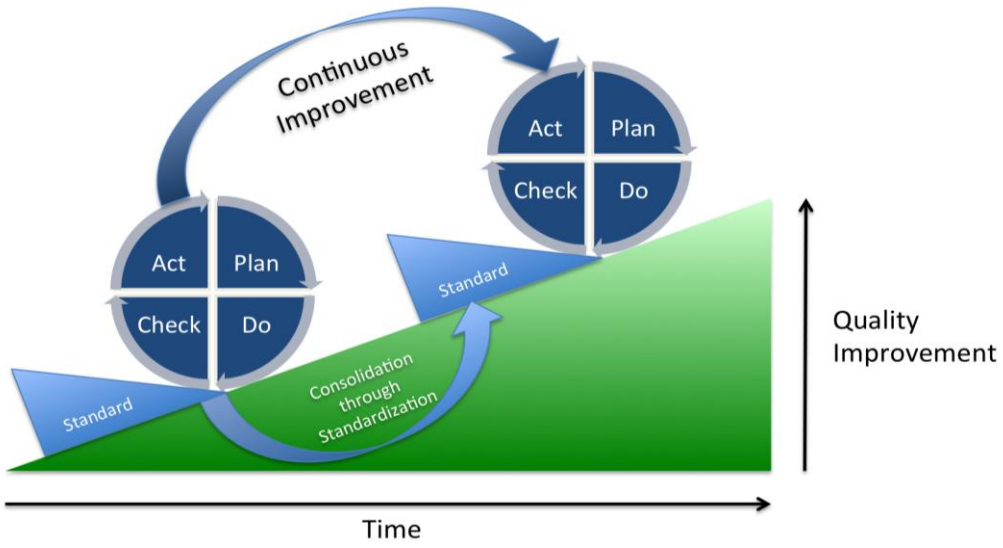

Figure 2.3 – Continuous quality improvement with the PDCA method. Source: Vietze, 2013.

In summary and accordingly to EMAS 2009 and ISO 2013 regulations, to properly evaluate the environmental impact and improve environmental performance of any school several details should be attended to, namely:

- Initial environmental review of environmental impacts and performance related with the activities, products and services of the organization.

- The establishment of environmental goals and meeting of respective deadlines, resources to be allocated and descriptive actions to be taken, as well as attributed responsibilities in what it might be said is the "environmental program" of the institution.

- To constantly analyze the best "environmental practices" in the sense of choosing the most efficient way to implement and develop the environmental program minding the conditions of the moment.

- The application of a certification process, evaluating the environmental studies done, adopted environmental practices and internal audit procedures applied.

- The "validation" of the aforementioned certification process through an external qualified entity that will verify if the analysis, improvements, processes and communications are being done in a credible and correct way.

Aiming for environmental excellence and medium to long term environmental sustainability, with the return on economic and environmental benefits inherent to this approach, will most likely demand adapted legislation. This legislation should frame simplified environmental management systems in the short-term and the aforementioned step-by-step approach, progressing to more demanding and ambitious organizational systems in a consolidated way (Fig. 2.4).

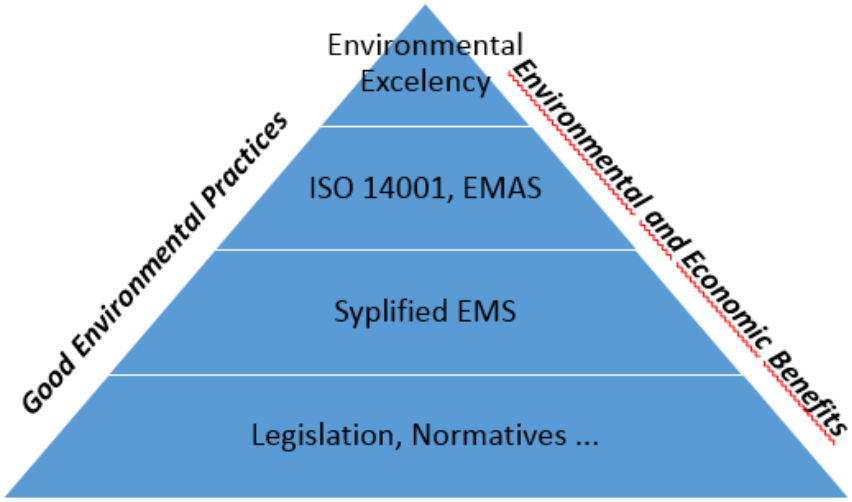

Figure 2.4 – Simplified relation between "professionalized" EMS and other educational and legal systems when striving for excellence in environmental management at educational institutions (adapted from Pinheiro, 2007).

A final word should go to the development of other environmental significant initiatives. Not having the possible positive impact of the aforementioned EMS, they can also be highly valuable in educational institutions, leading to increased awareness and more developed systems in the future. In this group can be included:

- Simplified Environmental Management Systems, "Eco-school" approach based or not, given their importance in the building of an environmental attitude, as supported by authors like Aragão *et al* (2011), Bradley *et al* (2010) or Copley (2008);
- Sustainable building approach and energetic sustainability training, and their associated label / prize systems, given not only the educational lines possible to explore but also the environmental impact and resource savings, as supported by authors like Custódio (2011) or Gaio (2009);
- "Ciência Viva" initiatives, responsible for the promotion every year of several scientific projects with a strong environmental component[11];

[11] In http://www.cienciaviva.pt/escolherciencia/projectos.asp the reader can find the list of approved projects.

- "Projeto 80", given its strong commitment with the efficient use of resources, reduction of our carbonic and hydric footprint, biodiversity maintenance and "green" entrepreneurship and economy[12];

- "Eco-Design" initiative, for the innovative approach linking creativity with the reuse of resources;

- Environmental sustainability report, according to the Global Report Initiative G4 guidelines (GRI, 2014), given its importance in the framing of a future EMS, and general communication and community approach, as defended by Arvidsson (2004);

- The existence of a "Science Club", "Environment Club" or similar, being one of the most common environmental initiatives in schools all over the country, with its importance supported by authors like Alexander & Britto (n.d.);

[12] In http://projeto80.pt/ the reader can explore the project in detail.

2.3 - ENVIRONMENTAL SUSTAINABILITY IN EDUCATIONAL INSTITUTIONS CONTEXT

Many authors like Arvidsson (2004), Barnes (2002), Bero (2012), Disterheft (2011) or Jabbour (2013), amongst others, have developed their research in the last few years in the area of university or college campus environmental sustainability, leading to a well-established study field and increased knowledge in the area. Some works (Hens, 2010; Kanyimba, 2014) also help in solving environmental problems and reaching a sustainable future in the area of primary education. Searching for the same development of work in the area of public or private middle and high-schools will return a lower number of results.

In educational institutions at middle and high-school levels, top-down methodologies in environmental management issues are common. Bottom-up approaches are always an option, somehow compromised, nonetheless, by the age of the students and their level of maturity, lack of awareness, motivation, knowledge and sometimes resources. "Green" unions, clubs or groups started by the initiative of middle or high-school students are not common. Environmental plans being born by the initiative of maintenance or administrative staff are also not commonly heard of in schools. This is much due to the above mentioned problems: lack of awareness, motivation, knowledge and sometimes, resources.

If proof beyond common sense was needed to support the assumption that a better environmental knowledge will lead to sustainable attitudes, Bradley *et all* (2010) and Jordan *et all* (2010) showed that ecological awareness is directly related, with statistically significant correlation, with environmentally favorable attitudes, and that students receiving instruction in both environmental issues and action strategies were more prone to demonstrate an increased level of knowledge of environmental awareness. These students also reported participating in a greater number of environmentally conscientious behaviors. However, other studies like those developed by Negev *et all* (2010), argue that no significant correlation can be found when analyzing 6^{th} and 12^{th} graders, in regards to knowledge and behavior, although ethnic and socioeconomic characteristics, also like the presence of adults who mediated children´s relation with nature, can be a very positive influence. Space to develop further research in this area and gather results clearly exists.

Overall lack of awareness in society and educational institutions has been a problem and according to Alshuwaikhat (2008), explored in Disterheft studies (2011, p 99) (…) *it is essential to include opportunities for public participation, as the process will affect the whole institutional community*, and (…) *EMS, public participation and sustainability teaching (...)* are three very important pillars in pursuing the goal of a sustainable future. Allowing for schools to solve problems in their own individual ways and believing that preparing students in the present with a sustainable future in mind should be the path to follow.

In some countries, Switzerland being one example, most of the universities are obligated to submit annual environmental reports about their environmental policies, structures and actions, as a way to contribute to the sustainable development of the society (Arvidsson, 2004), a requirement that should be followed by the other educational institutions for the same reason. Nevertheless and without any previously implemented EMS, many stop there, simply with reporting, and not going any further toward aiming for an ISO 14001 certification or similar. Findings of the same author conclude that smaller institutions will more easily implement a successful EMS, given the better ability to mobilize the community around a single goal. Lozano (2011) supports the work of Arvidsson (2004) with the results of his studies, showing that *sustainability reporting in universities is still in its early stages (both in numbers of institutions reporting and in level of reporting) when compared to sustainability reporting in corporations*.

2.4 – MIDDLE AND HIGH SCHOOLS IN PORTUGAL: A BRIEF CHARACTERIZATION

Accordingly to PORDATA[13] (2013), Portugal had in the 2012-2013 school year 411.238 students attending high school (Portuguese *ensino secundário* – 10th, 11th and 12th grades), 437.713 attending middle school (Portuguese *terceiro ciclo* – 7th, 8th and 9th grades) and 83.525 teachers supporting this student population. In terms of distribution of students (Portugal mainland – *Portugal em números,* 2012), the north of the country hosted 40%, the center 22%, Lisbon area 27%, Alentejo 7% and the Algarve 4%. These students and teachers make up almost 10% of the entire Portuguese population. If those working indirectly with middle and high school educational institutions were to be taken into account, from the food transporters to the school bus drivers, the parents and the private companies that manage the maintenance of many of the educational institutions devices, this number would increase even more.

In the Portuguese educational system, high-school curricula changes accordingly to the chosen area of study, varying between "Natural Sciences", "Arts", "Humanistic" or "Socio-Economical Sciences". The students and family can choose between courses oriented to the progression of studies in the university or oriented directly to the working market ("professional courses").

The national educational system faces today several challenges, recognized by Fialho (2009, p.145), when in his study concluded that the promotion of a collaborative school, with improved leadership and consolidated self-evaluation processes, are procedures not commonly seen, but that will lead to the improvement of the educational system. Quintas and Gonçalves (2012) also state that the actual leadership model should not be centralized, advocating availability of information, multiple leaderships and articulated share of responsibility and goals. The same authors defend that principals have reduced influence in most of the educational institutions procedures, and the intermediate leadership (teachers) is commonly not defined or organized, leading to the lack of a clear strategy and prospective

[13] PORDATA is a Portuguese official, up to date and certified statistical database about the country and EU sponsored by Fundação Francisco Manuel dos Santos. Educational data can be accessed at http://www.pordata.pt/Tema/Europa/Educacao-27

guidance. Alentejo, Lisboa e Vale do Tejo and Algarve are the regions of the country where a simplistic normative vision of the School management are most commonly seen.

Pereira and Moreira (2007) were able to conclude in one of their studies[14] that high-schools were, in the last decade, inefficient in terms of academic results, when compared against the invested resources. In the same study it was possible to conclude about the positive relation between areas of the country with more resources and superior academic results, and also between private institutions management and better performance of the students.

Not only in human resources, but also economically speaking, an average middle or high-school in Portugal, like EB 2/3 Dr. António de Sousa Agostinho, with 685 students and part of Agrupamento vertical de Almancil, represents a heavy mechanism. This school spends in a monthly basis, in the words of its biology teacher and future responsible for the environmental sustainability of the institution, Mr. Sérgio Luiz, an average of 2900€ in electricity, 400€ in gas and around 720€ in water. And these numbers *increase even more in the winter*, accordingly to the same teacher. Portugal spends currently more than 6.2%[15] of its Gross Domestic Product (GDP) supporting the educational system.

Keeping in mind that in 2013 the country hosted almost 590 middle and high-school institutions, and that in Portugal alone, almost 850 000 students (Pordata, 2014) study on a daily basis in the middle and high school establishments (higher-education hosted in 2013 371 000 students - 2.3 times less in comparison), a deeper reflection should be made in the area of implemented environmental sustainability of public and private middle and high-schools, the scope of this study. This disparity of numbers, by itself, is more than enough to justify a deeper study. The question should be made: up to what level can some of the knowledge acquired in the elementary education levels, and with the studies developed around university campus environmental sustainability, be extrapolated and implemented, with the necessary adaptations, to the middle and high-school realm?

[14] "Eficiência das Escolas Secundárias Portuguesas: Uma Análise de Fronteira de Produção Estocástica"

[15] In report "Repensar o Estado – Algumas contribuições para a reforma da despesa pública", January 2013.

CHAPTER 3 – METHODOLOGY, DATA COLLECTION AND ANALYSIS

Educational research is an activity of cognitive nature, consisting of a systematic, flexible and objective study process, contributing to explain and understand educational phenomena.

(Coutinho, 2005, p.68)

3.1 – RESEARCH DESIGN AND METHODOLOGY

If on the one hand numerical evaluations of collected data allow us to apply statistical procedures that lead to useful conclusions, on the other hand, to go in depth on the topic and try to understand the "how" and it´s complexity, a mixed methodology with emphasis in the qualitative research was the chosen approach. Multiple strategies were used (questionnaire, interview, pre-existent data). Not only numbers, but also words (quantitative and qualitative data) were collected with the purpose to (…) *built a complex, holistic picture (…) reporting detailed views (of participants) and conducting the study in a natural setting* (Bogdan and Biklen - 1992). Supported by the studies of the referenced authors one can also conclude the qualitative research support adopted as adequate, since a lot of attention should be dedicated to the process, rather than only on its outcomes.

To reduce observer and respondent bias and properly fit the desired goals of this investigation, an e-mailed questionnaire survey was conducted to the entire population of mainland Portugal middle and high-schools, representing an initial large group of 583 institutions. Posterior telephone interviews to selected institutions were made to confirm and complement some of the answers given in the questionnaire, in particular to the institutions that have environmental sustainability initiatives implemented. Statistically the sample had the purpose to be representative, impartial and stratified.

From the initial research it was concluded that developing only a quantitative investigation would not suffice. Aiming to understand only the "why" with numbers, scales, closed-end questions or statistical analyses, and exploring only the causes, like defended by

Rodrigues (2010), would have been insufficient. Implementing a "case-study", with such different possible realities, would also be fully unsatisfactory in terms of collected data. Nevertheless, addressing the 583 educational institutions, the effort was made to obtain random and statistically representative data from the analyzed population. Secondary (statistics and data-based) and primary (observation, survey and interviews) data collecting methods were used.

The chosen population was purposeful to the study - all middle and high-schools enrolled in Portuguese educational institutions in the school year of 2012/2013 – with the data initially obtained from a bought database originated in Direção Geral de Estatísticas de Educação e Ciência (DGEEC) / Ministério da Educação e Ciência (MEC).

How many schools have energy saving equipment, how much water does an average school use every month or who delegates responsibility for the environmental subjects of the school are easily quantifiable data. Nevertheless, understanding the motives for the energy saving equipment's application, the reasons for the large resource use, the stakeholder's commitment towards the environmental sustainability of the institution, or the motives and effectiveness of delegating environmental issues in one or other school participant are very important findings, that cannot be easily translated unless by using questionnaire surveys. The different contexts where, when possible, seen from an "insider" perspective in the interviews, not assuming preconceived hypothesis or assumptions, using part of the line of study followed by Raos (2000) – but never trying to follow a "case study" approach – and trying to "jump" over the possible problem that could represent the large initial sample, sure that a rich and detailed description would give the reader a broader, (though accurate) understanding of the phenomenon in study. Every school worker opinion was considered to be important and taken into account.

After the e-mailed questionnaire data was collected and analyzed, specific answers were selected for the reason that they stood out in some way and the institution responsible for the answer was asked for an open-ended interview, with the purpose of adding richness of details to the investigation. Instead of doing a simple case study with just one school, as has been done many times, this study approach chose to have an in-depth follow-up interview with thirty selected educational institutions, in order to get the better possible idea of this topic on a national level.

Before and after the interviews Tesch´s (2002) ideas about de-contextualization of the process of interview were used. Defining the topics, sample, and planning the instruments to proceed to an evaluation was done, since the collected volumes of data intended to be segmented in smaller "units of ideas, episodes or pieces of information" (p. 166). An effort was done to separate some data from their context with the purpose of putting them back together (re-contextualization process) enabling the researcher to observe the big picture. Any large volume of data collected would have to be reduced to convenient and manageable amounts, for what systematic segmentation was used when possible.

3.2 – SURVEY DESIGN FOR DATA COLLECTION

3.2.1 - THE QUESTIONNAIRE

In terms of the data collection procedures, after research, a semi-structured written survey (Annex II) was developed with the main aim to known the environmental initiatives that are being developed in the educational institutions, their main drivers and follow up and also the involvement of internal and external stakeholders on those processes.

The questionnaire was divided in four main parts:

- General school and questioned person information's (although name of the individual answering was not asked with the purpose of increasing the number of returned questionnaires);
- Environmental initiatives in the institution and it´s continuity;
- Stakeholder's involvement;
- "Other´s" group, were questions like existing interactions with private / public companies in the area of environmental sustainability, knowledge of EMAS or ISO 14001 norm, the existence / importance given to EMS, the qualification / training effort of the intervenient in the environmental area or the main causes for the problems (if existing) in implementing and promoting environmental initiatives were asked.

The questionnaire was semi-structured, with open and closed questions, trying to avoid double-barrel or ambiguous questions and loaded or leading questions. Category type, ordinal and continuous questions, in terms of level of measurement, were used. The use of some recall-dependent questions was unavoidable and a *Likert scale* similar approach was used several times. Content, language, type and sequence of the questions were adapted to the target population.

When developing a questionnaire to apply to a large sample of schools (583) the testing of several hypotheses would have to be done implicitly or explicitly in some of the several questions, aiming to statistical relations when possible. The option of an e-mailed

questionnaire was chosen over paper survey, given the wide geographic area being covered, time and money restrictions. The convenience to those being questioned, since the survey could be answered in any place, at any pace and any hour of the day was taken into account. The survey in its chosen form (*Google forms*) allowed for an easy codification of the collected data, posteriorly transformed in a *Microsoft Excel* database.

The fact that answering this survey could also be a catharsis to further thinking about the subject in some way to those answering it should not be undervalued, since parallelism can be established with Feigelman *et al* (2012) research, although in a completely different area of study.

Some of the disadvantages of an e-mailed survey that Hoz (1985) and other authors identify are low return rates (with the representation of the sample being difficult to establish), questions badly interpreted, postponed clarifications and the inability to observe the respondents. Some of those limitations were clarified by the telephonic interview or by e-mail when possible. The survey was kept as short as possible, with a predicted (and verified) 10 minutes duration.

None of the questions was compulsory in the answer, with the purpose to increase number of answers. The cultural level of the ones responding to the survey was taken into account.

The questionnaire was tested in four different high-schools and revised to form a final document to be sent by e-mail to the chosen institutions. The e-mail was sent January 19th 2014, 15 days after the beginning of the second period of the school year, when the institutions are normally stable in terms of personnel and internal procedures. The questionnaire was to be answered by one element of each of the main representatives of the school "staff", being: management team, teachers, administrative personal and duties monitors. Following Tuckman´s (2000, p. 343) research, responders where sent an e-mail explaining the objective of the investigation and they were assured of anonymity protection. They were informed about study´s endorsement and the identity of the researcher and they were asked for cooperation and given directions as to how to complete the survey. In the same e-mail, at the end of this explanation it was available the link to the survey.

A second e-mail was sent in an effort to increase returned e-mailed questionnaires, but telephone contact (as suggested by Dias *et all*, 2008) was not attempted given the limited time and large population.

From the original list of 583 middle and high-schools to be e-mailed and where the questionnaire would be applied, only 464 were sent questionnaires. The remaining 119 institutions, representing 20.4% of the initial population, were unable to be contacted mainly due to outdated contacts in the bought database, since the decree-law n.º 75/2008, from the 22nd of April (Autonomy, administration and management organization system in schools) required schools to be organized in "mega groups" in the same geographical area, which led to several changes in the institutions contacts from 2009 to 2013. The institutional email of each of the 119 schools was independently checked, and despite some being up-to-date, they constantly returned the emailed questionnaire with "domain name not found", "mailbox unavailable", "rejected by the server" or "relying denied" automatic answers.

3.2.2 - THE TELEPHONE INTERVIEWS

The purpose of the follow-up interviews was to verify the validity of some of the answers provided in the questionnaire and to collect further information, that would help to better understand if, and how, the schools have implemented their environmentally sustainable procedures. The interviews were also important for a better understanding of how meaningful the environmental procedures implemented were for all the stakeholders of the school.

Given the geographical distance and availability of many of the interviewees, and the related larger number of interviews doable in a short period of days or weeks, telephone instead of in-person interviews was the more appropriate option. Therefore, a semi-structured model for the telephone interviews was developed. Some negative points must nevertheless be noted: even by phone, time and availability constraints could be a problem, and the potential refuse to answer a question or simply not answer the phone could become difficult complications to unravel.

The option for the semi-structured interview relates with the yet exploratory state of the project and also with the ability to help in the building of the theoretical framework of the research and allow flexibility in the answers. Five main questions / topics to follow and try to explore in the interviews were developed with a minor guidance in mind. The questions asked about the social framing of the institution, number of students, situation or initiative that lead to choose the institution for interview, main problems considered to delay or keep the environmental initiatives from being done and main areas of future intervention. The interviews were recorded under permission of the interviewees and converted in digital files available to the public.

A simplified document (Annex III) with five major guiding questions was created to support the initially semi-structured interviews. Nevertheless, after the first few interviews it became obvious that even minimum guidance in the first minutes of interview would sometimes inhibit several interviewees, which is why an open approach to the dialogues was taken, with some guidance towards the end or when some confidence allowed.

In terms of procedure and treatment of interview and accordingly to the already mentioned procedures, data content analysis was the option taken, trying to translate

messages in a systematic and objective way assuming that the audio and written files translate truthfully the interviewees´ opinions and knowledge. Post-interview text analysis was open (or exploratory), given that no strict concepts where initially defined and the categories and concepts where left to emerge freely with the analysis of the translated interviews. After a "floating" and free analysis of the texts, codification of the material was the option taken, trying as much as possible to classify, aggregate and categorize data with posterior triangulation of data in mind. A vertical and post-interview content analysis was made.

Using the e-mailed survey as a starting point after close analysis, certain answers stood out more than others in the framework of this research, which is why only some of the schools (30) answering the initial questionnaire were considered for the post-questionnaire telephone interview. Further details can be found in the "Results" section.

3.2.3 – DATA TREATMENT

Inferential statistics and simple statistical techniques, frequently supported in *Microsoft Excel*, were applied to analyze the data of the questionnaire. Bivariate analysis was done and cross-tabulation was used as support of data analysis.

Reliability is assured by the accurate analyses of the results and their reproducibility. Once collected and analyzed, the data were translated into a quantitative analysis whenever possible. Tables and graphs were used and significant percentages calculated.

Questioning the content of the interviews and categorizing by theoretical relevance of repetition (Rodrigues, 2010), creating categories organized in themes, accounting context units and establishing connections between the themes and categories was the line of questioning followed in the interviews. Awareness was kept, nevertheless, for the fact that unlike questionnaires, there are no standardized procedures for interviews and each research interview or topic would involve a variety of perspectives that could be approached in various ways, also defended by Schulz (2012). Content analysis, discourse analysis and relational analysis were done and can be explored in the results section.

The transcription of the interviews, although summarized, translated the conversations thoroughly with the purpose of an (…) objective, systematic and quantitative description of the content present in the interviewee's testimonies (…), to assure objectivity, systematization and influence applied to the several discourses (…) and to properly analyze the qualitative material resulting from the interviews, searching for a better understanding (…) of its characteristics or ideologies (…) extracting the most relevant aspects of them (…) (Martim, 2008).

Understanding the answers considered for analysis, establishing connections and extending new aspects of the research were the specific objectives of this part of the study. These were achieved through an analytical reading of the translated interviews and also from the triangulation of some open answers from the e-mailed questionnaire. A textual and thematic pre-analysis was done with the aim of creating possible categories to the posterior management of the information, analysis, inferences and interpretation. Again, according to

Valentin (2008) and supported in Bardin (1977), the lexical analysis in this research measures the different words and their incidence, comparing and identifying relationships. A classification with the objective of organizing the words in a comprehensible manner and creating levels of occurrence with relative and absolute frequency calculated was done and texts were observed with the goals of this research. Those calculations were computed in Excel software.

4. – RESULTS

4.1 – THE QUESTIONNAIRE

This sub-chapter will proceed to the presentation of the results with reflective discussion of the data in chapter 5.

Our working sample includes a total of 76 answers, from 65 different institutions (Annex IV) out of 464 effectively e-mailed surveys, from the initial sample of 583 Portuguese middle and high schools, corresponding to a 16.4% return rate. However, since from the initial 76 answered questionnaires 11 were answered by different individuals, but some of them from the same institution, in reality only 65 different schools responded to the questionnaire, which corresponds to a 14.0% return rate. From those schools, 83% were public institutions and 17% semi-private or private institutions. In terms of representation the results seem to be dependable, given that they correspond, in terms of area of the country, to the average distribution of schools supported in DGAE[16] (2014) database and *Ler em Português* mainland private schools database. In these documents a public school distribution of 43% / 43% / 14% can be seen between the north, center and south of mainland Portugal. This study obtained respectively 47% / 43% / 10%. A private school distribution of around 38% / 50% / 12% can be seen in the same areas. This study obtained respectively 56% / 33% / 11%. A better understanding of Portuguese mainland division (no study was developed in the Açores and Madeira archipelago) and statistical regions can be done in Annex V.

Given the new organization of the educational institution in Portugal in "Agrupamentos" or "Mega Agrupamentos", grouping several institutions of the same regional area with the same management and shared resources, the majority of the schools had middle and high-schools students in the same institution. For this reason, a clear pattern or predominance of middle or high-schools answering the questionnaire cannot be established.

[16] 2014 school codes database for candidates applying to public teaching institutions.

The answers to the majority of the surveys came from teachers (52%) and managing team (25%) being the number of answers from the maintenance staff of only 1%, as represented in figure and table 4.1. Please note that from the 76 obtained answers only 71 are represented here, given that 4 of the individuals did not identify their position in the institution. Likewise, when in the presented tables response numbers is inferior to 76, this signifies that one or more interviewees did not answer that question.

Table 4.1 – Function in the institution of the responsible for the questionnaire answers (number of answers / percentage

Type of Answer	N.º of Answers	Percentages
Belonging to the managing team	18	25%
Teacher	37	52%
Administrative staff	11	15%
Duties Monitors	1	1%
Others	4	6%

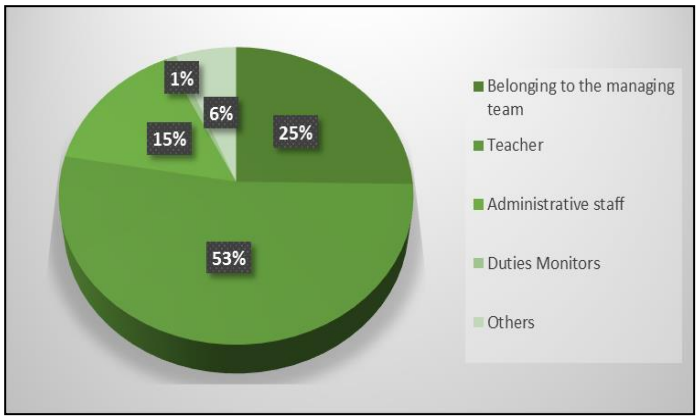

Figure 4.1 – Function in the institution of the responsible for the e-mailed survey answers.

As can be seen by figure and table 4.2, 85% of the answers came from staff that works in their schools for at least 5 years.

Table 4.2 – Number of working years in the institution (number of answers / percentage)

Type of Answer	N.º of Answers	Percentages
1 year	**5**	**7%**
2 years	1	1%
3 years	3	4%
4 years	2	3%
5 or more years	61	85%

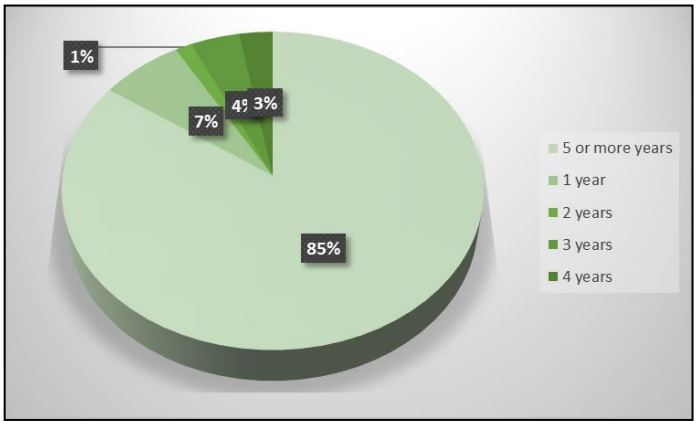

Figure 4.2 – Working years in the institution of the responsible for the e-mailed questionnaire answers.

In terms of environmental initiatives and environmental sustainability promoting actions, the subjects were asked if they recall any initiative in the area in the last 4 years[17], and if they did, how many. Afterwards was also asked to identify the type of initiatives and their origins. As can be seen by analyzing figure and table 4.3, 83% of the inquired population remembers at least one or more initiatives in his / her educational institution in the

[17] School "contracting and working cycle" that just ended in 2013

examined period, but 17% did not recall any environmental initiatives. The chances of having this number increase if dealing with the total number of schools in the country are real, as will be demonstrated ahead. 52% of the respondents remember four or more activities (Figure and Table 4.4).

Table 4.3 – Inquired population that recognizes at least one or more environmental/environmental sustainability initiative in his/her institution on the last school period of 4 years (number of answers / percentage).

Type of Answer	N.º of Answers	Percentages
Yes	60	83%
No	12	17%

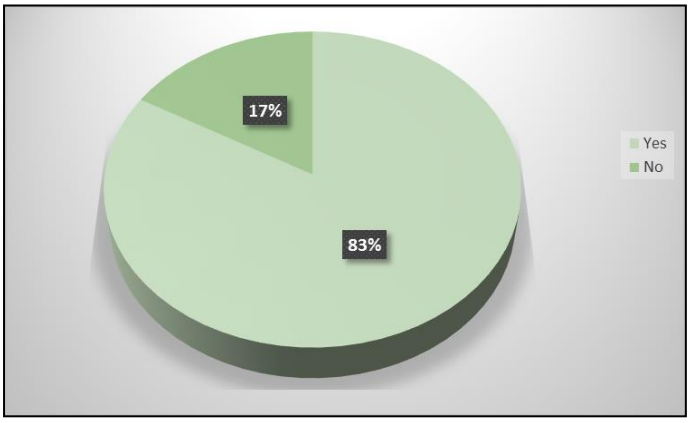

Figure 4.3 – Inquired population that recognizes at least one or more environmental/environmental sustainability initiatives in his/her institution on the last school year.

Table 4.4 – Number of identified initiatives in case of positive answer on the previous question (number of answers / percentage)

Type of Answer	N.º of Answers	Percentages
One initiative	5	8,5%
Two	18	31%
Three	5	8,5%
Four or more	30	52%

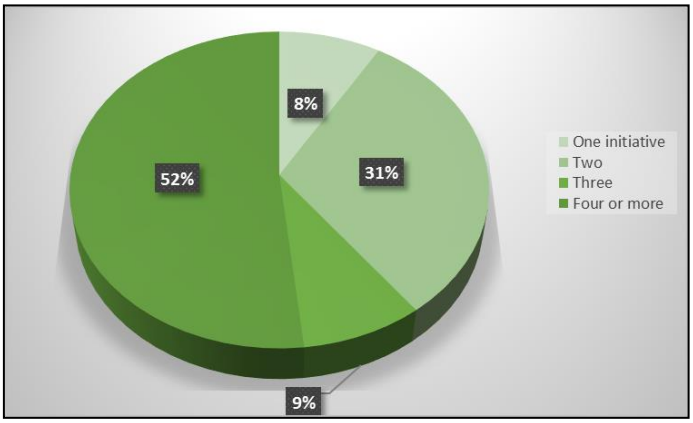

Figure 4.4 – Number of identified initiatives in case of positive answer on the previous question.

Asking to the respondents the question: *What was the type of initiative they remember most for causing the biggest positive impact and the reason for that*, the answers were as listed in Table 4.5.

Table 4.5 – Type of identified initiatives causing the "biggest positive impact" (number of answers / percentage).

Initiative	N.º of answers	Percentages
EMS	15	9%
Sustainable building	7	4%
Energy saving procedures - Workshop	13	7%
"Eco-Escolas" Initiative	45	26%
"Ciência Viva" Initiatives	27	15%
"Projeto 80" Initiative	2	1%
"Eco-design" Initiative	4	2%
Sustainability report presentation	5	3%
"Clube do Ambiente" (or similar) promoted initiatives	34	19%
Other(s) (Please specify)	23	13%

"Eco-Escolas" program, "Iniciativas Ciência Viva", "Clube do Ambiente" and also "others" total for 73% of the overall initiatives, being the EMS the ones with higher weight between the remaining (9%). Those that indicated "others" as being the activity causing the biggest positive impact reported the following initiatives:

- Projects developed in *Area de Projeto* – an extinct subject where students developed throughout the school year a focused and dedicated project (ideally oriented to the community).
- *Olimpíadas do Ambiente*, an initiative coordinated by a Portuguese private university (Universidade Católica) where middle and high-school students are assessed as to their knowledge in environmental and sustainability issues.

- Projeto Ponto Electrão / Escola Electrão[18], recycle bins building and distribution along the school, printer cartridges and cork collection[19] and forwarding to the proper transformation channels.
- The "Environmental office" and "Biodiversity and climate change brigade" resulting in the cleaning of school green areas and biodiversity and environmental sustainability procedures exhibitions.
- *Projeto RIOS*[20].
- Eco-Challenge EDP and Twist-EDP – Promoted by the Portuguese *Energias de Portugal* Company, the main national electricity supplier.
- Collection of cooking oil to transform in Biodiesel – Mainly promoted by ECO-Escolas program, some municipality and private institutions.
- Comenius Project environmental actions, an European project mainly dedicated to the "improvement" of education in its qualitative and European dimensions.
- Use on gardening, sanitation and students baths of the pluvial water collected after passing through a simple water treatment station.
- Electric energy micro-generation

When in question five, those answering the survey were asked about "the reason for that positive impact", the most relevant answers can be organized in the following groups:

- Acquisition of Eco-Escolas "green flag"[21];

[18] Projeto "Ponto Electrão" and "Escola Electrão" are a national initiative from *Amb3E*, a Portuguese non-profit company, with the purpose of developing the collection and recycling of electric/electronic devices, promoting a national championship as to the amount – in Kg – of materials collected.

[19] Green Cork project was developed by Quercus, (the national association for nature conservation) and supported by several private companies.

[20] A national project promoted by Ciência Viva and other entities, where students study defend and promote a fluvial area in terms of biological, chemical and physical properties with the purpose of implementing solutions and understanding the Portuguese "Carta da Terra" and "Diretiva Quadro da Água".

[21] By gaining the "green flag" the School is recognized for doing quality work in the area of Environmental education / Education for Sustainable development.

- The buy-in of most of the school community and several aspects of environmental education in the activity;
- The large amount of electronic devices collected ("Ponto Electrão" and "Escola Electrão" initiatives);
- Environmental protection awareness;
- Demanded teamwork;
- Minimizing energy use and raw material reutilization;
- Ability to motivate teachers and remaining staff for SDW selective separation;
- The school community understood the message;
- Added value to the school facilities;
- Lab/practical work was done and contact with nature was positive.

When asked about the origin of the identified initiatives, figure 4.5 and table 4.6 show that the large majority of the initiatives (92%) had its origins in the school, with no other intervention, being that only 3% of the initiatives had its origins in the municipality. As to the "others", they relate with *Parque Escolar* renovation work, *Olimpíadas do Ambiente* (promoted by Universidade Católica) and *Amb3E*[22] initiatives.

[22] Amb3E is a Portuguese association for waste management, having as a mission, with the help of many initiatives, to organize the re-utilization, recycling and adequate management of electric and electronical devices that are no longer used.

Table 4.6 – Origin of the identified initiatives in the previous questions (number of answers / percentage).

Type of Answer	N.º of Answers	Percentages
School/internal initiative	54	92%
Parent-Teacher association	0	0%
Private/Business initiative	0	0%
Municipality	2	3%
Others	3	5%

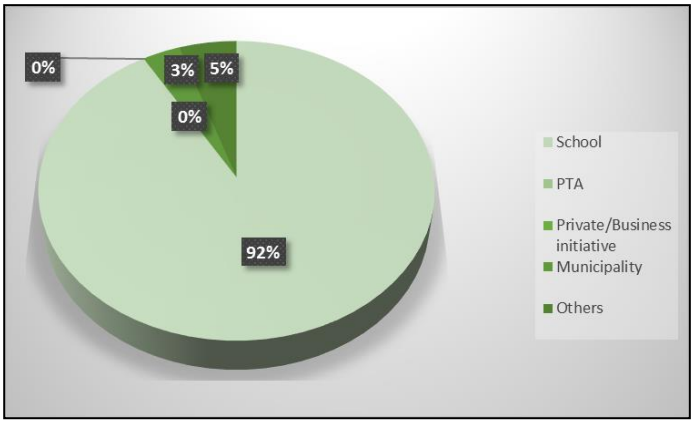

Figure 4.5 – Origin of the identified initiatives in the previous questions.

What is interesting to understand (given the possible guiding lines for action in the future that those answers could give us in terms of target population) was “how inclusive” of the school community those activities were. If they have focused more on middle or high school, and in what kind of school stakeholder do they focus more, if any. To test the aforementioned the e-mailed survey asked, in question seven, about the percentage of the school population included in the most relevant initiatives, the main age group focus of the initiatives (middle or high school) and the main focus of the initiatives within the school population. Figure 4.6 show us that 75 to 100% of the school population was included in the

main initiatives in 34% of the cases. It is curious to notice that 71% of all the relevant initiatives are focused on Middle school students (figure 4.7).

Table 4.9 and figure 4.8 will also give us a more accurate idea of the main focus on the school population of the most relevant initiatives.

Table 4.7 – Percentage of the school population included in the most relevant environmental initiatives (number of answers / percentage).

Type of Answer	N.º of Answers	Percentages
Between 75 and 100% of the school population	20	34%
Between 50 and 75% of the school population	22	37%
Between 25 and 50% of the school population	11	19%
Between 1 and 25% of the school population	6	10%

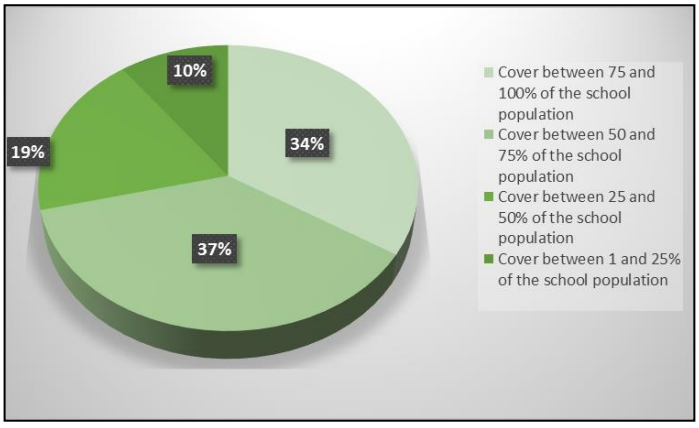

Figure 4.6 – Percentage of the school population included in the most relevant environmental initiatives.

Table 4.8 – Main focus of the environmental sustainability initiatives (number of answers / percentage).

Type of Answer	N.º of Answers	Percentages
Focused mainly on Middle school	35	71%
Focus mainly on High school	14	29%

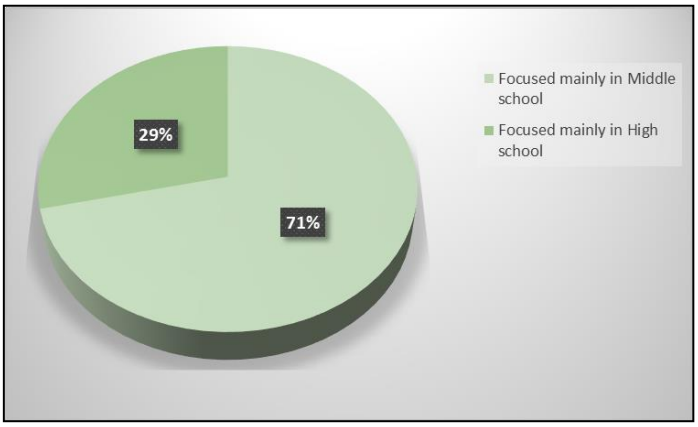

Figure 4.7 – Main focus of the environmental/environmental sustainability initiatives.

Table 4.9 – Main focus in the school population of the most relevant environmental initiatives (number of answers / percentage).

Type of Answer	N.º of Answers	Percentages
Focused mainly on the students	13	23%
Focused mainly on the teachers	0	0%
Focused mainly on other school intervenient	1	2%
Focused mainly on students and teachers	14	25%
Focused mainly on students and other school stakeholders	5	9%
Focused mainly on teachers and other school intervenient	0	0%
Inclusive of the all community	24	42%

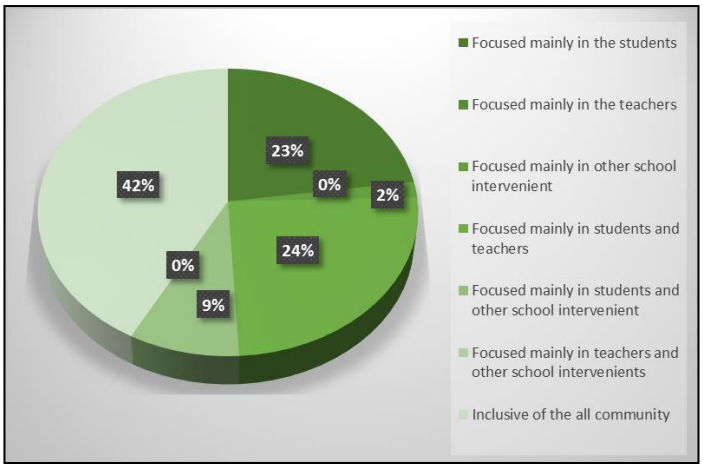

Figure 4.8 – Main focus in the school population of the most relevant environmental initiatives.

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Understanding if the environmental initiatives outcomes and knowledge was continued and preserved along the school year and the following years was also one of the goals of the research, which is the reason why the respondents were asked, "from one to

five" (one very bad and 5 very good), how would they rate the perpetuation of the knowledge acquired in the environmental initiatives, both in the school year they were promoted in and on the following years. As shown in figures 4.9 and table 4.10, 74% of the initiatives were considered to have a *good* or *very good* (rated "4" or "5") "follow up" after they had been promoted. In the following years the situation change slightly, since 13% of the answers (against only 3% in the same school year) consider that the "follow up" is *bad*.

Table 4.10 – Perpetuation of the most relevant environmental initiatives along the school year where they were promoted (number of answers / percentage).

Type of Answer	N.º of Answers	Percentages
1 (very bad)	0	0%
2	2	3%
3	14	23%
4	33	53%
5 (very good)	13	21%

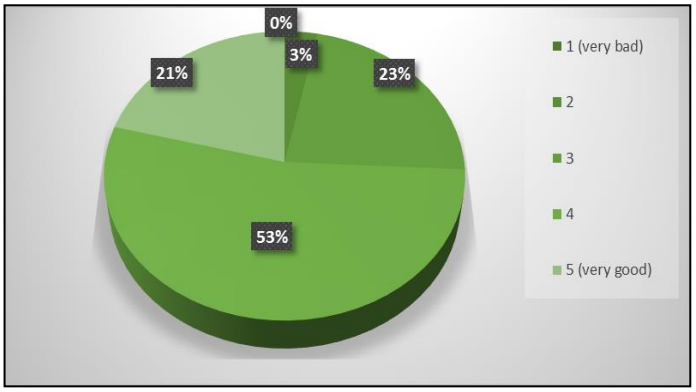

Figure 4.9 – Perpetuation of the most relevant environmental initiatives along the school year where they were promoted.

Table 4.11 – Perpetuation of the most relevant environmental initiatives along the following school years (number of answers / percentage).

Type of Answer	N.º of Answers	Percentages
1 (very bad)	0	0%
2	8	13%
3	12	19%
4	27	44%
5 (very good)	15	24%

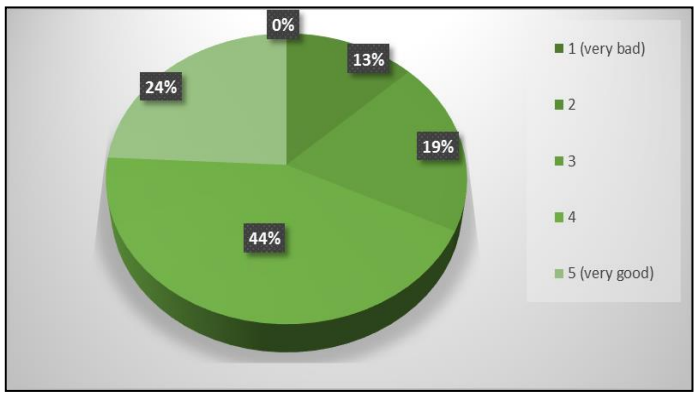

Figure 4.10 – Perpetuation of the most relevant environmental initiatives along the following school years.

The school involvement, work force dynamics and the commitment to the environmental cause of those answering the survey was considered important, since it could inevitably lead to significant conclusions in the motivational area. This was the reason why question number one of page three asked if the school / individual answering the survey was involved in the *Eco-Escolas* project, by far one of the most broadly implemented environmental programs in educational institutions in Portugal. 47% of those answering the survey did in fact belong to an *Eco-Escola*. The results of the program were considered by those answering the survey as Table 4.12 and figure 4.11 describes.

Table 4.12 – *Eco-Escolas* program results evaluation by the ones answering the survey (number of answers / percentage).

Type of Answer	N.º of Answers	Percentages
Non-existent	2	6%
Feeble	0	0%
Reasonable	10	29%
Good	19	54%
Very good	4	11%

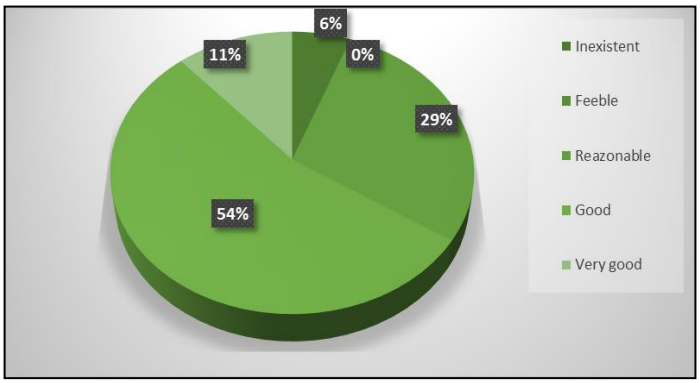

Figure 4.11 – *Eco-Escolas* program results evaluation by the ones answering the survey.

The existence of an assigned person at the school responsible for the promotion of environmental sustainability was analyzed (page three, question number three). 22% of the schools that responded to the survey do not have an assigned environmental responsible, 43% of the schools do have that position and 12% of the schools lost the position or the person responsible for this position. 23% of the interviewees do not know if they have that person/position in their institution. From the institutions that lost this figure/position (eight in the overall) 64% of the answers explain that the responsible for the position retired/was

dismissed/was taken out of the position, there is no motivation or interest for that position in the institution (13%) or no one was given that position by the principle/responsible for the institution management.

Another very important area was considered to be the opinion of the interviewees about the engagement of the community and school stakeholders with the environmental initiatives promotion and work (Fig. 4.12). This question include the municipality where the school belong to, since it is the one responsible for sponsoring many of the initiatives. Also other daily involved stakeholders were considered, namely the management of the school, the teachers of the institution, duties monitors, administrative staff, parents and students.

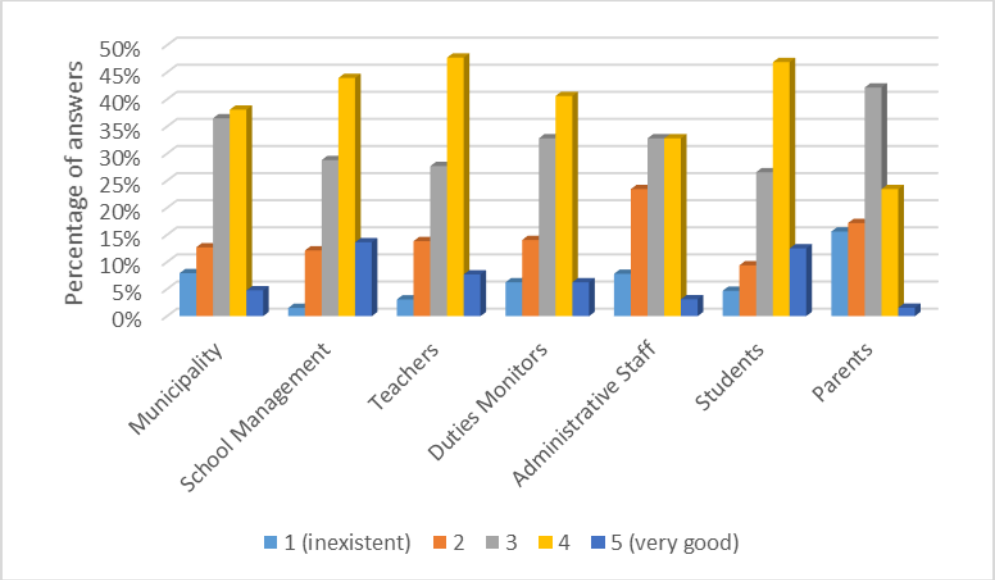

Figure 4.12 – Interviewees opinion about the engagement of the several school stakeholders in terms of environmental initiatives promotion and work in the institution.

Understanding that the development of strategic partnerships, with private or public companies, working in the area/management of environmental sustainability is a very important part of any long term vision (Danida, 2000), the designed questionnaire inquired the interviewees about the existence of the aforementioned partnership, and in the case of a positive answer, the identification of the partner and the kind of partnership implemented. From the 72 obtained answers, 73% (52 answers) do not know if this kind of partnership

exists in their institution or do not have that kind of partnership, 3% lost that partnership and 25% do have some kind of active partnership implemented. When asked to identify the partner and the kind of partnership, the answers were the following:

- 8 identified the Municipality, with no more information as to the kind of partnership;
- 10 identified waste collection and recycling companies / partnerships but only 4 identify the name of the companies: SUMA, DST, LIPOR, Ponto Verde, ReciclAlgarve, ALGAR, AMI and Resinorte;
- 2 identified environmental consultancy companies, but only one name was mentioned: Eco-Progresso;
- 1 identified EDP (consumption records) as their partner;
- "NGO", SMAS and Escola Electrão were also mentioned, with no more details as to the type of partnership;

Those that lost the partnership mentioned the lack of resources (materials) and the end of the established period for the partnership as the main reasons.

Supported in the research done and success cases in private or public enterprises, assumptions can be made about the importance of the implementation of an EMS other than the simplified version of *Eco-Escolas*. Even in a non-certified procedure or institution, the implementation of an EMS is somehow connected with good-practices. Being two of the most known and best developed EMS EMAS and ISO 14001 certification norm, the participants were asked about their work or knowledge related with the above mentioned systems.

In regards to EMAS, 58 answers (89%) recognize that the person or institution does not know anything about the system nor is related with the system procedures. 5 respondents (8%) know EMAS, but do not work with it and 2 answers (3%) stated that they worked with a similar system, pointing to the *Eco-Escolas* audit scheme. Analyzing the answers related with ISO 14000 series certification norm, 48 answers (73%) state that the person or institution does not know the norm nor is related with its procedures, 16 answers indicate that the respondents know ISO 14000 series norm but the person or institution does not work with it, 1 answer (2%) stated to have worked with this norm and 1 answer stated to work with a similar one, not specifying the name.

After presenting a simplified definition of EMS the respondent were asked their opinion about the introduction of an EMS in the institution where they work or have worked in the year before. 48 answers (73%) stated that an EMS would be welcomed in the institution they work/have worked, although 11 answers (17%) indicated that its application in the real world would be questionable. 17 interviewees (25%) do not have an opinion and 1 answer (2%) defended that the application of a EMS in the school would be impossible. Those answering that "the application of the EMS would be questionable", "would be unnecessary" or "would be impossible to apply" were asked to explain the reason leading to their opinion. The answers can be summarized in the following way:

- 5 detailed the lack of motivation, reduced readiness and poor collaboration, mainly between teachers;
- 2 explained that some institutions have a huge variety of projects and activity demands, in such a way that embracing a new project becomes almost impossible, especially with the available human resources;
- 1 described the need to attribute the project leadership to a permanent worker;
- 1 defended the lack of environmental sensibility of the school population;
- 1 explained that it is very difficult to bring awareness to some students.

Since the management of the institution´s environmental policies should permeate the entire school community, it was asked in the survey "how has the management of the environmental policies in the institution been done?" The answers can be summarized in table number 4.13.

Table 4.13 – *How is the management of the environmental subjects in the institution been done?* (Number of answers / percentage).

Type of Answer	N.º of Answers	Percentages
Focused in the School management and delegated in the institution workers	6	10%
Closed in the School management	0	0%
Centered in a work group and delegated in the institution workers	14	22%
Closed in a work group	1	2%
Delegated by the institution management in a work group and then in the institution workers	9	14%
Cross-cutting to all the School community	20	32%
Disperse	9	14%
Non-existent	4	6%

Because schools and all committed in searching for sustainable development through education have to search actively for training and knowledge in the area of environmental sustainability, next question examined the opinion of teachers, school management, duties monitors and administrative staff about the effort done in the last 4 year cycle with the aim of gaining skills and knowledge in the environmental and sustainability area. Figure 4.13 summarizes the results.

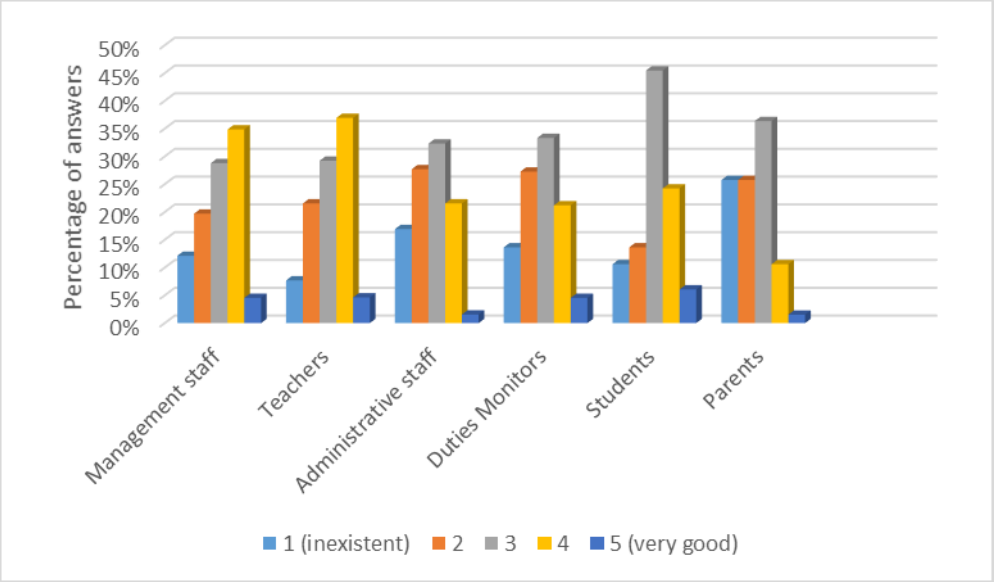

Figure 4.13 – General opinion about the effort done in the last 4 year cycle with the aim of gaining skills and knowledge in the environmental/environmental sustainability area.

Receiving a periodic e-mail or newsletter with information and tangible procedures encouraging environmental sustainability promotion in the institution, already done in *Eco-Escolas* program, was considered to be useful in 40 answers (63%). The effectiveness and application of the information and procedures was considered to be influenced by the existence of a person at the school responsible for the environmental policies in 18 answers (29%), 4 answers (7%) considered that this information and procedures would be of questionable usefulness or application and 1 answer (2%) considered that it would be impossible to apply in his/her institution. When asked about the cause of the several difficulties faced when trying to implement environmental sustainability procedures, the respondents answered that problems arose mainly due to:

- Management (15%)
- Teachers (15%)
- Administrative staff (5%)
- Duties Monitors (9%)
- Students (7%)

- Parents (6%)
- The absence of a "environmental subjects" responsible in the institution (20%)
- Unnecessary bureaucracy (22%)
- "Others" (3%)

Those answering "others" (4 answers) pointed the lack of time, human resources and motivation, poor civic training and social involvement and the huge size of some organizations as being the main problems.

In the last question of the survey the respondents were asked about "what could be the most important stimulus for the effective implementation of environmental activities and projects in teaching institutions?". Figure and table 4.14 summarize the results and peer evaluation seems to be the main driver.

Table 4.14 – Most important stimulus for the implementation of environmental activities and projects in teaching institutions (number of answers / percentage).

Type of Answer	N.º of Answers	Percentages
Peer evaluation and stimulus	27	40%
Management evaluation and stimulus	15	22%
MEC evaluation and stimulus	23	34%
Others	2	3%

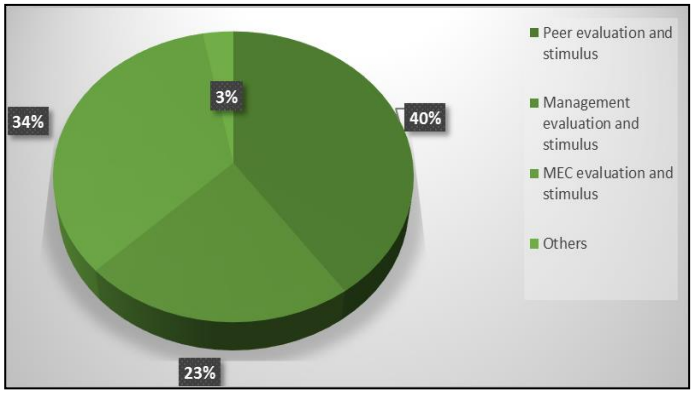

Figure 4.14 – Most important stimulus for the implementation of environmental activities and projects in teaching institutions

Those answering "others" identify "changing the teaching staff" and "have prior knowledge of the applicability of the activities and projects" as the most important stimulus. Respondents had the opportunity to write "comments and suggestions" before ending the survey. Only one suggestion was written, namely the existence of an "environmental management office" in the school where several stakeholders from different areas would meet and discuss the topic.

4.2 – THE TELEPHONE INTERVIEW

Following the initially proposed methodology and supported on the questionnaire results and analysis, thirty two different institutions (Annex VI) were selected for a post-questionnaire telephone interview. The aim would be to better understand the accuracy of the answers and deepen the knowledge given by the questionnaire and importance and developments regarding the significance of the selected responses to the institution. Understanding some of the functioning logic, organic and procedural details of the schools and triangulation of data were important goals. The educational institutions considered to be more relevant and selected for analyses were those answering:

- "I do not recall any initiative in the last four years in my institution" – given the extreme case this would represent being true;
- "The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)";
- "we have instituted the *environmental sustainability office* in the school";
- "we have a *climate change combat* program";
- "We have electrical energy micro generation";
- "We collect rain water for posterior use";
- "The initiative with the biggest impact in the school was the EMS / voluntary carbon management";
- "The school has a business-like view of environmental management";
- "The environmental initiatives had its origin in the municipality";
- "The institution as a partnership with environment consulting companies and / or NGO;
- "I know / have worked / work with a similar one in relation to EMAS or ISO 14000 family norm".

In 22 educational institutions (67% of the total institutions selected) and after an average of three phone calls per institution, having between 1.29min and 24min extent, it was possible to satisfactorily conclude about the questionnaire answers motivation and overall dynamic of the school. In the remaining 10 institutions and after an average of six phone calls, it was not possible to contact the responsible for the questionnaire answers (preferable) or someone related with this person, ideally the school management or person responsible for environmental policies in the institution. The reasons for this impossibility were the fact that the responsible or related person was in a meeting (3 institutions), the difficulty of reconciling the schedules of interviewer and interviewee (2 institutions), the lack of knowledge in the area (not being the responsible for the answer or related – 2 institutions) or simply the refusal to answer or forward the message to those that could answer (3 institutions). In the situations where it was not possible to contact the responsible for the questionnaire answers, an attempt was made to contact the direct supervisor (principal or vice principal of the institution) or the environmental responsible, if existent. 21 out of the 22 voice interviews where digitally recorded, the files are available and the resumed transcriptions are presented on Annex VI.

Results can be observed in Table 4.15, where three major themes (social framing, school dynamics and "questionnaire related") frame nine categories (family income, behavioral problems, number of students, management assertivity, existence of professional qualification courses, "in line with the questionnaire", major problems implementing activities, urgent areas of intervention and existence of *Eco-School* project). These nine categories frame different sub-categories with respective register units and category and global frequency (*fr)* in percentage.

Table 4.15 – Summary of the content analysis of telephonic interviews[23].

Theme	Category	Sub-Category	Register Units	fr %(category)	fr % (global)
Social Framing	Family Income	Medium to low income W/activities	9	56	41
		Medium to low income No/activities	2	13	9
		Medium income W/activities	4	25	18
		Medium income No/activities	1	6	4
	Behavioural Problems	No W/activities	5	83	23
		No No/activities	1	17	4
School Dynamics	Number of Students	small (0 - 500 students) W/activities	7	35	32
		small (0 - 500 students) No/activities	2	10	9
		Medium (501 - 1000 students) W/activities	4	20	18
		Large (1000+ students) W/activities	4	20	18
		Large (1000+ students) No/activities	3	15	14
	Management Assertivity	Strong W/activities	7	47	32
		Median W/activities	2	13	9
		Median No/activities	3	20	14
		Week W/activities	1	7	4
		Week No/activities	2	13	9
	Professional Qualificaion Courses	Yes W/activities	12	60	54
		Yes No/activities	4	20	18
		No W/activities	3	15	14
		No No/activities	1	5	4
Questionnaire Related	In Line with Questionnaire Answer	Yes correctly	3	17	14
		Partially correctly	5	28	23
		Partially incorrectly	3	17	14
		No	7	41	32
	Major problems Implementing Activities	Money related	4	16	NA
		Motivational (management)	2	8	NA
		Motivational (Teachers)	3	12	NA
		Motivational (Students)	5	20	NA
		Motivational (All community)	4	16	NA
		Work load	1	4	NA
		Excess activities	3	12	NA
		Lack environmental responsible	3	12	NA
	Urgent areas of Intervention	Partnership with private/public entities	1	5	NA
		Green spaces maitenance	2	9	NA
		Scheduled interventions cut short	4	19	NA
		Electricity	7	33	NA
		Water	4	19	NA
		SDW	3	14	NA
	"Eco-School"	Yes W/activities	11	61	50
		No W/activities	5	28	23
		No No/activities	2	11	9

[23] "Management assertivity" category was defined by the author based on written and telephone interviews interaction. Ability to define the environmental goals of the institution and express feelings and thoughts related to this subject, perceived honesty and clarity of the speech and anxiety revealed in the interview were taken into account.

Apart from the above presented data, interviewees expressed some opinions not framed in the above mentioned themes, but relevant nevertheless, namely:

- The existence of relevant environmental initiatives supported by external to the school public or private entities (27%).
- The inability to conclude relevant environmental initiatives supported by outside public or private entities given the lack of financial and/or human resources (9%).
- The need to make the connection between environmental initiatives and money is one of the best ways to bring awareness to the environmental issues, namely the economic resources that can be lost and negatively influence our own individual economy and every-day life as stated by a respondent: "As long as the citizens don´t feel that money is coming out of their pockets, they don´t react. If we talk of money citizens react. Talk of natural resources and it doesn't work" (Fornos de Algodres Middle and high-school environmental issues responsible).
- The need to allocate resources in social sustainability projects that can connect in a meaningful way the economic and environmental effort with the social benefits (5%).
- The need to implement a detailed diagnosis of the environmental and carbon footprint of the educational institution as a first step to further environmental initiatives (5%).
- The option to "rent" the roofs of the educational institution to investors that wish to produce energy with electro voltaic solar panels, indirectly contributing to the environmental sustainability and compensating in that way some of the institution pollution in terms of CO_2 (5%).
- In order to innovate in schools the contact with private companies and investors is essential (5%).

Crossing data between the type of management, district and number of environmental activities is purposeful since it can lead to important conclusions about the existing relation between the different areas of the country and/or management type and the implementation of environmental activities. Table 4.16 allows for that comparison.

Table 4.16 – Relation between district, type of management and number of environmental activities. “M/N” - median assertivity with no activities, “M/W” - median assertivity with activities, “S/W” - strong assertivity with activities, “W/N” - weak assertivity with no activities and “W/W” - weak assertivity with activities. “Blank” indicates the number of educational institutions where management assertivity was not possible to quantify.

Count of Activities	Management						
District	M/N	M/W	S/W	W/N	W/W	(blank)	Grand Total
Beja						1	1
Braga	1		1				2
Coimbra			1	1			2
Faro			1			1	2
Guarda						1	1
Lisboa		1	1	1			3
Porto					1	2	3
Santarém						2	2
Setúbal	2	1					3
V. do Castelo			2				2
Vila Real			1				1
Grand Total	3	2	7	2	1	7	22

5. – DISCUSSION

5.1. – MAIN DISCUSSION OF THE RESULTS

The main goal of this study was to discuss about applied environmental sustainability in today´s middle and high-schools in Portugal, as compared with the apparent feeling of the school community about that same sustainability, and to look for dissonances that could support future investigations. The research was designed from the beginning with the purpose to be a rounded analysis, allowing the researcher and reader to understand the complexity, strengths, weaknesses, opportunities and existent overall pressures.

Far from an "ideal" answering rate, (Surveymonkey blog defends a 10% error margin for our sample[24]), this study obtained an answering rate of 14%, nevertheless random and impartial, since the sample was simply randomized and all the institutions from the initial sample had equal opportunity to participate in the study.

In terms of public / private and semi-private ratio of schools, an 83% / 17% correlation was obtained in the questionnaire, when accordingly to *Ler em Português*[25] 2012 / 2013 contest database, the relation was around 70% / 30% in 2009, excluding strictly professional training institutions and music schools, given that those were not part of our research. This difference slightly reduces the confidence degree of our results.

Graph and table 3.2 show us that 85% of the answers came from staff that have worked in their institutions for 5 years or more, and should, because of that, be a source of reliable information, given the supposedly acquired knowledge during that period.

In terms of the desired stratification of answers, given that in the emailed survey was asked to distribute the questionnaire to one representative of the school management, a teaching staff member responsible for the environmental management of the school, administrative staff and a duties monitor, the results can be considered disappointing. The

[24] https://www.surveymonkey.com/blog/en/blog/2011/09/15/how-many-people-do-i-need-to-take-my-survey/

[25] Detailed data from 2009 available in http://www.lerportugues.net/np4/escolas.html.

majority of the answers came from teachers and the managing team (total of 77%), not allowing for the desired broad conclusions, but being nevertheless expected results, as the managing team, together with the administrative staff, are often responsible for many of the received e-mails in schools, and, managing team and teachers are often the main decision-makers in terms of environment and environment sustainability actions in the educational institutions.

The number of answers from duties monitors (1%) can lead us to conclude what level of importance is given to their opinion and at what level the information is getting to the support personnel. Many times these people are on the "front line" in terms of action and bringing awareness to correct SDW separation and, in general, the students environmental actions. Developing efforts in empowering these personnel with environmental knowledge and the will to make the difference can be a worthy step forward for schools around the country.

In this research 52% of the respondents remember four or more environmental activities in their institution (Figure and table 4.4), which is positive. Our questionnaire results show also that 17% of the respondents did not recognize any environmental initiative in their institution, and this can be a worrying number. In a bigger sample (which would include all the schools in the country), this number should increase, given that 47% of the interviewees belong to an *Eco-School*, which means that they initially are more aware or motivated to positively answer the questionnaire. The overall amount of Eco-Schools in Portuguese middle and high-school institution is much smaller than our 47% response rate, easily confirmed in the 2013 – 2014 list of Eco-Schools (ABAE, 2014). This is why the number of schools with "no initiatives" could be even higher in reality than is reflected in this study. The respondents´ *Eco-School* project evaluation was positive ("reasonable", "good" or "very good") in 94% of the responses.

Cross-checking data with the interviews, however, led to the conclusion that 32% of the telephone-interviewed institutions did not agree with the responses in some questionnaire answers, especially the ´absence of environmental initiatives` question. This led to another reflection: that the true number of schools that answered the e-mailed questionnaire and stated that they didn´t have environmental initiatives may be smaller than the 17% that the initial questionnaire results show. Some of the initiatives are nonetheless of reduced impact or motivation, as can be seen in the answers of some of the telephone interviewed participants, as for example:

Hum… we have a partnership with Biocante[26] *(…) another with Banco Alimentar*[27] *(…). Some years ago we started using recycled paper in the school, an option that was applied but didn´t gather consensus. We have something going on…* (Interview #6).

As for the environmental initiatives that the respondents considered to have had the biggest positive impact in the institution, those answering the survey were asked about "the reason for that positive impact", and no major pattern stood out in terms of quantitative or qualitative analysis. A clear pattern can be seen about the origin of the identified initiatives (Figure 3.5 and Table 3.6). 92% had origins in the school, with no other intervention, and only 3% of the initiatives had its origins in the municipality. These numbers should be focused on, given that the remaining 5% of the initiatives correspond to temporary construction works, *Olimpíadas do Ambiente*, (a private university annually promoted questionnaire about environment and environmental sustainability), and from *Amb3E* initiatives, a non-profit organization with the purpose that organizes an integrated management system for electric and electronic devices.

These results show that not only the contact with the municipality is scarce, being those the ones that can several times make the connection between the educational institutions and the corporate structure and business in the region. Also, one may assume that no serious approach or connection is being made with the private or corporate structures of the areas around the schools. This situation can frankly limit the environmental approach of the institutions, given that they are many times the ones that have not only the knowledge but also the initiative to promote and structure environmental enterprises at school level. These are the organizations that many times should be spearheading the environmental initiatives in schools, as they are the ones who have the experience and technical awareness and can bring together the working market and students from the school.

The research showed that 71% of all the environmental initiatives that happen in the school focus on middle school students, leading to the question: what can be done to close this gap? One possible answer is, obviously, to put more focus on high-school students. Another would be to bring in public or private institutions, who could provide those students

[26] Biotechnological Park where several companies in the area of Biosciences research co-exist. No special emphasis is given to environmental sustainability (http://www.biocant.pt/).

[27] NGO dedicated to collect food goods all over the country and posterior distribution to those in need (http://www.bancoalimentar.pt/).

with more technical knowledge and a clear picture of what's happening in terms of environmental initiatives, in a 'real-world' application.

The follow-up of the initiatives in the years after the one where the initiative was promoted seems to be a possible area of improvement also. From the results of the survey it was clear that in the same year the initiative was implemented, the continuity was assured in at least 74% of the cases (Fig. 3.9), but in the following years 13% of the respondents considered the follow-up "bad". Reinforcement activities in pre-planned periods, questionnaires like *Olimpíadas do Ambiente*, communication about the performance of the projects or plans and participatory monitoring and evaluation can be possible solutions to this problem. The follow-up should always be part of the initial work plan.

Not only is the existence of a sustainable development coordinator one way of assuring continuous community involvement in environmental initiatives, but the existence of this individual is also one way to make the promotion of activities more effective, given that decisions are more centralized and motivation is assured by there being someone responsible for this area. This person should be responsible for the set-up and development of environmental initiatives throughout the school community. An important part of this person's responsibilities should be to ensure that as much of the school community as possible is included in those initiatives. In this research and in regards to the questionnaire answers it was possible to show that 57% of the institutions doesn't have, lost (used to have in the previous years) or the respondents simply didn´t knew about the existence of a sustainable development coordinator in the school. In addition, there should be an 'eco-team', comprised of teachers, administrators, duty monitors, parents and students, representing another way to promote environmental education and the continuity of environmental sustainability actions. Given the current economic conditions in the country and the reduced size of many of our institutions, suggesting the existence of a full-time sustainable development coordinator doesn't seem to be a realistic approach, although it is desirable.

In terms of engagement of the school and surrounding community in the promotion and development of environmental initiatives in the institution, parents, administrative staff and the municipality (in this order) are consider to be the ones with the least involvement. Given that there is small connection between the municipality and the educational institutions, it is not strange to see that 73% of the respondents didn't recognize the existence of partnerships with / supported by private or public companies working in the

area / management of environmental sustainability. Involving the entire school community in the environmental decisions, instigating sometimes a bottom-up approach and creating a real concept of "community", where all are welcome and participation is promoted, is one viable option. The problem of the lack of resources in many schools could be minimized if parental support were encouraged. Partnerships with private or public companies could also help in this area.

The *facilitator* position that many times municipalities can assume when dealing with the relation between schools and other private or public companies is of major importance, and teachers and management should directly question the publicly elected for the development of this effort. A word should also go for the lack of initiative of private and public institutions, which could allocate resources, within their possibilities, to help and involve the country´s educational institutions in a deeper manner. In a more broad and superior level, it is the Portuguese government´s role to promote and facilitate the aforementioned connections, creating, for example, tax incentives or positive synergies in these areas.

It was interesting to confirm in the interviews that, from the 25% of the sample that responded to the questionnaire as having some kind of active partnership implemented, several correspond to recycling companies who collect SDW. Although recycling is valuable, it is not above and beyond what is or should be done in everyday life in the community. The existence of two schools that have active partnerships with environmental consultancy companies is one step forward that could represent another positive path to follow.

School management, teachers and students are the ones recognized to be more engaged in the environmental initiatives, and can, because of that, be the front line of the changing movement towards a more sustainable education.

When dealing with the application of a more developed and focused EMS in the Portuguese educational institutions, our focus being mainly on the broadly known EMAS or ISO 14001 processes, it was possible to conclude that none of the respondent´s institutions are actually using these systems, and only a very small percentage of the school population related with the environmental area decisions in the schools knows about them. A discussion can be made around the need to better inform the school workers about the existence and application of these tools, giving the more committed ones the opportunity to go one step

further in relation to the simplified *Eco-School* program and an even bigger step when considering the normal "every-day" environmental management of the institutions. A new line of work can be created by the central government with synergies between the Science and Education Ministry and the Environment, Territory Management and Local Development Ministry.

The 73% of answers that consider positive the implementation of an EMS in their institution consider it an opportunity to take the next step in terms of environmental management in educational organizations in Portugal, but several conditions must be present in order for that to happen:

- Motivational issues should, above all, be solved. Table 3.14 of the results shows that peer and MEC evaluation and stimulus are valuable in the educational community, and this could be a starting point and future area of research to solve those same issues. Collaboration, mainly between teachers can also benefit with this approach.
- The existence of a large variety of projects and small availability of human resources in the educational institutions is also a problem, if schools are aiming to the environmental management excellence. A strict organization of the available resources, institution priorities and global interests should be taken into account and the existence of sustainable development coordinator or environmental task group should exist.
- School environmental awareness and the ability to motivate students and the educational institution´s community is another challenge to overcome in the future. Similar to the Portuguese *PEST* (Programa de Educação Sexual escolar de Turma - school sexual education program in the class), transversal to all the subjects and with wide consensus in the educational community, a "*PEAT*" (Programa de Educação Ambiental escolar de Turma" – school environmental education program in the class) could be created, framed in a wider PEA (Programa Educativo Ambiental - School Environmental Program). Small initial investment would be needed and cost-effectiveness could easily be assessed in the short term, especially with an implemented EMS. It would also be comprehensive and nationwide, standardizing positive desired effects. A schematic approach proposal can be found in Figure 5.1.

One other possible approach to the successful implementation of EMS in educational institutions can be made exploring the help of business angels / Maecenas / private

supporters. These would be important not only for the knowledge and ability to approach students and staff to the business and technical area, but also because of the possible financial support provided.

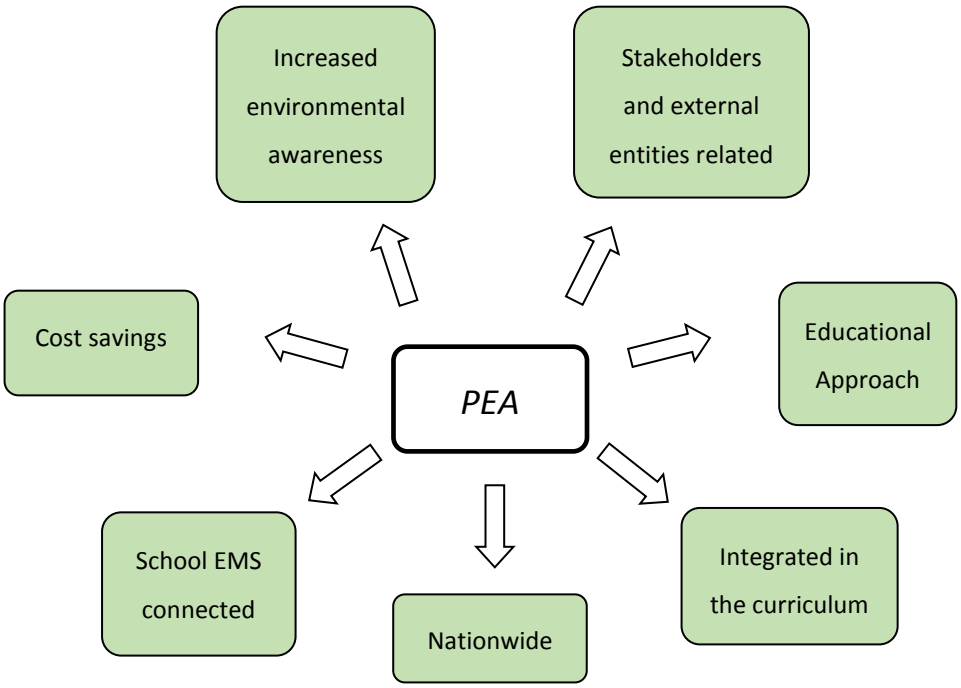

Figure 5.1 – Schematic approach proposal for the nationwide implementation of the "PEA" in educational institutions.

In terms of the results obtained about the type of management of the environmental programs implemented in the analyzed schools, no well-defined approach was recognized in the majority of the institutions, even when comparing questionnaire results and telephone interviews, situation that is in line with the work of Fialho (2009) and Quintas (2012). Nevertheless, "top-down" methodologies could be recognized in 46% of the cases. When a well-defined methodology joins with an assertive management and a participatory approach, positive results emerge. Interviews # 11 and # 13 support this opinion clearly.

The search for environmental knowledge and training in the area of environmental sustainability is part of a committed approach to gain skills that will support a change in the

future. This research shows a pale picture in this area, where no particular member of the school community stood out clearly and positively. Parents, administrative staff and duties monitors are the ones with poorest results in this area. Again, teachers and management staff were the ones showing the best results. Apart from the fact that those were the groups responsible for the large majority of the answers, they are also the ones that, by the position held, should lead the way in terms of research and initiatives. Organizing the development of the environmental knowledge needed for the active and productive participation of all the stakeholders is important. This will allow for the creation of a competitive advantage in the institution and country, based on a constructivist line of work where all the community will, in different ways, be empowered with the understanding of the importance of creating a sustainable future, improving responsibility and collective knowledge, and creating an engaged and embedded ability to sustain future changes and improvements. From these initial changes, an EMS could arise.

Based on the results of this study and literate review from authors like Amirtham (2013), Aragão (2014), Namacau (2011), Quintas (2012) or Samuel (2010), some lines should be dedicated to the understanding of the reasons for the difficulties in the implementation of environmental/environmental sustainability procedures in the institutions. These are obviously related to future problems in the implementation of EMS and their upkeep. The main people and recognized problems reported by the questionnaire respondent opinions when asked about the main difficulties were:

- Management (15%)
- Teachers (15%)
- Administrative staff (5%)
- Duties monitors (9%)
- Students (7%)
- Parents (6%)
- The absence of a sustainable development coordinator in the institution (20%)
- Unnecessary bureaucracy (22%)
- “Others” (3%)

Communication within the school community should be clear and the motivation and goals of the managing team should openly stand out and lead the way. Recognizing lack of time and motivation to deal with the environmental issues with an organized strategy is failed

tactic. Duties monitors, administrative staff and parents should be informed about the actual situation, desired goals and pathway designed to achieve them, and their opinion and participation should be taken into consideration when possible. Poor civic training and social involvement is also a target here. Student empowerment and a continuous environmental strategy that will follow the learners until the end of high-school seem to be an alternative and the existence of a sustainable development coordinator is highly recommended (as highlighted by Interview # 18). Bureaucracy should be reduced to the advisable minimum, supporting short hierarchic chains, electronic and e-mailed simple procedures, and making the best possible use of the available information. Good regulation with proportionality and transparency of procedures in mind, accountability for decisions, and consistency and targeting the defined goals is required.

Lack of time and human resources would be minimized by organizing small teams of different areas / subjects and allocating non-teaching time for the environmental issues purpose, as already discussed. Having prior knowledge of the applicability of the activities and projects can also be an incentive for the effective application of environmental measures. Cross-checking the collected data, no clear trend was possible to be seen in respect to the size of the organization and the implementation of environmental sustainability measures, although the initial researched studies suggested so.

Many of the aforementioned proposed initiatives and lines of work try to follow the seven specific principles of the third article of the Portuguese LBA (Portuguese law 19/2014, from April 14th), initially stated in this work. Most of those principles, namely prevention, participation, management and action unit, international (or national) cooperation or accountability do not seem to be taken into account, at least at the ideal level of action, in the Portuguese educational institutions. Ethical values and school management criteria can thus be questioned in many institutions when dealing with environmental issues.

This research seems to point to a less positive attitude toward some of the Portuguese LBA´s main ideas and lines of action, when dealing with educational institutions, namely in regards to the following questions:

- Is future economic and social self-sustainable development being taken into account, generally and individually, minding our national educational institutions?
- Are anthropogenic factors known and minimized when possible?

- Are resources being rationalized and ideally managed?
- Is the school community actively participating in the decisions of the institutions and, on a broader level, in the national environmental laws?
- Are environmental values being included in the country´s educational curricula and professional development?
- Are teachers being supported in the dissemination of the environmental values?

European Union regulations (Directives n.º 1221/2009 – Nov. 25th; 1600/2002 – Jul 22nd, among others) also seem not to be explored to their maximum potential. Namely if accounting for the volunteer involvement of organizations in management and audit systems, or the need to strengthening volunteer partnerships between private and public companies, as a advantageous approach to accomplishing the environmental goals of the near future. Production, publication and analysis of detailed reports verified by external authorities about the sustainable development of institutions and their environmental performance is only a partial reality, mainly supported in the *Eco-Escolas* program.

This study support´s the work of Orr (nd.), Copley (2008), Namacau (2011) and Gomes (2009), when questioning the existence of a gap between documents like the PNAEE, ENE or PNAC and their real-world application in the educational institutions in asking if it is not doing exactly what Moreira da Silva (2013) feared, i.e., allowing for the actual problems and economic crisis to be an excuse to postpone or fail in preparing a sustainable future. This approach can instead be a catalyst for the desired change, as supported by interview # 12. In this school, resource use was cut in order to save money.

The four dimensions of creativity defended by Soleimani and Tebyanian (2011) do not seem to be explored in the name of environmental sustainability in Portuguese educational institutions. This is mainly because the ability to initiate environmental changes with future sustainability in mind, demanding for stakeholder's involvement and flexibility, motivation for the environmental cause, tolerance to the change and ability to endure, do not seem to be existent in many of the studied cases.

Socioeconomic status and the number of students in the analyzed institutions is not a factor in regards to the environmental commitment and implemented sustainability measures at the school. Management assertiveness, nevertheless, seems to have a clear positive correlation (fr category = 0.47) with the implementation of environmental initiatives. An

even bigger positive correlation (fr category = 0.60 and fr global = 0.54) was found between the existence of professional qualification training and the development of environmental initiatives and implemented environmental sustainability (see Table 4.15), suggesting the need of this kind of educational approach as one possible pathway to achieve proper implemented environmental sustainability. This strong correlation was even more noticeable in the telephone interviews, since, as explained, the initiative and development of many of the environmental sustainability improvements in the educational institutions is attributed to the professional development training, given the need of those involved to develop and apply their knowledge. The fact that the existence of professional education in some educational institutions amounts to a larger funding appropriation (coming from MEC), allowing to allocate more money to different environmental projects, is also one explanation for the positive correlation. This should also be noted. Curious, but also expected, is the fact that the institutions with no relevant environmental initiatives, but with professional programs, are the ones whose professional programs do not have an environmental or technological component in the curricula. Namely, sociocultural animation practices, chef and kitchen, public relations, amongst other humanities-based professional courses.

In terms of the implementation or existence of an EMS, some of the interviewees understood the concept of "EMS" as a single, or a set of simple and sometimes loose initiatives, that could somehow be related to the environment, for example:

...some years ago we tried to use recycled paper in the copy machines, but the option didn´t gather consensus, but was applied. Something is happening … (interview #6).

…we have several clubs and projects related with the environmental area that develop some initiatives along the school year. Collecting batteries, SDW separation, and several areas of activities (interview #10).

Some of the interviewees confused the concept of an applied EMS with the existence of over-simplified *Eco-Schools* related initiatives.

The same can be said about the existence of energy saving systems in the school buildings, for example:

… whenever possible we use double-glazing in the windows, what for me is a strategy. For some time now we have implemented a strategy associated to the number of lamps we have

in use in the corridors. Namely, we understood that being half of them with no light was perfectly acceptable. Also, when the classes end we have someone responsible for shutting off the electrical panel (interview #20).

As for the statement that "no environmental sustainability related initiatives were promoted in the last four years in the institution", answers like the ones from interview #5, #14 and #17 prove that some initiatives did, in fact, exist. This can lead to the discussion that a small percentage of the questionnaires were answered by someone that was not fully aware of the school dynamics in terms of environmental issues.

Minor inconsistencies were also found in other answers, although in the majority of the cases that can be attributed to the fact that in some telephone interviews it was not possible to talk directly with the person responsible for the answers to the questionnaire. Co-workers, co-responsible or supervisors were the ones doing the telephone interview in many cases.

The problems in the implementation of environmental initiatives identified through content analysis of the interviews can be organized in five areas:

- Money related (16%)
- Motivational (56%)
- Work load related (4%)
- Excess activities (12%)
- Lack of sustainable development coordinator (12%)

Money related problems correlate with the inability to conclude started projects, sometimes with the municipality support, inability to proceed to structural works in electrical, water or other facilities that use the institution´s economic resources, and generally with the constraints and inability to economically support people and materials needed to develop projects that can generate environmental gains in the future. Strict management of the school finances seems to be one alternative not completely explored yet, and the indication of interview #1, where all the schools operating expenses and available budget should become public can be debated. Allocating a larger amount of resources by the central government to this cause or the implementation of dedicated and well-managed EMS would be a help in this area. Connecting environmental efforts with social benefits, renting roofs for

solar power to external entities with the purpose of installing solar panels or carbon and environmental footprint calculations and diagnosis are possible lines of work and research.

Still minding money related problems, because of the economic, environmental and social importance, Portuguese middle and high schools should be compared to small to medium companies. When doing so, the parallelism in terms of efficiency to any other well-managed company should be done. One should aim for:

a) Short hierarchical chains;

b) Multitasking in many occasions;

c) Appropriate training for the purpose of the institutions´ and established goals;

d) Ability to adapt to new situations;

e) Limited bureaucracy and simplified procedures;

f) The existence of a dedicated and responsible individual, accountable for the area of sustainable development;

g) Proportional aims and procedures for each school, having in account to the size and complexity of the system analyzed as well as the nature of its environmental impacts.

Although the work-load doesn't seem to be a serious problem, judging by the small number of interviewees that showed some concern in this area, excess of activities and the lack of a sustainable development coordinator in the institution were highlighted problems, being that the latter can many times, accordingly to the research done, be one solution for the former problem.

Motivational problems are by far the ones that pose the biggest problems and according to some of the interviewees (interviews #6, #17 and #22) these are the ones that more easily corrode the implementation of many of the projects. Student lack of motivation, weak management and MEC inputs, and excessive time spent with the development of inconsequent activities are just some of the problems that should be solved.

From the telephone interviews it was also possible to understand the main concerns about urgently needed interventions, closely related to the aforementioned motivational,

economical and other problems. These are the need for private or public partnerships related with environmental sustainability, green spaces maintenance, planned interventions cut short and urgent interventions in the electrical, SDW control or water channeling.

All the interviewed institutions that belong to *Eco-School* program had implemented activities in the environmental area, although highly variable in environmental importance and school community´s involvement. These data seems to support once more the importance of the *Eco-School* program as the starting point for any more developed EMS and initial input to the environmental sustainability change.

According to the initial research and collected results, and having in mind careful management of educational institutions when comparing them to other small to medium companies in terms of efficiency, this study is following several main ideas. Specifically and on the positive side, short hierarchical chains are common in most educational institutions, where the responsible for the environmental activity reports many times only to the principle. Multitasking is recognized to some degree (but with space to improve), given that the management team and teachers are often solely responsible for the research, development and promotion of the environmental activity, many times investigating the use of scientific and technological resources.

On the negative side, appropriate training is not given to the school community nor is the quest for it encouraged in the workers of the institution. Environmental goals, when existent, are often not clearly communicated. This situation, side-by-side with bureaucracy and complicated procedures does not help in the aforementioned lack of motivation. The common nonexistence of a sustainable development coordinator, to help in the development of all the above-mentioned situations and support proportional aims and procedures, as well as the nature of the environmental impacts in his/her institution, also doesn't help. Adaptation to new situations didn´t seem easy. Lack of motivation due to constantly changing government employment policies and poor working conditions are in many cases having an important negative role.

The needed motivation of the staff, readiness to accept proposals and provide proper feedback and the conditions for the engagement of the personnel, as suggested by Soleimani and Tebyanian (2011), allowing for the implementation of new ideas, is not readily found in the data collected. Valsassina private school and Loulé high school are some of the few good

examples to take into account. From the telephone interviews was possible to understand that these schools have motivated staff and strong management.

The instruments and principles suggested by Pinheiro (2009) and Videira *et al* (2007) and explored in the beginning of this dissertation do not seem to be present in the majority of the studied examples in the applied surveys. The support for this can be found in the lack of interaction with local corporations and institutions, as well as the lack of sustainable socio-economic experiences provided by the educational institutions or external entities. The relative (and sometimes total) lack of control of the impacts of atmospheric emissions, SDW, indoor air quality, thermic or luminous pollution are real and the sustainable use of the built existent spaces is not so common as could be expected, specially through EMS and innovation. Several questionnaires and interviews allow us to conclude, nevertheless, about the fostering of the efficient use of resources in many situations, which is without no doubt positive.

5.2 – SUGGESTIONS FOR IMPROVEMENT

From this study many inferences and lines of discussion arose, and many developments were concluded to be possible in the short to medium term. A compilation of these in a simplified manner follows below.

There is no doubt at this stage of the research that the central government, trough MEC or/and ETMLD, and at a more local level, the municipality, through dedicated departments or assigned individuals, should not only be a partner but also a catalyst of initiatives between the educational institutions and the local business fabric and public or private enterprises. Awareness should be brought through supported studies and direct contact with these organizations should happen. Everyone in the school community should make these efforts.

The implementation of a developed EMS in educational institutions, with the purpose of joining efforts to reduce environmental impact and economic costs and increase sustainability, seems to be at this stage not only needed, but desired and essential. The change should be gradual to allow for the adjustment of all stakeholders and the testing of procedures and implemented changes. Initial tests in pilot-schools should be conducted and a three-step approach should be implemented. The proposal steps are as follows:

Step 1 – For the first two years, a School Environmental Program with MEC guide-lines and dedicated in-class environmental programs would be implemented. Simultaneously, Eco-School program would be adopted, or if already adopted in the institution, fine-tuning its procedures and results would be the goal.

Step 2 – For the next two years, maintaining the school and class environmental programs is one goal. Simultaneously, the implementation and development of an advanced and more professionalized EMS is the second goal, keeping in mind the educational perspective. ISO 14001 or EMAS are one option and the choice of maintaining Eco-School program or not would depend on the institution´s resources.

Step 3 – Maintaining the school and class environmental programs continues to be one of the main goals in the fifth year. Certifying the institutionalized procedures in regards to implemented EMS would be the final objective, following a continuous PDCA logic from then on. Simple tools to control and evaluate the project should be created.

In the educational institutions, planning ahead is essential and a much more pro-active and organized approach should be taken aiming to influence resources management and general change of behaviors within the school community. Clear guidelines, curricular supplements and accessible resources should be available for those working on the initiatives. Participative working methodologies developed in yearly workshops promoted in every school, supported by discussion groups focused on developing reduction and mitigation measures, cost control and compensation actions, should exist and are desirable. The relationship between the philosophical and educational nature of environmental education and education for sustainability should be understood and highlighted in every subject area.

To compensate unavoidable emissions, simple calculations of discharges or CO_2 production can be made and funds eventually raised to compensate for this pollution. These funds could be allocated in "compensation projects", already available all over the world with certified procedures. Similar procedures can be conducted in other environmental domains, like water saving and waste valorization.

The position/existence of the SDC is of extreme importance to the educational institutions. Simultaneously, the existence of the "Sustainability Development Office" (SDO), made up of various members of the school community, including parents, students, teachers, administrators and maintenance staff is highly advisable. This office could be linked with *Eco-schools* forum, if already existing. These members would be the responsible for the organization of the environmental and sustainability educational institutions´ plans and activities, as well as for the implementation and management of the future EMS. Non-teaching working hours should be allocated and an assertive and environmentally-focused management team should exist. There is no doubt that in institutions with scarce resources or where the allocation of more working hours is difficult or impossible like-minded persons should be found and good will, readiness and motivation will be essential.

The research pointed to the fact that not only does the implementation of existing environmental legislation have many flaws at the educational institution level, but also that

the interpretation of voluntary-approach instruments like the “Eco-Schools” program, widely depends on the good will, knowledge and readiness of those in charge of the environmental programs. A voluntary approach will always have to exist as the first step to the implementation of an EMS to accommodate differences between educational institutions. As second step, however, a gradual change to compulsory instruments is advisable.

The existence of professional education with a technological or environmental approach in the student’s educational curricula has proven to be a powerful promoter of environmental sustainability activities. Whenever possible, these type of professional education curricula should be encouraged. Development training for the educational community is also advisable if resources are available. Although it was only sometimes discussed in this study’s research, publicizing the environmental goals, activities and outcomes of the sustainability development strategy of the educational institution seems to be a good way to inform and motivate the entire school community. This type of procedure could become routine.

Empowering duties monitors and administrative staff with environmental sustainability knowledge was shown to be important in this study. Dedicated training courses should be provided by the institutions or even by the central government. Once again, municipalities and/or private institutions can play an important role in this area.

High-school targeted initiatives were proven to be in deficit when compared with middle-school. The approach to the business and working market in the area of environmental sustainability, related social initiatives promoted by the students and encouraged by teachers or a scientific or technological approach to the subject in class time can be possible solutions to the lack of high-school initiatives. Many more ideas could arise from the institution´s resources.

6. – CONCLUSIONS AND FUTURE DEVELOPMENTS

6.1. – CONCLUSIONS

Despite obtaining an answering rate of 14%, the sample was considered to be random, impartial and dependable in terms of results, as shown in the discussion. The desired stratification of answers was not achieved in the e-mailed questionnaire, leading to the assumption that some very important stakeholders of educational organizations – duties monitors and to a minor extent administrative staff – are not taken into account in terms of opinion or importance. Empowering these personnel with environmental sustainability knowledge can be an important step forward in the environmental management of an educational institution, given their professional functions.

The fact that more than 10% of the respondents (after adjusted with the interviews) had no environmental initiative developed in their institution in the last 4 years, is a worrying number. It is so, since in national terms, the number of middle and high-schools without environmental initiatives in the studied population can be much bigger. More research should be done in this area to obtain accurate conclusions and act accordingly. All the institutions that were *Eco-Schools* had implemented activities in the environmental area, although highly inconstant in environmental importance and community involvement. The *Eco-School* evaluation by the respondents was positive.

Many environmental initiatives developed in public and private institutions are of minimal impact and commitment, given the educational, social and cultural expectations of a European country. The need to standardize the number and quality of these initiatives arose from this research.

Almost 100% of the environmental initiatives developed in our schools (97%) had their origins in the school (and remained "closed" in the school) or represent minor interventions by external entities. The partnership with private and public institutions outside of the educational institutions that are capable of bringing new ideas, initiatives and

knowledge, as well as making the connection between the educational institutions and the corporate structure and business fabric in the region, is not being properly done. In order for schools to have a broader environmentally sustainable approach to development, there will need to be a closer connection between the schools, municipality and private institutions.

More focus should be put in the development of high-school targeted initiatives, with the purpose of creating a continuum of knowledge and action from middle-school. Including the business and working market in the planning can be a good option.

A work-plan with reinforcement activities in pre-planned periods, questionnaires like *Olimpíadas do Ambiente*, communication about the performance of the projects or plans and participatory monitoring and evaluation, together with an also pre-planned follow-up, will allow for improving the continuity of environmental initiatives.

The existence of a sustainable development coordinator is desirable and should be encouraged in every institution. Equally, multidisciplinary teams should gather periodically to discuss the environmental management of the institution. These two entities should ensure continuous stakeholder involvement, more effective promotion of environmental activities and an active participatory approach at all levels.

Parents, administrative staff and the municipality are the ones considered to be the least engaged in the environmental initiatives and environmental sustainability promotion in Portuguese educational institutions. Bottom-up approaches, the concept of a real "school community" and effective partnerships with outside entities should be instigated. Municipalities can have an important role as facilitators of many of the aforementioned relations.

Despite the continuous growth and strong development of ISO 14001 certificates in Portugal on the last ten years, almost no one from the school community know (or understand the purpose) of the existence of developed EMS like the EMAS or ISO 14001. This seems to open a door for training in the area and possible synergies between the Science and Education Ministry and the Environment, Territory Management and Local Development Ministry. Most schools consider positive the implementation of an environmental management system. Having an active partnership with environmental consultancy companies can be an important help in terms environmental management of the institution and future development of an EMS at EMAS or ISO 14001 level.

The lack of motivation of some staff has a relation with the Science and Education Ministry evaluation and stimulus. A collaborative approach with environmental stimulus and evaluation along all the educational hierarchy is a preliminary point to implement. An excessive number of projects and reduced number of human resources were also identified in some interviews (interviews #10, #17 and #21). Strict management of priorities, well defined management goals and the existence of the sustainable development coordinator can be a response to this problem. The lack of environmental sensibility and awareness could be minimized with the creation a school environmental education program. The same should be standardized, comprehensive and nationwide, becoming because of that a normalization, control and unifying tool in terms of environmental procedures. Having prior knowledge of the applicability of the activities and projects can also be an incentive for the effective application of environmental processes.

Assertive management and participatory approaches, together, seem to stand out positively in terms of results.

Globally, the schools´ stakeholders present weak results when dealing with the search for knowledge in the environmental area. Organizing the development of the environmental knowledge needed for the active and productive participation of all the stakeholders will allow for a competitive advantage in the institution and country.

Communication between school stakeholders should be clear and the motivation and goals of the managing team should openly stand out and lead the way. Bureaucracy should be reduced to the minimum.

When developing environmental sustainability actions, it was not possible to find a correlation between the organization´s size or socioeconomic status and the implementation of those actions.

Many of the ideologies of the Portuguese LBA and European Union regulations are not being taken into account at the ideal level of action. This research points to a less positive answer to some of the EU and Portuguese LBA environmental main ideas and lines of action, when dealing with educational institutions. From the discussion it was also possible to conclude that the publication and analysis of reports about the sustainable development of institutions and their environmental performance, certified by external organizations, is only a very restricted reality, highly supported in the *Eco-Schools* program.

The existence of professional qualification training for students in educational institutions, especially with a strong component of environmental knowledge and technology in their curricula, has a strong correlation with the existence of environmental initiatives in the educational institutions. They seem to act as catalysts for many of the activities

The inability to conclude started projects (sometimes in partnership with the central government or municipality), inability to start structural works in energy, water or other facilities that use the institution´s economic resources, and the constraints and inability to economically support staff and materials needed to develop projects that can generate environmental gains in the future, are recognized problems.

Short hierarchical chains and some multitasking exists in many of the analyzed institutions, although adaptation to new situations (and flexibility) is not apparent. Appropriate environmental management training is not given to the staff most of the time and in many cases they do not seek out. It was possible to conclude that some schools are fostering of the efficient use of resources in many situations.

A comprehensive step-by-step approach to future environmental management in educational institutions and development of dedicated EMS seems to be the way to go. Adapted legislation that will frame and harmonize simplified environmental management systems in the short-term and the aforementioned step-by-step approach, progressing to more demanding and ambitious organizational systems could be created by the central government. Benefits will arise from this approach. A first approach in pilot-schools could be made.

Educational institutions should be the first to implement the concept of environmental democracy, promoting green entrepreneurism at the school level, as this is associated with economic and social benefits, showing the importance of investing in the environmental sustainability to the population. Parents should be called to participate in more activities in order to act side-by-side with their children with environmental education in mind. The municipality or even central government should act not only as a partner but also as a catalyst of partnerships, leading to future environmental sustainability. Efforts should be dedicated not only to solve existing problems, but also in the mitigation of future ones, through well-defined strategies.

6.2. – FUTURE LINES OF RESEARCH

Although it was not the focus of this study, some readings and the investigation itself allowed to understand that, in the educational system, very few researches approach the statistical connection between the implemented environmental sustainability and the economical accounting point of view. Starting to develop dedicated Environmental Accounting Systems (EAS) to overcome this lack of information could be important. Allowing the information to be accessible to the public will probably not only bring awareness of the economic pressure related to environmental sustainability in educational institutions, but it will also allow future researches and the implementation of developed EMS as a way to minimize that economic burden.

In a more sociological-based study, it would be very interesting to deepen the knowledge of the school community's behavior and actions as related to environmental issues. This could lead to the understanding of the way individuals accept and deal with the environmental problems of the present, capturing the logic behind the functioning of different educational institutions. Because of that, better framing of school communities' actions and management decisions could be done.

A short-term study about the several ways that the municipality can act, not only as partner, but also as catalyst, between the educational system and the corporate structure and specialized private or public entities in the area of influence on a school is essential.

Given that software and computer systems can easily facilitate the access to information and decision-making, it seems logical to research, develop and implement a modular and flexible software, aimed toward developing schools' environmental sustainability. The goal of such a system would be to allow for the educational communities to understand in an autonomous way the different environmental pressures acting on the institution, frame the decision making, and allow for the control of results. In short, a system to facilitate the implementation of dedicated EMS is suggested.

Bero (2012) suggests that popular technology gadgets like live building energy monitors, among others, can induce improved awareness for the environmental cause. More

research should be done in this area, and, if proved the validity of the approach, some resources could be allocated to technologically improve our educational system.

Future qualitative research could be made with content analysis in mind. Identifying the more urgent areas of intervention and the biggest environmental and economic pressures will allow for better framing of future actions and goals, helping the school government.

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ANNEXES

ANNEX I – Main differences between EMAS and ISO/EN ISO 14001 (source: EMAS factsheet, May 2008)

	EMAS	ISO/EN ISO 14001
Status	Under legal bases (EU Member States and EEA countries). Regulation of the European Parliament and the Council under public law	Under no legal bases. (International: world wide) ISO standard under private law
Organisation	The entity to be registered shall not exceed the boundaries of the Member State, and it is intended to go towards entities and sites	Does not go towards entities or sites
Environmental policy	Included commitment to continual improvement of environmental performance of the organisation	Does not include a commitment to the continual improvement of environmental performance but of the performance of the system
Initial environmental review	Obligatory preliminary review, when is the first time that the organisation sets its environmental status	Initial review is recommended, but not required
Environmental aspects	Identification and evaluation of the environmental aspects (direct and indirect). Establishment of criteria for assessing the significance of the environmental aspects	Required only a procedure able to identify environmental aspects
Legal compliance	Obligatory to demonstrate it. Required full legal compliance. There is a compliance-audit	Only commitment to comply with applicable legal requirements. There is no compliance-audit
External communication	Open dialogue with the public. Public Environmental Statement (validated for verifiers)	Not open dialogue with the public. Only is required to respond to relevant communication from external interested parts. Control by public is not possible
Continual improvement	Required annual improvement	Required periodically improvement without a defined frequency
Management review	Is wider and requires an evaluation of the environmental performance of the organization, based in a performance-audit	Required an environmental performance in the management, but not through a performance audit
Contractors and suppliers	Required influence over contractors and suppliers	Relevant procedures are communicated to contractors and suppliers
Employees involvement	Active involvement of employees and their representatives	No
Internal environmental auditing	Includes: system-audit, a performance-audit (= evaluation of environmental performance) and an environmental compliance-audit (= determination of legal compliance)	Included only system audit against the requirements of the standard
Auditor	Required the independence of the auditor	Advised the independence of the auditor
External verification	Accredited environmental verifiers	No
Verification/ Certification Scope	Verifiers accredited according to NACE codes	Certifiers accredited according to EAC code
Authorities are informed	Obligation by Validation of Environmental Statement	No obligation
Logo	Yes	No

ANNEX II – E-mail applied Questionnaire to Portuguese Middle and High-Schools

Ambiente e Sustentabilidade Escolar / Iniciativas Aplicadas e Percecionadas

Caro(a) Docente, membro da Direção, Secretaria ou Assistente Operacional escolar,

No sentido de podermos analisar os esforços de promoção ambiental e sustentabilidade no parque escolar de 3º Ciclo e Ensino Secundário do nosso pais, torna-se essencial obter a opinião dos principais intervenientes na vida diária das instituições de ensino, pelo que é extremamente importante que responda ao questionário que em seguida lhe apresentamos.

Com o presente questionário pretende-se recolher dados para:
(i) Caracterizar o grau de envolvência das instituições de ensino nas questões de sustentabilidade ambiental.
(ii) Recolher informação que contribua para o aperfeiçoamento das diferentes dimensões da promoção do ambiente e sustentabilidade em meio escolar.

As questões apresentadas não têm associadas respostas corretas ou incorretas e pretendem apenas recolher opiniões pessoais.

Garantimos que os dados recolhidos serão tratados com respeito pelo anonimato e confidencialidade dos mesmos, reforçando o facto da sua colaboração ser essencial! O preenchimento levará aproximadamente 10 min.

Agradecemos desde já a sua colaboração.

Nome da Instituição

Distrito

Concelho

Cargo Desempenhado na Instituição

Anos ao Serviço da Instituição

Continuar »

25% concluído

Identificação de Iniciativas e sua Continuidade

Recorda-se de alguma iniciativa de promoção da sustentabilidade ambiental escolar, ou de promocão de comportamentos ambientalmente corretos, nos últimos 4 anos, na instituição onde exerce funções (ou exerceu funções, por motivo de desemprego, mudança de área ou outro)?

Se respondeu afirmativamente à questão anterior, recorda:

Essa(s) iniciativa(s) foram:

Nota1- Pode selecionar uma ou mais opções. Nota2- Entende-se por Sistema de Gestão Ambiental (SGA) uma estrutura organizacional ou conjunto de iniciativas que permitam à instituição avaliar e controlar os impactos ambientais das suas atividades, produtos ou serviços.

- ☐ Sistema(s) de gestão ambiental
- ☐ Construção sustentável
- ☐ Formação sobre poupança energética em edifícios
- ☐ Iniciativa "Eco-Escolas"
- ☐ Iniciativa Ciência Viva
- ☐ Iniciativa "Projeto 80"
- ☐ Iniciativa "Eco-design"
- ☐ Criação e comunicação do relatório de sustentabilidade
- ☐ Iniciativa promovida pelo "Clube do Ambiente" (ou similar)
- ☐ Outro(s) (indicar por favor)

Indique por favor o nome/designação da iniciativa que considera ter tido maior impacto positivo entre as que indicou na questão anterior.

Indique por favor, em sua opinião, a razão desse impacto positivo.

A promoção dessa iniciativa teve origem:

A/As atividades promovidas no âmbito dessa iniciativa:

Do conjunto de iniciativas que chegaram ao seu conhecimento, sendo 1 "muito má" e 5 "muito boa", como classifica a continuidade das mesmas:

	1	2	3	4	5
Ao longo do ano letivo onde foram desenvolvidas?	○	○	○	○	○
Ao longo dos anos letivos posteriores?	○	○	○	○	○

« Anterior | Continuar »

50% concluído

Envolvência dos Intervenientes

Pertence ou pertenceu a uma Eco-Escola?

Se respondeu afirmativamente à questão anterior, como avalia os resultados da iniciativa?

A instituição onde desenvolve funções (ou exerceu funções, por motivo de desemprego, mudança de área ou outro) possui/possuia algum responsável pela área da promoção ambiental?

Se respondeu "sim, possuia" na questão anterior, indique por favor o motivo:

Sendo 1 "muito má" e 5 "muito boa", como caracteriza a envolvência em iniciativas no âmbito ambiental/da sustentabilidade escolar:

	1	2	3	4	5
Da autarquia que tutela a região onde desenvolve funções?	○	○	○	○	○
Da Direção / órgão de gestão escolar?	○	○	○	○	○
Do corpo docente?	○	○	○	○	○
Do pessoal Assistente Operacional?	○	○	○	○	○
Do pessoal administrativo?	○	○	○	○	○
Dos alunos?	○	○	○	○	○
Dos Encarregados de Educação?	○	○	○	○	○

« Anterior | Continuar »

75% concluído

Outras Informações

A instituição onde desenvolve funções possui/possuía alguma parceria estratégica com empresas na área da gestão/sustentabilidade ambiental?

Se respondeu afirmativamente à questão anterior, identifique o parceiro e resuma por favor o tipo de parceria.

Se respondeu "sim, possuía" na primeira questão desta página, indique por favor o motivo:

Conhece ou de alguma forma já trabalhou com o EMAS (Eco-Management and Audit Scheme) ou similar?

Conhece ou de alguma forma já trabalhou com a norma de certificação da série ISO 14000 ou similar?

Na sua opinião, a introdução de um Sistema de Gestão Ambiental (SGA) na instituição onde desenvolve funções (ou desenvolveu funções, por motivo de desemprego, mudança de área ou outro):

Se respondeu "Seria bem vinda, mas de aplicação duvidosa", "Seria desnecessário" ou "Impossível de aplicar", resuma por favor a razão dessa dificuldade.

A gestão dos assuntos ambientais/na área da sustentabilidade ambiental na instituição onde desenvolve funções (ou exerceu funções, por motivo de desemprego, mudança de área ou outro) tem sido:

Sendo 1 "muito pouco" e 5 "muito", como classificaria o esforço de habilitação/formação realizado nos últimos 4 anos na instituição onde exerce/exerceu funções, com vista ao ganho de competências na área ambiental e de sustentabilidade ambiental de:

	1	2	3	4	5
Direção	○	○	○	○	○
Professores	○	○	○	○	○
Pessoal administrativo	○	○	○	○	○
Pessoal Assistente Operacional	○	○	○	○	○
Estudantes	○	○	○	○	○
Encarregados de Educação	○	○	○	○	○

A receção de informação periódica na instituição de ensino (e-mail, newsletter, outros) com ideias e procedimentos concretos na área da promoção ambiental/da sustentabilidade ambiental seria:

Considerando as instituições de ensino que encontram dificuldades na implementação de procedimentos de promoção ambiental/de sustentabilidade ambiental, diria que essas dificuldades poderão ser atribuídas maioritariamente a:

Nota- Pode selecionar uma ou mais opções.

- ☐ Direção
- ☐ Pessoal docente
- ☐ Pessoal administrativo
- ☐ Pessoal Assistente Operacional
- ☐ Alunos
- ☐ Encarregados de Educação
- ☐ Ausência de responsável ambiental
- ☐ Procedimentos burocráticos instituidos
- ☐ Outros (por favor especifique)

O que considera mais importante para estímulo ou efetivação de medidas, atividades e projetos ambientais nas instituições de ensino?

Comentários/sugestões?

« Anterior Enviar

Nunca envie palavras-passe através dos Formulários do Google.

100%: terminou.

ANNEX III – Semi-structured telephonic interview guidelines

Guião Entrevista semi-estruturada Escolas 3º Ciclo + S

(sustentabilidade percecionada e implementada)

Tema: Sustentabilidade ambiental percecionada e implementada na escola pública 3º Ciclo + S

Objetivos:
Aprofundar o conhecimento proporcionado pelo inquérito;
Aferir a veracidade e importância de algumas respostas mais relevantes;
Compreender detalhes orgânicos e processuais de algumas atividades relacionadas com respostas mais relevantes.

Pessoa/as a entrevistar: Responsáveis pela resposta ao inquérito inicial selecionados ou supervisores diretos.

Variáveis que pretendemos estudar:
Razão/veracidade da resposta "não se recorda de nenhuma iniciativa nos últimos anos";
Pormenores orgânicos das escolas que indicam ter SGA implementados, sistema de poupança energética em edifícios, relatório de sustentabilidade, microgeração e projeto de combate às alterações climáticas;
Compreender o conceito de "gestão voluntária do carbono" aplicado às escolas;
Aferir a dificuldade na motivação dos intervenientes escolares para a temática;
Observar a profundidade de envolvimento dos intervenientes com autarquia e empresas de consultoria ambiental;
Observar a profundidade de conhecimento e implementação do EMAS e/ou ISO 14001

Questões base a desenvolver:

Aos que afirmaram não se recordar de nenhuma iniciativa" (página 2, questão numero 1):

1- Veracidade / confirmação, envolvente social, número de alunos, pontos positivos e negativos a destacar de momento no condicionamento das iniciativas, outros que deseje referir para melhoria…

Aos que indicaram que as iniciativas que se recordam são SGA, poupança energética em edifícios, criação e comunicação do relatório de sustentabilidade, entre outros (página 2, questão numero 3):

1- Veracidade / confirmação, envolvente social, número de alunos
2- Desenvolvimento pormenorizado da iniciativa
3- Pontos positivos e negativos a destacar de momento no condicionamento das iniciativas, outros que deseje referir para melhoria…

Aos que indicaram possuir parcerias com a autarquia e/ou empresas na área da

sustentabilidade ambiental (página 4, questão numero 1):

1- Veracidade / confirmação, envolvente social, número de alunos
2- Desenvolvimento pormenorizado da iniciativa
3- Pontos positivos e negativos a destacar de momento no condicionamento das iniciativas, outros que deseje referir para melhoria…

Aos que responderam já ter trabalhado com EMAS, ISO 14001 ou outro similar (página 4, questão numero 4 e 5):

1- Veracidade / confirmação, envolvente social, número de alunos
2- Iniciativa em contexto educativo/de escola?
3- Desenvolvimento pormenorizado da iniciativa
4- Pontos positivos e negativos a destacar de momento no condicionamento das iniciativas, outros que deseje referir para melhoria…

ANNEX IV – Participating institutions in the questionnaire[28], area of influence[29] and type of funding/management[30]

	Origin in the Country			**Management/Funding**		
Institution Name	North	Center	South	Public	Cooperative	Private
AE António Damásio		X		X		
AE Damião de Goes			X	X		
AE. Anselmo de Andrade		X		X		
AE. de Fornos de Algodres	X			X		
AE. Muralhas do Minho, Valença	X			X		
AE. Padre Benjamim Salgado	X			X		
AE. Coimbra Centro	X			X		
AE. VNP	X			X		
AE. da Maia – ES da Maia	X			X		
Agrupamento de Escolas Alexandre Herculanc		X		X		

[28] Please note the reader that from the stated 76 participations, only 60 different names are presented in the above table. This is due to the fact that more than one person from different school areas (Management, teacher, auxiliary, human resources) participated in five different schools and 5 other schools didn't correctly identified themselves.

[29] Portugal is commonly divided in "Islands", "North", "Center", "South" and the area of "Great Lisbon" (Attachment n.º IV for details)

[30] To fit general purposes it can be said that Portuguese schools normal fit into 3 types of funding and management: Public- Supported by public funds and managed by a democratic elected board/principal; Cooperative teaching- Supported in different percentages by public funds and private ones with different types of management; Private- Supported mainly by private funding and with different types of managing.

Agrupamento de Escolas Artur Gonçalves		X		X
Agrupamento de Escolas da Moita		X		X
Agrupamento de Escolas de Airães	X			X
Agrupamento de Escolas de Aljustrel			X	X
Agrupamento de Escolas de Arganil		X		X
Agrupamento de Escolas de Carnaxide		X		X
Agrupamento de Escolas de Mortágua	X			X
Agrupamento de Escolas de Muralhas do Minho	X			X
Agrupamento de Escolas de Ribeira de Pena	X			X
Agrupamento de Escolas de Sampaio		X		X
Agrupamento de Escolas de Santo António		X		X
Agrupamento de Escolas de Vila Nova de Paiva	X			X
Agrupamento de Escolas Figueira Norte	X			X
Agrupamento de escolas monte da lua		X		X
Agrupamento de Escolas Nº 2 de Abrantes		X		X
Agrupamento de escolas Rodrigues de Freitas	X			X
Agrupamento de Escolas Sá de Miranda		X		X
Agrupamento Escolas Ferreira de Castro		X		X
Agrupamento Escolas João Silva Correia	X			X

Agrupamento Escolas Miranda Corvo	X			X		
Ced Jacob Rodrigues Pereira - Casa Pia De Lisboa		X			X	
Centro de Estudos de Fátima		X			X	
CLIP	X					X
Colégio Campo de Flores		X				X
Colégio Liceal de Santa Maria de Lamas	X				X	
Colégio Valsassina		X				X
DIDÁXIS	X				X	
E.S. Rio Maior		X		X		
EB 2,3 D. Manuel de Faria e Sousa	X			X		
EB 2/3 Pêro de Alenquer			X	X		
EB Ferreiras	X			X		
EBS de Fornos de Algodres		X		X		
EBS de S. João da Pesqueira	X			X		
EBS Ferreira de Castro		X		X		
EBS Rodrigues de Freitas	X			X		
ES. de Gago Coutinho		X		X		
ES. sá de Miranda		X		X		
ES/3 da Amora		X		X		
Escola Cooperativa de Vale S. Cosme	X				X	

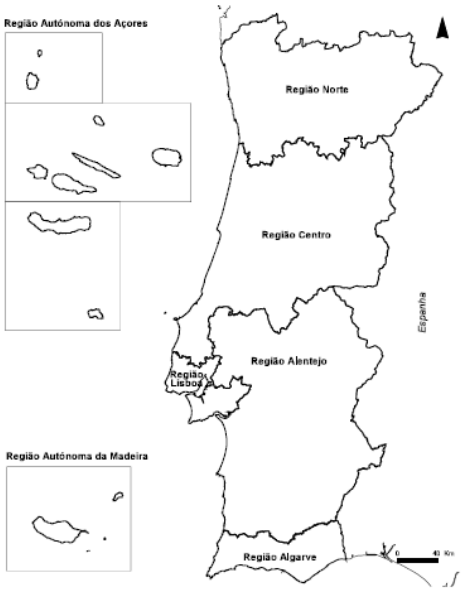
Escola dos Casquilhos		X		X		
Escola Michel Giacometti		X		X		
Escola Sá de Miranda	X			X		
Escola Sec. de Miraflores		X		X		
Escola Secundária de Loulé			X	X		
Escola Secundária de Paços de Ferreira	X			X		
Escola Secundária Manuel da Fonseca			X	X		
Escola Secundária Sá de Miranda	X			X		
Externato D. Dinis	X					X
Instituto de Nossa Senhora de Fátima			X		X	
Valença Escola 23/S de Lanheses	X			X		
Total:	28	26	6	50	6	4
Total %:	47%	43%	10%	83%	10%	7%

ANNEX V – 2010 Portuguese area and population by "NUTS II" (Statistical sub-regions of Portugal)

Territory

TERRITÓRIO

TERRITORY



Portugal - Área e População por NUTS II [1]

Portugal - Area and population by NUTS 2 [1]

ano 2010	Área	População residente	Densidade populacional
	km²	N.º	hab./km²
Portugal	**92 212,0**	**10 636 979**	**115,4**
Continente	89 088,9	10 143 600	113,9
Norte	21 285,9	3 741 092	175,8
Centro	28 199,4	2 375 902	84,3
Lisboa	3 001,9	2 839 908	946,0
Alentejo	31 604,9	749 055	23,7
Algarve	4 996,0	437 643	87,6
R. A. Açores	2 322,0	245 811	105,9
R. A. Madeira	801,1	247 568	309,0
	km²	No.	inhab./km²
2010 year	Area	Resident population	Population density

Fontes: Instituto Geográfico Português (IGP); INE, I.P., Estatísticas Demográficas; Estimativas Provisórias de População Residente.

Source: Portuguese Geographic Institute (IGP), ; Statistics Portugal, Demographic Statistics; Provisional Estimates of Resident Population.

(1) A partir da Série Cartográfica Nacional à escala 1:50000 e Carta Administrativa Oficial de Portugal - CAOP 2009.1

(1) After the National Cartographic Series at 1:50000 scale and the Official Administrative Map of Portugal - CAOP 2009.1

Nota: A análise é realizada com base nas Estimativas da População Residente (INE) não ajustadas aos Resultados Provisórios dos Censos 2011 recentemente disponíveis.

Note: The analysis is performed based on Resident Population Estimates (INE) not adjusted to the provisional results of the 2011 Census recently available.

ANNEX VI – Schools Selected for Telephone Interview and associated reason

Institution Name	**Origin in the Country**			**Associated Reason**
	North	Center	South	
-AE António Damásio		X		"I do not recall any initiative in the last four years in my institution"
-AE. Anselmo de Andrade		X		"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)"
-AE. de Fornos de Algodres	X			"I know / have worked / work with a similar one in relation to EMAS or ISO 14000 norm"
-AE. Padre Benjamim Salgado	X			"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)"
-AE. Coimbra Centro	X			"I do not recall any initiative in the last four years in my institution"
-Agrupamento de Escolas Alexandre Herculan		X		"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)" "The initiative with the biggest impact in the school was the EMS /

			voluntary carbon management"
-Agrupamento de Escolas de Arganil		X	"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)"
-Agrupamento de Escolas de Muralhas do Minho	X		"I do not recall any initiative in the last four years in my institution"
-Agrupamento de Escolas de Ribeira de Pena	X		"I know / have worked / work with a similar one in relation to EMAS or ISO 14000 norm"
-Agrupamento de Escolas de Sampaio		X	"The environmental initiatives had its origin in the municipality"
-Agrupamento de Escolas de Santo António		X	"I do not recall any initiative in the last four years in my institution"
-Agrupamento de Escolas Nº 2 de Abrantes		X	"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)"
-Agrupamento de escolas Rodrigues de Freitas	X		"I do not recall any initiative in the last four years in my institution"
-Agrupamento de Escolas Sá de Miranda		X	"I do not recall any initiative in the last four years in my institution"
-Agrupamento Escolas Miranda Corvo	X		"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the

			community)"
-Centro de Estudos de Fátima		X	"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)"
-CLIP	X		"The school as a business-like view of environmental management"
-Colégio Campo de Flores		X	"We have electrical energy micro generation"
-Colégio Valsassina		X	"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)" "we have a *climate change combat* program" "The initiative with the biggest impact in the school was the EMS / voluntary carbon management" "The institution as a partnership with environment consulting companies and / or NGO"
-EB 2,3 D. Manuel de Faria e Sousa	X		"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)"
-EBS de Fornos de Algodres		X	"The initiatives I recall are EMS,

			energy saving in buildings, sustainability report instituting and results communication (to the community)"
-ES. de Gago Coutinho		X	"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)"
-ES. sá de Miranda		X	"I do not recall any initiative in the last four years in my institution"
-ES/3 da Amora		X	"We collect rain water for posterior use"
-Escola Cooperativa de Vale S. Cosme	X		"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)" "I know / have worked / work with a similar one in relation to EMAS or ISO 14000 norm"
-Escola dos Casquilhos		X	"I do not recall any initiative in the last four years in my institution" "I know / have worked / work with a similar one in relation to EMAS or ISO 14000 norm"
-Escola Michel Giacometti		X	"The environmental initiatives had its origin in the municipality"

-Escola Secundária de Loulé			X	"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)" "we have instituted the *environmental sustainability office* in the school"
-Escola Secundária Sá de Miranda	X			"I do not recall any initiative in the last four years in my institution" "The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)"
-Externato D. Dinis	X			"I do not recall any initiative in the last four years in my institution"
-Instituto de Nossa Senhora de Fátima			X	"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)"
-Valença Escola 2/3/S de Lanheses	X			"The initiatives I recall are EMS, energy saving in buildings, sustainability report instituting and results communication (to the community)"
Total:	13	17	2	
Total %:	41%	53%	6%	

ANNEX VII – Resumed Interview Transcriptions

Resumed Interview Transcript #1

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Lanheses public school (middle and high school) vice-principal**

Relation with the e-mailed survey: 1st person

Interview Settings: Interview conducted by phone, 2.45pm, 26/06/2014, 7.41min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): Poderia por favor caracterizar a realidade sociocultural associada à escola?

Vice-Presidente (VP): É o que podemos considerar uma realidade de classe média/baixa, com algumas famílias pobres. Não temos problemas comportamentais especialmente sérios e estamos aproximadamente a meio do ranking nacional em termos de resultados.

JRF: Quantos alunos de 3º ciclo e ensino secundário tem a escola de momento?

VP: Mais de 400 alunos.

JRF: No questionário enviado por correio eletrónico e respondido pela escola constava que a escola implementou o conceito de "eficiência energética/poupança energética" nas instalações escolares. Poderia descrever ou aprofundar este conceito e a forma como está a ser explorado? VP: Basicamente trata-se de construir sinergias com o Curso Técnico de Eletricista que oferecemos na escola, significando que detalhes como as luzes exteriores, que são agora em LED, entre outros pormenores de eficiência energética são agora acautelados. Também implementámos painéis solares de aquecimento de água, os quais nos permitem ter grandes poupanças em termos de gás e foram integralmente suportados pelo orçamento escolar, sem outra ajuda.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

VP: Nós gostaríamos sinceramente de ver os orçamentos escolares tornarem-se públicos e disponíveis para consulta, visto que com tantos constrangimentos monetários ainda conseguimos fazer tantas coisas… Isso obviamente exige uma pesquisa constante por formas de poupança e uma gestão criteriosa do orçamento disponível. A motivação docente não me parece ser um problema.

JRF: Se lhe fosse pedido para identificar uma área ambiental/de sustentabilidade ambiental para melhorar, o que identificaria como mais importante?

VP: Melhorar o aspeto das áreas verdes escolares envolventes seria ótimo. Também tivemos (temos?..) um investimento na área do "Plano Tecnológico" que parou a meio por falta de fundos…

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado eu.

//

Resumed Interview Transcript #2

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Gago Coutinho High-School Vice-Principal and environmental issues responsible**

Relation with the e-mailed survey: Direct supervisor of the teacher that answered the survey

Interview Settings: Interview conducted by phone, 3.15pm, 26/06/2014, 10.04min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): Poderia por favor caracterizar a realidade sociocultural associada à escola?

Vice-Presidente (VP): É uma zona dormitório de população que trabalha em Lisboa, com um comércio mínimo e que tem vindo a diminuir atendendo à presente crise. Somos uma escola estritamente secundária com cursos profissionais e científico-humanísticos. Temos um protocolo com as OGMA para a manutenção de aeronaves. A nível social e principalmente nos cursos profissionais temos tido um acréscimo de alunos a recorrer ao SASE.

JRF: Quantos alunos de 3º ciclo e ensino secundário tem a escola de momento?

VP: Temos aproximadamente 1300 alunos.

JRF: No questionário enviado por correio eletrónico e respondido pela escola constava que a escola implementou uma espécie de Sistema de Gestão Ambiental. Poderia descrever ou aprofundar este conceito e a forma como está a ser explorado?

VP: Temos os contentores cá na escola, onde se faz a colocação diferenciada do lixo, principalmente pela secretaria, refeitório e bar. Já temos tido algumas iniciativas de recolha de tampas e pilhas, tivemos o ponto eletrão… mas…assim um programa ou uma coisa bem estruturada, não tenho conhecimento.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e/ou mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

VP: O facto de sermos só secundário torna mais complicado incutir nos alunos alguns conceitos e algumas práticas. A separação por exemplo é um problema, eles nem olham e atiram para o primeiro buraco.

JRF: E no sentido desta resposta anterior, pensa que está a faltar uma preparação prévia e/ou urge uma preparação a nível secundário para incutir esses valores?

VP: Não consigo responder. Sendo professora de Biologia sei que em alguns programas, por exemplo Biologia, Física e Química, Geografia, isso faz parte do programa, já nas outras disciplinas e cursos profissionais desconheço se isso é abordado ou incluído no

programa. Este ano a escola implementou ainda um trajeto que segue uma parte do estuário do tejo e é orientado, com atividades, tendo como objetivo qualquer professor poder explorar o percurso com os seus alunos e melhor conhecer a importância do rio, estuário e apelar um pouco à intervenção antrópica e tentar uma melhor intervenção na natureza e utilização dos recursos. Esta atividade vem no seguimento de uma formação que foi dada pelo EVOA. Os alunos tem ainda um *website* que é o *Geoalberta*, onde podem explorar mais atividades e onde vai ser colocado o percurso.

JRF: Se lhe fosse pedido para identificar uma área ambiental/de sustentabilidade ambiental para melhorar, o que identificaria como mais importante?

VP: Nós estamos numa fase onde se iniciou uma intervenção (obra) muito significativa e que por condições económicas parou, sendo que a escola está completamente limitada com taipais e muito deteriorada. Eventualmente os problemas de perda de água e luz poderiam ser muito melhoradas com a conclusão das obras.

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado eu e boa sorte.

//

Resumed Interview Transcript #3

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Manuel Faria e Sousa Middle and High-School Vice-Principal**

Relation with the e-mailed survey: Direct supervisor of the teacher that answered the survey

Interview Settings: Interview conducted by e-mail by request of the interviewee in 26/06/2014. e-mail sent on the 26th of June at 12.17.

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: The interviewee never returned the email.

(Start of interview – e-mail copy)

Ex.º Diretor,

Sou José Rocha Ferreira, responsável pelo inquérito sobre ambiente e sustentabilidade (âmbito de mestrado) que amavelmente alguém da sua instituição identificado como "docente" respondeu. Conforme expliquei telefonicamente á pouco, gostaria de colocar as seguintes questões com vista ao aprofundar da minha pesquisa referente à sustentabilidade implementada e percecionada no 3º ciclo e ensino secundário português:

1- Como caracteriza, de forma geral, a envolvente social dos alunos de 3º ciclo e secundário da escola?

2- Nº aproximado de alunos da escola (apenas 3º ciclo e sec.)?

3- O docente responsável pelas respostas ao questionário apontou existir "um sistema de poupança energética" implementado. Poderia especificar? Possuem algum comprovativo dos resultados ou procedimento institucionalizado?

4- Se tivesse que identificar o fator que mais limita o desenvolvimento de iniciativas de âmbito ambiental/ de sustentabilidade ambiental, qual o fator que identificaria? (motivação dos alunos, motivação docente, fundos...)?

5- Se tivesse de identificar a atividade/área de intervenção mais premente no âmbito ambiental/de sustentabilidade escolar, o que destacaria?

Antecipadamente grato pelo tempo disponibilizado.

Att,

José Rocha Ferreira

Grupo 520

Resumed Interview Transcript #4

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: 1st - **Campo de Flores private school vice-principal**

2nd (e-mail) – **Campo de Flores private school principal**

Relation with the e-mailed survey: 1st interviewee - direct supervisor of the teacher that answered the survey

2nd interviewee – supervisor of the teacher that answered the survey

Interview Settings: Interview conducted by e-mail in 26/06/2014 given the fact that it was not possible to contact the responsible for the survey answers. e-mail sent on the 26th of June at 10.13pm.

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview – e-mail copy)

No dia 26 de Junho de 2014 às 19:00, João Rafael <jr@campodeflores.com> escreveu:

Digníssimo Senhor

Os nossos melhores cumprimentos.

Contactou-nos solicitando informações complementares.

Queira por obséquio fazer-nos chegar o seu pedido de informações pois daremos o nosso melhor para clarificar o que fazemos.

Sempre disponíveis,

João Rafael Almeida

No dia 26 de Junho de 2014 às 22:13, José Ferreira <rochanetmail@gmail.com> escreveu:

Ex.º Dr. João Rafael,

No seguimento de um inquérito via e-mail sobre sustentabilidade em meio escolar que vós amavelmente responderam à mais de 2 meses, questionei hoje por via telefónica o significado da "microgeração" (como atividade de sustentabilidade ambiental) referida por vós numa das respostas desse mesmo questionário, tendo sido este o motivo do contacto.

Antecipadamente grato por qualquer resposta e tempo dispensado.

Att,

José Rocha (Prof. de Biologia e mestrando em Ambiente e Sustentabilidade)

No dia 27 de Junho de 2014 às 07:47, João Rafael <jr@campodeflores.com> escrev

Digníssimo Professor José Rocha

Os nossos melhores cumprimentos.

O nosso Colégio instalou em Novembro de 2012 um sistema de minigeração (e não micro) dotado de 166 painéis solares, com uma potência máxima de 39KW. Procurámos desta forma baixar a nossa pegada ecológica.

Sempre disponível,

João Rafael Almeida

No dia 27 de Junho de 2014 às 10:10, José Ferreira <rochanetmail@gmail.com> escreveu

Dr. João,

De novo, muito obrigado. Todas as contribuições são preciosas!

Att,

José Rocha

Resumed Interview Transcript #5

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Sá de Miranda Middle and High-School principal**

Relation with the e-mailed survey: Direct supervisor of the teacher that answered the survey

Interview Settings: Interview conducted by phone, 4pm, 26/06/2014, 07.17min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): Poderia por favor caracterizar a realidade sociocultural associada à escola?

Principal (P): Temos uma realidade muito abrangente, uma "manta de retalhos". Temos uma franja considerável com alguns problemas derivados de algumas carências e desemprego, mas temos também o oposto. Alguns alunos de aldeias limítrofes apresentam uma situação mais complicada.

JRF: Quantos alunos de 3º ciclo e ensino secundário tem a escola de momento?

P: Temos aproximadamente 2000 alunos.

JRF: No questionário enviado por correio eletrónico e respondido pela escola foi referido, cito, "não se recordar de qualquer atividade de índole ambiental nos últimos 4 anos". Concorda com esta afirmação e aceita a ausência de iniciativas?

P: Não. Temos inclusive um clube ligado ao ambiente, com recolha de eletrodomésticos, organização de campanhas de recolha de vários produtos, iniciativas relacionadas com a manutenção dos nossos espaços verdes, entre outros. Temos várias iniciativas de promoção ambiental, algumas inclusive em sala de aula.

JRF: No questionário enviado por correio eletrónico e respondido pela escola constava que a escola implementou uma espécie de Sistema de Gestão Ambiental. Poderia descrever ou aprofundar este conceito e a forma como está a ser explorado?

P: Não sei a que o colega se estava a referir quando respondeu…Uma das nossas escolas e no âmbito da renovação do Parque Escolar, tem um sistema de monitorização de qualidade do ar, por exemplo. Os dados são recolhidos e nós temos acesso a esses dados.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e/ou mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

P: Uma maior interligação com as entidades envolventes era muito importante. Empresas da zona ou mesmo com a câmara. Temos a vontade de caminhar nesse sentido.

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado.

Resumed Interview Transcript #6

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Agrupamento Coimbra Centro middle and high school Biology teacher and environmental issues responsible**

Relation with the e-mailed survey: 1st person

Interview Settings: Interview conducted by phone, 11.15am, 26/06/2014, 06.04min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): Poderia por favor caracterizar a realidade sociocultural associada à escola?

Professor (P): Não se pode considerar de todo uma zona problemática e é uma escola serena a nível de problemas comportamentais.

JRF: Quantos alunos de 3º ciclo e ensino secundário tem a escola de momento?

P: Devemos ter cerca de 250 alunos. Cerca de 150 de ensino secundário.

JRF: No questionário enviado por correio eletrónico e respondido pela escola foi referido, cito, "não se recordar de qualquer atividade de índole ambiental nos últimos 4 anos". Concorda com esta afirmação e aceita a ausência de iniciativas?

P: Hum… temos uma colaboração com o "Biocante", de Cantanhede, e mais recentemente uma parceria com o banco alimentar contra a fome ("papel por alimento"). Há alguns anos aderimos à utilização de papel reciclado na reprografia, opção que não reuniu consenso, mas foi aplicada. Existe portanto alguma coisa a decorrer.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

P: Motivação dos alunos.

JRF: Se lhe fosse pedido para identificar uma área ambiental/de sustentabilidade ambiental para melhorar, o que identificaria como mais importante?

P: Uma melhor gestão da energia e água. Já tenho refletido na forma como as escolas poderiam desenvolver iniciativas neste sentido, mas nunca avançámos com nada.

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado eu.

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Resumed Interview Transcript #7

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Agrupamento de Escolas de Ribeira de Pena (middle and high school) vice-principal**

Relation with the e-mailed survey: Co-worker and supervisor

Interview Settings: Interview conducted by phone, 03.15pm, 26/06/2014, 4.24min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: The socio-economic context is variable, with the majority of the population belonging to middle/middle-low class. The school has around 420 students between middle and high-school (Jan. 2013).

(Start of interview)

José Rocha Ferreira (JRF): Na resposta ao questionário aplicado por correio eletrónico foi dito que a escola ou pessoa responsável pela resposta trabalha/trabalhou com o *Eco-Management and Audit Scheme* (EMAS). Poderia especificar ou descrever a forma como este instrumento tem sido aplicado, caso tenha conhecimento?

Vice-Principle (VP): Bom, provavelmente se a pessoa escreveu isso é porque já trabalhou. Nós na escola fazemos vários diagnósticos, por exemplo auditoria ambiental no âmbito do projeto Eco-escolas, e funciona. Vários alunos vem agora chamar à atenção para uma torneira que está a pingar ou uma luz acesa. Em relação ao Eco-escolas nós este ano não participamos. Pensamos que era sempre a mesma coisa e achamos até que os objetivos que nós definimos para o agrupamento são mais importantes e abrangentes que os propostos pelo programa.

JRF: A escola ambientalmente acaba por ser muito ativa, pelo que percebo da conversa?

VP: Sim, muito.

JRF: Acabam no entanto por não ter nenhuma espécie de sistema de gestão ambiental implementado, certo?

VP: Essa auditoria da Eco-escolas era feita todos os anos, partindo dessa auditoria tinha-mos um diagnóstico da escola e a partir desse diagnóstico partíamos para um plano de ação. Diagnosticamos pontos fracos, pontos fortes e em regra os alunos aderem muito bem, incluindo os alunos de secundário, desde que saibamos agarrar. O facto de ser uma escola pequena também facilita, visto que se uns fazem os outros acabam por fazer também. Até para os funcionários já desenvolvemos atividades. Eles saem mais sensibilizados e pró-ativos.

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado eu.

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Resumed Interview Transcript #8

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Externato D. Dinis human resources coordinator**

Relation with the e-mailed survey: 1st person

Interview Settings: Interview conducted by phone, 4.18pm, 26/06/2014, 02.14min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): No questionário enviado por correio eletrónico e respondido pela escola foi referido, cito, "não se recordar de qualquer atividade de índole ambiental nos últimos 4 anos". Concorda com esta afirmação e aceita a ausência de iniciativas?

Human Resources Coordinator (HRC): Reciclar, nós reciclamos por natureza, temos cá os contentores e reciclamos, agora não sei se considera isso como atividade.

JRF: E a nível de atividades promovidas pelos professores, por exemplo?

HRC: Bem, não houve tantas como costuma haver, assim de repente quando respondemos ao questionário podemos não nos ter lembrado de nenhuma. Costumamos participar na semana da terra, este ano também participámos, se calhar pequenas coisas fazemos sempre, agora projetos definidos e de maior dimensão penso que não.

JRF: Quantos alunos de 3º ciclo e ensino secundário tem a escola de momento?

HRC: Este ano tivemos muito menos alunos, uma média de 100, se calhar nem tanto, sendo que só temos CEF´s e profissionais

JRF: Muito obrigado pelo seu tempo.

HRC: Obrigado eu e boa sorte.

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Resumed Interview Transcript #9

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Agrupamento de Escolas Rodrigues de Freitas**

Relation with the e-mailed survey: No relation was established

Interview Settings: Interview conducted by phone, --.--pm, --/06/2014, --.--min extent

Affiliation with the interviewee: None

Interview available in electronic file? No

Others: Due to technical problems with the voice recorder, no electronic file of the interview is available. Nevertheless, three phone calls to the institution were not able to identify the person that answered the e-mailed survey or someone available to explain/develop the answer *do not recall any environmental/environmental sustainability activity on the last four years*. The human resources responsible committed to ask the principle to send an e-mail with the answers to the questions (never occur until the 24th of July) and "some minor activities on the environmental area" where recalled.

Resumed Interview Transcript #10

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Padre Benjamin Salgado Middle and High-School teacher and environmental issues responsible**

Relation with the e-mailed survey: Co-worker of the responsible for the answers

Interview Settings: Interview conducted by phone, 4.55pm, 01/07/2014, 04.18min extent

Affiliation with the interviewee: None

Interview available in electronic file? Yes

Others: The school is part of an "Agrupamento" (group of schools) with more than 3000 students and the socioeconomic reality stated in the report of the *Comissão eventual de análise da situação socioeconómica da área do município de Vila Nova de Famalicão* (2010) tell us that 54% of the population studied less than 6 years (6º ano de escolaridade). Middle class and low income families are common and unemployment is a problem. No updated information was found to prove that the aforementioned reality changed in the last 3 years.

(Start of interview)

José Rocha Ferreira (JRF): Na resposta ao questionário enviado por correio eletrónico foi dito que "a escola tem implementado um sistema de gestão ambiental". Poderia nomear ou detalhar por favor?

Professor (P): Temos uma série de atividades ambientais na escola e vários clubes no âmbito do ambiente…mais especificamente o que pretende?

JRF: Percebo que a nível das atividades ambientais, existem várias atividades, mas não há um órgão organizador destas atividades, correto?

P: Temos vários clubes e projetos ligados a essa área que vão funcionando ao longo do ano letivo. A recolha de pilhas, separação de resíduos, várias áreas de atividades.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e/ou mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

P: Por vezes muitas atividades também não será o ideal. Não vale a pena ter muitas atividades se não houver coordenação entre elas. Na parte energética o controlo de custos será por ventura uma parte mais importante.

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado.

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Resumed Interview Transcript #11

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Loulé High-School principal**

Relation with the e-mailed survey: 1st person

Interview Settings: Interview conducted by phone, 05.06pm, 26/06/2014, 02.14min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Partially, since the principle returned the interviewer call when the later was in an outdoor place with no voice recording devices, only paper.

Others: Loulé is an active municipality with a multicultural student population, result of immigration (Projeto educativo ESL, 2012-2015). Unemployment is significative and the majority of the working population works in the tertiary sector. Middle class but also low income population are common (Revisão PDM Loulé, 2009).

(Start of interview)

José Rocha Ferreira (JRF): Foi respondido no inquérito enviado por correio eletrónico que a escola tem um "gabinete de sustentabilidade ambiental". Poderia especificar o enquadramento do mesmo?

Diretor (D): Trata-se de um grupo essencialmente da área da Biologia e trabalham com o objetivo de tornar a escola do ponto de vista ambiental o mais sustentável possível. Foram e são realizadas uma série de ações aqui na escola neste sentido. Desde a motivação aos alunos, recolha e separação de lixo, instalação de ecopontos na escola, plantar árvores, recolha de pilhas…

JRF: Foi também referido que a escola tinha implementado uma espécie de sistema de gestão ambiental. Poderia especificar e desenvolver este tema por favor?

D:Parte-se da vontade de todos e das linhas de orientação que defini como diretor. Parte da gestão ambiental é obrigatória por lei, como será o exemplo do certificado *Verdoreca* ou do sistema de recolha de óleos. Desenvolvemos os *Eco-bags*, para recolha e posterior reciclagem de material, mas que os alunos insistem em não usar corretamente. Mudámos torneiras e autoclismos da escola para temporizados, controlando assim os gastos de água.

JRF: Se lhe fosse pedido para identificar uma área ambiental/de sustentabilidade ambiental para melhorar, o que identificaria como mais importante?

D: A eletricidade confesso ser um problema, muito devido às obras da Parque Escolar.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e/ou mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

D: Temos o apoio dos colegas e o programa Eco-Escolas associado. Penso que a educação precoce dos jovens é mesmo um problema. Deveria começar de forma séria no segundo ciclo.

JRF: Muito obrigado pelo seu tempo.

D: Obrigado.

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Resumed Interview Transcript #12

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Fornos de Algodres Middle and High-School teacher and environmental issues responsible**

Relation with the e-mailed survey: Co-worker and environmental issues responsible

Interview Settings: Interview conducted by phone, 07.57pm, 26/06/2014, approx. 16.00min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): No questionário enviado por correio eletrónico e respondido pela escola constava que a escola implementou uma espécie de Sistema de Gestão Ambiental. Poderia descrever ou aprofundar este conceito e a forma como está a ser explorado?

Teacher (T): Bom, não sei se fui eu quem respondeu, mas não identifico à partida o que queríamos dizer com isso. Nós a única coisa que temos em questão de gestão ambiental é que a nossa escola é uma escola Eco-Escola, e muitas das atividades desenvolvidas são enquadradas neste programa. Por exemplo, resíduos é das vertentes que mais exploramos, às vezes com a sensação de ingloriamente. Fazemos recolha de eletrodomésticos, pilhas, tentamos fazer a separação de lixos. Tivemos uma atividade engraçada com a autarquia, que não conseguimos concluir, pois nem sempre os técnicos tem a disponibilidade e tempo que gostaríamos. Fizemos um levantamento do tipo de lixo ou resíduo que as pessoas colocam no contentor normal, literalmente despejando os contentores e analisando o lixo. Estamos agora a fazer o tratamento estatístico dos dados, mas tudo leva muito tempo e necessita de apoio. Depois de fazermos a separação dor resíduos o volume de lixo reduziu para cerca de um terço. O Município cedeu o material e a ideia partiu de um engenheiro florestal, comprou-se material, e o município daria apoio logístico.

JRF: Faria agora outra questão: quem respondeu indicou utilizar ou ter utilizado o Eco-Management and Audit System (EMAS). Isto diz-lhe algo?

T: Não me diz nada. Nós fizemos uma atividade que secalhar está relacionada com isso, o Depositrão e/ou a geração Eletrão. Sei que essas empresas tem alguma relação com instituições europeias.

JRF: Em relação ao Eco-Escolas como sente esta atividade na escola?

T: Algumas coisas vão ficando. Claro que as mudanças não são extraordinárias, mas não tem sido fácil.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e/ou mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

T: Bom, se calhar é mesmo o comodismo. Para já não sentem necessidade de mudar, é a forma de estar das pessoas, às vezes tem de ser assim tratamento de choque. Lembro-me que à uns tempos a direção da escola perguntou-me a forma de dinamizar uma ação de formação para os funcionários, sendo que eu procurei mesmo chocar as pessoas mostrando como tudo se está a alterar e notei que houve uma postura diferente. Algumas pessoas começaram a mudar. As pessoas enquanto não sentirem que lhes sai do bolso não reagem. Se falarmos em dinheiro as pessoas reagem, falar em recursos naturais é letra morta.

JRF: Se lhe fosse pedido para identificar uma área ambiental/de sustentabilidade ambiental para melhorar, o que identificaria como mais importante?

T: Era mesmo os resíduos. Pode-se reduzir em muitas áreas claro.

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado eu e boa sorte.

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Resumed Interview Transcript #13

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Valsassina private school Biology teacher and environmental issues responsible**

Relation with the e-mailed survey: 1st person

Interview Settings: Interview conducted by phone, 13.17pm, 30/06/2014, 24.08min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): No questionário enviado por correio eletrónico e respondido pela escola constava que a escola implementou uma espécie de Sistema de Gestão Ambiental. Poderia descrever ou aprofundar este conceito e a forma como está a ser explorado?

Teacher (T): Olhe, no fundo o ponto de partida e "chapéu-de-chuva" do projeto que temos na escola tem a ver com o projeto *Eco-escolas*, criado como resposta à Cimeira do Rio e vocacionada para responder à Agenda XXI a nível escolar. Cumprimos os sete passos, a realização de auditorias, etc. O SGA não é portanto o programa típico com certificação tipo "APCER" ou semelhante, mas um programa relacionado com a metodologia do programa *Eco-escolas*, muito ligado á parte pedagógica. Sendo uma escola particular nós podemos ver isto do ponto de vista pedagógico e formação dos vários intervenientes escolares, etc e podemos ver isto do ponto de vista da escola como instituição e empresa. Tentamos um equilíbrio entre a parte pedagógica e a parte de gestão. Tentamos potenciar o nosso sistema nas três vertentes de desenvolvimento sustentável: a parte ambiental, a parte económica (dai fazer todo o sentido a ligação com a parte de gestão) e a parte social. Temos alguns projetos a nível social, inclusive na zona de inserção da escola. Implementámos um programa de diagnóstico detalhado da pegada ecológica da escola.

JRF: Quando referem "gestão voluntária do carbono", poderia especificar?

T: O projeto foi iniciado em 2006 e derivou da necessidade de desenvolver um projeto mais detalhado na área das alterações climáticas. Veio mais tarde a designação de "A caminho de uma Low Carbon School", tendo como linhas principais, primeiro, um relatório detalhado do que é a pegada carbónica da escola, tendo feito uma parceria com uma empresa de consultores ambientais, a Eco-progresso, e a partir dai um diagnóstico detalhado de todas as áreas da escola que contribuem para a produção de carbono. A partir dai fizemos um workshop onde aplicámos metodologias de participação ativa, com três grupos de discussão, onde pretendíamos recolher as opiniões da comunidade. Apontámos para medidas de redução e mitigação, num segundo grupo de discussão apontámos para a parte de compensação (o que fazia sentido, se fazia sentido, etc), e num terceiro grupo a questão dos custos. Tivemos duas linhas principais de ataque, primeiro a gestão dos

recursos, instalações, mudar comportamentos, enfim, reduzir. Decidimos tentar reduzir dois porcento por ano. Portanto, primeiro vetor, mitigação, segundo, medidas de compensação das emissões inevitáveis. Por exemplo o transporte dos alunos cheio e com um percurso muito bem estudado. A nível de fundos criamos um "fundo de carbono". Sempre que á visitas de estudo para fora do concelho de Lisboa é feito um cálculo do pagamento da visita e depois um valor simbólico que tem como objetivo contribuir para esse fundo do carbono. Depois tudo segue a lógica de espiral. Temos uma ferramenta construída de avaliação das medidas aplicadas, se tiveram ou não tiveram sucesso e se no próximo ano é necessário reformular atividades. Definimos uma primeira fase até 2012 e temos uma nova fase até 2020, pois á uma coincidência com a estratégia 20/20/20.

JRF: Qual o instrumento de auditoria interna/externa que usam para o controlo e aferir a evolução do projeto?

T: Criámos uma ferramenta para introduzir os dados com a periodicidade desejada e aferir dados. Recorremos até à metodologia definida a nível internacional sobre o protocolo de gases de efeito de estufa e gestão voluntária de carbono. Esse protocolo só é obrigatório para algumas instituições. A metodologia define três âmbitos em relação ao tipo de dados que são recolhidos. Inclui transporte de colaboradores e pais, por exemplo. Pensámos que faria sentido trabalhar a mobilidade sustentável. A ferramenta permite ter todos esses dados. Temos depois fatores de emissão e o apoio da empresa que nos irá certificar a validade desses dados. A ferramenta permite-nos multiplicar as emissões pelo respetivo fator de emissão e o resultado é a respetiva pegada carbónica, fazendo posteriormente a comparação com anos anteriores.

JRF: Falou à pouco da forma como utilizam alguns fundos para tentar mitigar a pegada carbónica do ano letivo anterior. Pode fornecer alguns exemplos concretos da forma como o fazem?

T: Uma das primeiras discussões que tivemos foi se nos queríamos assumir como uma escola neutra em carbono ou como uma escola com baixas emissões de carbono. Temos a responsabilidade como escola e sabemos que não há ninguém que tenha "0" emissões de carbono. Seria pernicioso fazer apenas o cálculo da pegada carbónica, que seria "X" toneladas, pagaríamos a uma empresa o equivalente à nossa pegada para investir num projeto que iria retirar essas "X" toneladas e já estava. Este caminho não transportava a mensagem de eficiência e podia ter uma mensagem diferente daquela que queríamos transmitir. Decidiu-se então trabalhar numa primeira linha de forma a reduzir as emissões,

gerindo mais eficientemente os recursos. Numa segunda linha, aquilo que não conseguirmos reduzir (as chamadas emissões inevitáveis), faríamos a compensação. Esta compensação está em duas linhas, primeiro os transportes para fora de Lisboa e uma publicação que nós temos. A compensação foi inicialmente escolhida na India (tendo em conta o grupo de projetos que estão validados ao nível das nações unidas como projetos válidos neste sentido, ao abrigo do protocolo de Quioto. Todos os projetos são sérios, certificados e avaliados. A ideia pensar globalmente e agir localmente tem-nos norteado. Mais recentemente temos apostado num projeto nacional gerido pelo Técnico onde apostamos em pastagens e essas mesmas pastagens absorvem o carbono do solo. Mostramos assim que aquilo em que estamos a investir via taxa de carbono tem efetivamente expressão prática e continuidade.

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado eu e boa sorte.

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Resumed Interview Transcript #14

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Casquilhos Middle and High-School Vice-Principal**

Relation with the e-mailed survey: Direct supervisor of the teacher that answered the survey

Interview Settings: Interview conducted by phone, 03.02pm, 30/06/2014, 07.17min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): No questionário enviado por correio eletrónico e respondido pela escola foi referido, cito, "não se recordar de qualquer atividade de índole ambiental nos últimos 4 anos". Concorda com esta afirmação e aceita a ausência de iniciativas?

Vice-Presidente (VP): Não. Como exemplo, desde há seis anos a esta parte temos tido um protocolo com a Câmara Municipal do Barreiro na área da seleção e recolha de resíduos sólidos. Os funcionários tem de colocar os resíduos no contentor adequado. Portanto, formalmente, não existem atividades organizadas, mas na prática existem.

JRF: Percebo que acabam por ser tudo atividades mais pontuais com origem nos docentes em si, sem um programa com origem definida, por exemplo na direção?

VP: Neste momento não.

JRF: No questionário enviado por correio eletrónico e respondido pela escola constava que a escola, ou a pessoa responsável pela resposta, trabalha ou já trabalhou com o Eco-management and Audit System (EMAS) ou com a norma 14001. Tem algum conhecimento desse trabalho?

VP: Não, nem me recordo de ver nenhum desses números expostos na escola.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e/ou mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

VP: Temos sido nós próprios aqui na direção, devido às mudanças. Agrupamento, etc., o que leva a que este tipo de projetos vá ficando para trás.

JRF: E alguém do corpo docente tomou a dianteira ou propôs projetos?

VP: Não. Em todo o caso temos projetos que pensamos incentivar. A recolha de Óleos, resíduos sólidos…a nível energético já tivemos aqui uma empresa a ver como podíamos poupar energia (uma espécie de parceria com uma empresa privada), mas isto já há cerca de seis anos. Este ano por exemplo estamos a montar painéis solares com investimento de terceiros. A escola ganha uma percentagem dos lucros produzidos. No fundo o que fazemos é a locação do espaço. Informalmente (ou formalmente…) o que fazemos é

consciencializar todos os funcionários para a poupança. Colocar luzes LED, desligar aparelhos. Temos claro os pequenos projetos de recolha de tampinhas…

JRF: Se lhe fosse pedido para identificar uma área ambiental/de sustentabilidade ambiental para melhorar, o que identificaria como mais importante?

VP: Era mesmo a água. Existe um desperdício de água através de roturas, já que o nosso património remonta a mais de 50 anos. Não temos capacidade de chegar a todo lado. A energia é mais controlável. É uma das coisas que nos faz gastar muito dinheiro. Onde podemos chegar sem dinheiro temos chegado. Na água é realmente diferente.

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado eu e boa sorte.

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Resumed Interview Transcript #15

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Ferreiras elementary school**

Relation with the e-mailed survey: School teacher and co-worker

Interview Settings: Interview conducted by phone, 03.13pm, 30/06/2014, 01.29min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): No questionário enviado por correio eletrónico e respondido pela escola foi referido, cito, "não se recordar de qualquer atividade de índole ambiental nos últimos 4 anos". Concorda com esta afirmação e aceita a ausência de iniciativas?

Teacher (T): Não me recordo. Eu penso que sim, alguma coisa existiu… O melhor é mesmo falar com a pessoa que respondeu.

…

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado.

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Resumed Interview Transcript #16

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **António Damásio School group Vice-Principal**

Relation with the e-mailed survey: Direct supervisor of the teacher that answered the survey

Interview Settings: Interview conducted by phone, 04.34pm, 01/07/2014, 02.35min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): No questionário enviado por correio eletrónico e respondido pela escola foi referido, cito, "não se recordar de qualquer atividade de índole ambiental nos últimos 4 anos". Concorda com esta afirmação e aceita a ausência de iniciativas?

Vice-Presidente (VP): Não. Existe uma recolha de resíduos e separação de lixo.

JRF: A nível de parcerias com entidades externas, por exemplo empresas, existe alguma coisa?

VP: Sim existem, nomeadamente com a câmara Municipal de Lisboa nas questões de recolha e seleção de resíduos.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e/ou mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

VP: A falta de Eco-pontos de recolha no interior da escola… de momento não me ocorre assim mais nada.

JRF: Se lhe fosse pedido para identificar uma área de intervenção ambiental/de sustentabilidade ambiental para melhorar, o que identificaria como mais importante?

VP: A questão da poupança energética é uma área de preocupação.

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado eu e boa sorte.

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Resumed Interview Transcript #17

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Muralhas do Minho School Group Vice-Principal**

Relation with the e-mailed survey: Unknown (the person identified itself as "other")

Interview Settings: Interview conducted by phone, 04.45pm, 01/07/2014, 07.12min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

José Rocha Ferreira (JRF): No questionário enviado por correio eletrónico e respondido pela escola foi referido, cito, "não se recordar de qualquer atividade de índole ambiental nos últimos 4 anos". Concorda com esta afirmação e aceita a ausência de iniciativas?

Vice-Presidente (VP): Não, nem pensar. Temos um projeto que é o "Ambientaliza", que tem a ver com a sensibilização dos jovens para as questões do lixo, reciclagem, proteção do meio ambiente. Como vê já é uma atividade. Temos também um projeto de educação para a saúde, embora não se conecte diretamente com o ambiente. Eles tiveram ainda outra atividade que acabou com o hastear de uma bandeira verde, no âmbito do Eco-Escolas.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e/ou mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

VP: Eu digo-lhe já dois ou três: o excesso de atividades e trabalho com aumento da carga horária dos professores. Há uma desmotivação grande. Há um plano anual mas somos depois chamados a dinamizar uma grande quantidade de atividades propostas por entidades externas à escola. Isto tudo junto com a desmotivação docente e a sobrexaltação causada pelo ministério e um "não entender" daquilo que é importante nas escolas talvez justifique apenas essa postura. Não se podem considerar que não se façam. Antigamente existiam outro tipo de atividades. O pequeninos foram premiados no Green Cork, por exemplo.

JRF: Quantos alunos de 3º ciclo e ensino secundário tem a escola de momento?

VP: Temos cerca de 800 alunos.

JRF: Se lhe fosse pedido para identificar uma área ambiental/de sustentabilidade ambiental para melhorar, o que identificaria como mais importante?

VP: Poupança energética. Penso que há menos coisas feitas. E de água. Água também.

JRF: Muito obrigado pelo seu tempo.

VP: Obrigado eu e boa sorte.

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Resumed Interview Transcript #18

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Instituto Nsª Srª de Fátima human resources coordinator**

Relation with the e-mailed survey: 1st person

Interview Settings: Interview conducted by phone, 10.12am, 10/07/2014, 03.50min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

JRF: No questionário enviado por correio eletrónico e respondido pela escola constava que a escola implementou uma espécie de Sistema de Gestão Ambiental. Este conceito diz-lhe algo? Poderia descrever ou aprofundar este conceito e a forma como está a ser explorado?

Human resources Coordinator (HRC): Penso que sim e que isso se insere no âmbito do Eco-Escolas, em que nós temos muitas coisas relacionadas com isso.

JRF: Portanto a escola considera-se ativa nesta área ambiental?

HRC: Sim.

JRF: Sempre nesta linha das atividades Eco-Escolas ou considera existirem outras atividades alem das relacionadas com esse projeto?

HRC: Sim, também… o "Clube da ciência"… temos cuidado com o ambiente e com o que é necessário cumprir. Agora com estas novas regras e novos hábitos pensamos sempre acompanhar com os alunos.

JRF: Portanto as atividades saem do espaço da aula?

HRF: Sim. O "Clube da Ciência", eles fazem várias atividades nesse âmbito e o Eco-Escolas trabalha muito nesse âmbito. Os funcionários, a área da cozinha, tenta-se incutir essas práticas em todos.

JRF: Se lhe fosse pedido para identificar uma área ambiental/de sustentabilidade ambiental para melhorar, o que identificaria como mais importante?

HRC: Talvez mais na área da gestão energética, embora tenhamos alguém que está a fazer esse trabalho, um engenheiro. A gestão da água também é um problema.

JRF: Se lhe fosse pedido para identificar um fator negativo ou retardador da aplicação de mais e/ou mais eficientes iniciativas ambientais, o que identificaria como o mais importante?

HRC: Eu acho que não temos ninguém a bloquear essas medidas. Talvez pela falta de tempo seja difícil levar um projeto desses avante. Talvez a falta de uma pessoa responsável também seja um fator limitante.

JRF: Muito obrigado pelo seu tempo.

HRC: Obrigada.

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Resumed Interview Transcript #19

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Arganil Middle and High School Principal**

Relation with the e-mailed survey: 1st person

Interview Settings: Interview conducted by phone, 5.40pm, 01/09/2014, 05.45min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

JRF: No questionário enviado por correio eletrónico e respondido pela escola constava que a escola implementou uma espécie de Sistema de Gestão Ambiental. Poderia descrever ou aprofundar este conceito e a forma como está a ser explorado?

Principal (P): Bom, assim a esta distância é muito complicado responder. Desde os primórdios que nós separamos e fazemos tudo para que a escola seja o mais amiga do ambiente possível. Desde reciclar papel e plástico até termos três torres de painéis solares fotovoltaicos…

JRF: Esses painéis solares já foram iniciativa da própria escola? Com fundos da própria escola?

P: Sim, iniciativa da escola, mas a escola não tem capacidade para esse tipo de coisas. Recorremos a fundos de cursos profissionais, por exemplo, mas nunca a privados. Depois houve foram parcerias em termos de preços mais baratos. Os cursos profissionais trabalharam com materiais e colocaram painéis solares de aquecimento de águas nos balneários numa parceria com uma empresa da região, mas apenas com um preço "mais amigo", nada foi de borla.

JRF: As iniciativas a que se refere tem rido iniciativa de que origem? Basicamente da direção?

P: Bom, duas origens, primeiro a direção e segundo a possibilidade de termos cursos profissionais que nos possibilitam a existência dessas atividades.

JRF: No âmbito do currículo dito normal considera também existirem suficientes iniciativas desta índole ambiental, ou as coisas morrem mais?

P: Há… morrem mais. Sem ser nas áreas das biologias… por exemplo os alunos de humanidades pouca iniciativa deste género tem, não é. O que há é, por exemplo, nós o que aqui fazemos publicitamos tudo, dessa forma as pessoas vão adquirindo alguns hábitos de reutilização e reciclagem. Mas nos cursos de humanidades é quase zero em termos de currículo. Nos cursos de ciências e tecnologias à nas biologias e depois nos cursos profissionais faz-se muito.

JRF: Compreendo que não sai muito então daquilo que o currículo obriga?

P: Sim, não sai muito.

JRF: Ao nível de terceiro ciclo e secundário, a escola tem quantos alunos?

P: Serão à volta de 800 alunos.

JRF: Considera que a envolvente sociocultural em que escola se insere influencia de alguma forma (a dinâmica de sustentabilidade ambiental)?

P: Influencia da seguinte forma, enquanto na cidade a transmissão destes valores é muito mais fácil, pois tudo é "o botão, o botão, o botão", aqui estamos numa zona muito arborizada e existe alguma dificuldade em passar esses valores.

JRF: Muito obrigado mais uma vez pelo seu tempo.

P: Nada e obrigado eu.

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Resumed Interview Transcript #20

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Fátima Cooperative Middle and High-School** (Centro de Estudos de Fátima) Biology teacher

Relation with the e-mailed survey: 1st person

Interview Settings: Interview conducted by phone, 7.56pm, 12/09/2014, 14.08min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

JRF: No questionário enviado por correio eletrónico e respondido pela escola constava que a escola implementou um "sistema de poupança energética em edifícios". Poderia descrever ou aprofundar este conceito e a forma como está a ser explorado?

Teacher (T): Bom, necessitava de ter o inquérito novamente para pensar as respostas, mas por exemplo, sempre que é possível colocar vidros duplos, para mim é uma estratégia. Já há algum tempo implementámos uma estratégia associada ao número de lâmpadas que está aceso em cada corredor. Nomeadamente compreendemos que estando metade delas acesas era perfeitamente aceitável. Também quando estão as aulas todas terminadas temos alguém responsável por apagar o quadro elétrico.

JRF: Qual a origem principal das atividades de índole ambiental desenvolvidas ai no centro de estudos?

T: Bom, eu costumo dizer que o melhor amigo do ambiente é a crise e nós somos uma Eco-escola á já muitos anos, mas obviamente que a questão económica está sempre associada. Claro que quem se lembrou desta iniciativa de apagar as lâmpadas pensa na questão ambiental.

JRF: Em relação ao programa Eco-escolas como caracteriza o seu resultado prático?

T: Percebo que seja muito burocrático para ter validade a nível internacional, mas é uma burocracia que às vezes chateia um pouco. Mas a alternativa de não participar também não se coloca ao nível da direção ou qualquer outro. Já antes de existir o Eco-escolas a questão ambiental era essencial no nosso programa educativo, claro que não de uma forma tão sistemática ou regulamentada como com o programa Eco-escolas.

JRF: Ao nível dos alunos de terceiro ciclo e secundário, quantos alunos é que o centro de estudos abarca?

T: Penso que entre 800 a 1000 alunos.

JRF: Ao nível da envolvente social como podemos caracterizar a população escolar?

T: Bom, é uma manta de retalhos, visto sermos uma escola privada mas com contrato associativo. Temos aqui tudo e mais alguma coisa.

JRF: Se tivesse que identificar um fator que na escola impeça o avanço destas iniciativas ambientais, o que identificaria?

T: A inércia das pessoas, desde a gestão ao pessoal docente. Incluindo os alunos e a vários níveis como é óbvio. E pelas mais diversas situações fazer durante vários anos a mesma coisa também cansa, como é óbvio.

JRF: Muito obrigado mais uma vez pelo seu tempo.

P: Muito obrigada e boa sorte.

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Resumed Interview Transcript #21

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Abrantes Middle and High-School (Agrupamento)**

Relation with the e-mailed survey: Colleague and environmental issues responsible

Interview Settings: Interview conducted by phone, 11.25am, 18/09/2014, 7.48min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

JRF: No questionário enviado por correio eletrónico e respondido pela escola constava que a escola implementou um "sistema de gestão ambiental". Poderia descrever ou aprofundar este conceito e a forma como está a ser explorado?

Teacher (T): Sistema de Gestão ambiental? Esse nome não me diz nada.

JRF: O que tem então implementado a nível ambiental na escola?

T: O que temos implementado são projetos do tipo Eco-Escolas. No entanto não sou eu o promotor dessa atividade. Este ano é ano de auditoria, no entanto.

JRF: A nível ambiental a escola mantêm-se ativa e consegue ver resultados desse programa (Eco-Escolas)?

T: Sim, sim. Para além do Eco-Escolas ou englobadas neste temos ainda várias atividades sobre a reciclagem ou relacionadas com a natureza. Tivemos muita coisa o ano passado. Palestras, saídas ao exterior, etc.

JRF: Ao nível dos alunos de terceiro ciclo e secundário, quantos alunos é que o centro de estudos abarca?

T: Penso que cerca de 500 alunos.

JRF: Ao nível da envolvente social como podemos caracterizar a população escolar? Considera que condiciona de alguma forma o desenvolvimento de iniciativas.

T: A nível social poderemos chamar uma manta de retalhos e há um pouco de tudo. Apanhamos muita carência. Não penso no entanto que isso seja um fator limitador de forma alguma. O número de alunos também não é limitante.

JRF: Se tivesse que identificar um fator que na escola impeça o avanço destas iniciativas ambientais, o que identificaria?

T: Algum constrangimento mais evidente tem sido a calendarização das atividades. Falta de tempo e dificuldade em captar as pessoas para algumas palestras.

JRF: Muito obrigado mais uma vez pelo seu tempo.

P: Obrigado.

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Resumed Interview Transcript #22

Interviewer: José Rocha Ferreira (Master degree student)

Interviewee: **Michel Giacometti Middle and High-School Principal**

Relation with the e-mailed survey: 1st person

Interview Settings: Interview conducted by phone, 4.07pm, 16/09/2014, 4.54min extent

Affiliation with the interviewee: None

Interview available in electronic file?: Yes

Others: --

(Start of interview)

JRF: No questionário enviado por correio eletrónico e respondido pela escola constava que a algumas das iniciativas ambientais da escola tem o cunho ou são desenvolvidas em parceria com a Autarquia. Poderia descrever ou aprofundar esta relação e a forma como está a ser explorada?

Principal (P): Sim, de facto algumas tem. Procura-se o envolvimento da comunidade. Quando se fala em camara falamos da junta de freguesia. Ainda à pouco tempo aconteceu. Ambos nós ou a Camara Municipal tem a iniciativa.

JRF: A escola é uma Eco-Escola?

P: Não.

JRF: O que tem então implementado a nível ambiental na escola e como caracteriza a escola? Alguma coisa a destacar?

P: Não, de facto nada a destacar. E temos áreas de carência onde poderíamos melhorar muito. Na questão muito básica da separação e seleção de resíduos poderíamos fazer muito melhor, especialmente porque temos um eco-ponto á frente da escola. Ainda não mobilizámos convenientemente as forças.

JRF: Ao nível dos alunos de terceiro ciclo e secundário, quantos alunos é que a escola abarca?

P: Temos 1200 alunos.

JRF: Alguma outra coisa que gostasse de apontar a nível ambiental.

P: A nível dos cuidados a ter com o nosso espaço natural…nós temos uma área considerável, florestal, que deveria ser melhor cuidada criando um muito melhor enquadramento paisagístico. Assim tenhamos fundos para isso. Temos projetos de PIEF com projetos engraçados a nível profissional, mas que acabam por ficar a meio por várias razões.

JRF: Se tivesse que identificar um fator que na escola impeça o avanço destas iniciativas ambientais, o que identificaria?

P: Falta de motivação docente, não docente e alunos.

JRF: Muito obrigado mais uma vez pelo seu tempo.

P: Obrigado.

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