

ÉPOQUE: ENVIRONMENTAL PORTFOLIO FOR QUALITY IN UNIVERSITY EDUCATION

O1:

ENVIRONMENTAL PORTFOLIO: THE NEED FOR MODERNISED CURRICULA FOCUSING ON ENVIRONMENTAL ISSUES

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Executive Summary

This document is the first Intellectual Output of the project ÉPOQUE: Environmental Portfolio for Quality in University Education. The objective of the ÉPOQUE project is to promote a smart specialisation of prospective teachers/trainers, scientists and engineers through an environmental portfolio which can be fully integrated to the University syllabuses, as well as the Adult Education courses provided and which aim at increasing the employability skills of the participants. It creates a new generation of green professionals in the context of higher education modernisation agenda connected to SMEs and enterprises.

Intellectual Output 1: *Environmental Portfolio- The need for modernized curricula focusing on Environmental Issues* is a document which aims at summarising the current situation in the participating countries related to the degree that environmental topics are already part of the curriculum in Universities and Adult Education providers. In specific, the partners from Finland, Greece and Italy have investigated the current situation of the Universities in their own countries, while the partners from Austria and Malta have focused on the Adult Education providers. To be able to provide a clear picture of the extent to which environmental issues are indeed included or not in the University and Adult Education curricula, the partners have carried out a desk research in a selected number of Universities and Adult Education providers in their countries. Moreover, they conducted a field research, with the intention of obtaining the opinion of education professionals (University Professors and Adult Education teachers/trainers) on issues that would complement the information collected through the desk research and would also provide additional material to be used as a basis for the development of the ÉPOQUE Environmental Portfolio set of courses, which is Intellectual Output 2 of the project.

Following the collection of information, the partners drafted their Country Reports, upon which this document is based. Hereinafter the present report presents a summary of the key-findings from the national desk research conducted by each partner, along with a compilation of the data collected through the field research. More information on specific issues related to national specific information can be obtained from the Country Reports.

The analysis of the findings has led to the conclusion that irrespectively of the degree to which Environmental topics are included in the University and Adult Education curricula, there is still a lot of steps to be made until environmental awareness is considered a priority across all education levels, leading not only to upskilled professionals, but also to citizens who understand and foster environmental sustainability.

In the sections that follow, BEST, leader partner of the development of the first output of the ÉPOQUE project, presents a summing up of the key-findings of the desk research across the different countries, provides an analysis of the compiled results obtained through the field research and offers specific recommendations to be integrated in the development of the second output of the project, the Environmental Portfolio.

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1 INTRODUCTION

The Environmental Portfolio for Quality in University Education (ÉPOQUE) is a project which is funded by the European Commission, under the Erasmus+ programme, Key Action 2: Cooperation for Innovation and the Exchange of Good Practices.

The project started in September 2014 and end in August 2016. The consortium consists of six partners, which are:

- ☐ University of Ioannina (Greece): Project coordinator
- ☐ Helsingin Yliopisto (Finland)
- ☐ Hellenic Open University (Greece)
- ☐ Università degli Studi di Napoli Federico II (Italy)
- ☐ BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH(Austria)
- ☐ Projects in Motion (Malta)

1.1 PROJECT OBJECTIVE

The European Commission stresses the importance for the sustainable use of natural resources, especially by reducing energy consumption and eliminating energy wastage. There is significant potential for reducing consumption, especially in energy-intensive sectors such as buildings, manufacturing, energy conversion and transport. However, to promote sustainable development it is necessary to modernise both the higher education curricula as the adult education programmes, by building up the capacities of future professionals towards a more sustainable usage of natural resources and creation of bridges between the provision of knowledge and the labour market needs.

In this frame, the ÉPOQUE partnership have developed this project to equip the educators and future professionals with strong environmental portfolio in their courses, by developing a green specialisation of the human capital and advancing the synergy between Universities syllabuses, training organisations and enterprises. The ultimate objective is to promote a new generation of green professionals and increase the employability students/adult learners.

1.2 TARGET GROUPS

The direct target groups identified in the framework of the project are the following:

- ☐ University students of a variety of disciplines, who are intended to participate in the delivery of the course and gain new knowledge which will not only expand their skills and competences and help them become more environmentally conscientious, but will also improve their position in the labour market, equipping them with additional qualifications of significant added value. It is expected that throughout the course of the project, a total number of 200 University students will be trained on the joint course from the participating Universities (University of Ioannina, Hellenic Open University, University of Naples and University of Helsinki);
- ☐ University teachers who will be trained within the project to deliver the Environmental Portfolio and will have the opportunity to integrate (through the validation period) in their current curricula an innovative and very flexible set of courses. It is expected that a total number of eight teachers from the participating Universities will be directly involved during the

course development and the validation period. In addition, through the dissemination workshops a total number of 80 additional University teachers will be let known about the project and the results;

- ☐ Adult learners who will also be involved in the project, representing the second sector addressed through this project. From the partners who have direct access to adult learners (BEST and Projects in Motion), it is expected that a total number of 30 adult learners will participate at the course validation period. An additional number of 40 adult learners will be informed about the project through the dissemination workshops;
- ☐ Adult Education teachers/trainers will be participating during the course development and the validation period of the project. BEST and Projects in Motion will involve four teachers/trainers in total across the aforementioned activities and an additional number of 30 through the dissemination workshops.

Indirectly, the project will also address the following target groups:

- ☐ Pre-primary, primary and secondary schools that will participate during the validation period as pilots for the development of the Energy Management System by the students/adult learners. The partners aim to involve a total number of five schools per country;
- ☐ SMEs that will participate during the validation period as pilots for the development of the Environmental Management S by the students/adult learners. The partners aim to involve three SMEs per country.

1.3 SCOPE OF THIS DOCUMENT

This document is the **Intellectual Output 1 - Environmental Portfolio: the need for modernised curricula focusing on environmental issues**. Its main objective is to identify the trends in the curricula in adult education and higher education of the participating countries and highlight the importance for including issues related to the environment, the sustainable usage of natural resources and energy management.

Each of the partners carried out the analysis of the information provided from the questionnaires, as well as the outcomes from the desk research. With that as a basis, they each compiled a Country Report, which analyses the results for each participating country.

The present output is the summary of the findings and conclusions from the different reports, as well as a summative analysis of the data gathered. More information on country specific information can be accessed in the Country Reports.

The recommendations and conclusions of this report aim to provide the basis for the partners to develop the courses described in upcoming output, the Environmental Portfolio, based on the actual needs of the target groups.

1.4 RESEARCH TOOLS

The drafting of this document was based on a two-level survey carried out in the partners' countries:

- ❑ Desk research: all the partners carried out a desk research, each in their domain, and have indicated in a random sample of universities and adult education providers the extent to which the curricula examined include topics that are relevant to environmental issues. The results of the desk research were combined with those of the field research conducted in the partner countries with the aim of having a comprehensive picture of the situation regarding environmental education in different European countries.

The partners from Finland, Greece and Italy researched a number of universities, while the ones from Austria and Malta have focused on the adult education provision.

The desk research conducted by the partners from Austria and Malta primarily addressed adult education institutions. But also adult education opportunities available from other organisations like environmental NGOs or training centres and institutions specialised in certification bodies/energy management/auditing, beekeeping or composting were included. The two partners aimed to find out the status of provisions of environmental courses on national level delivered for the enhancement of skills and competencies, as a means to significantly improve the professional profile of adults. The results of the desk research were rounded with the analysis of the field research that gathered information of professionals in the field of adult education.

The methodological approach of the academic partners from Finland, Greece and Italy included the selection of universities/ university professors. Following the description of the national state-of-the-art regarding the implementation of environmental topics in higher education curricula, the role of university professors was researched. For this purpose, the results of the field research regarding university professors' perception of incorporation of environmental topics within their courses were included.

- ❑ Field research: the partners distributed a questionnaire, which was developed to serve the purposes of the EPOQUE project, depending on the target group they addressed. Therefore, 2 questionnaires were developed. One aims at examining university professors' opinion, while the second one is addressed to adult education trainers.

The questionnaire designed for adult education trainers was conducted in Austria and Malta following the target group of the partner organisations in these countries. The objective of the field research was to understand how adult education teachers and trainers perceive the incorporation of environmental topics within their courses and whether they consider that this is an element which could enhance a person's employability. It examines the current status of integration of environmental topics in adult education courses. The questions address awareness for environmental topics on the labour market in the different countries, as well as the enhancement of employability through knowledge in this field. Respondents have to indicate their knowledge regarding the topics of self-management of resources (i.e. printing habits, water usage, electricity habits, etc.), recycling, basic principles of environmental assessment, green entrepreneurship, environmental management systems, energy management systems and alternative energy sources. The survey targeted to find out their perception regarding the relevance of these topics for the promotion of employability. Finally, it aimed at engaging respondents to participate in the blended learning course.

The questionnaire for university professors was conducted in academic institutions of the partner countries Finland, Greece and Italy. Questions target at exploring academics' involvement in environmental topics and how they are included in their courses as a horizontal

discipline. Further, it requires estimation regarding the contribution of environmental knowledge to students' employability and indication of essential topics to be incorporated in the university curricula from a list including: self-management of resources (i.e. printing habits, water usage, electricity habits, etc.), recycling, basic principles of environmental impact assessment, green entrepreneurship, environmental management systems, energy management systems, alternative energy sources and green technology.

The conclusions and recommendations of this document served as a guide to the development of further project outputs, i.e. the tools in O2.

1.5 METHODOLOGICAL FRAMEWORK AND DATA COLLECTION

The national research was carried out between November 2014 and February 2015 by all partners, and the country reports were produced. During this period, the lead partner, BEST, designed the research framework and the template for the report, along with two distinct questionnaires: the first one was addressed to the University Professors, while the second to adult education teachers/trainers. Following feedback from the partners, the templates and questionnaires were finalised and the partners began to work on the desk and field research, as indicated above. All partners undertook the responsibility of carrying out the research in their own country. Given that Greece was represented by two partners, the workload was divided among them.

When it comes to the selection of Universities, specific agreements were made during the kick off meeting, with the objective to cover several disciplines, as well as to make sure that Universities from across each country were selected. The selection of Universities Professors was made in most cases based on the connections of the partners, to guarantee for credibility in the responses, as well as adequate know-how of the academic world in each country.

Likewise, the Adult Education sector was covered in Malta with specific focus on providers, who are focused on mainstreaming the courses to any type of student, not limited to adults. The selection of Adult Education teachers/trainers was made from the adult educators' databank from all the organisations that provide educational courses with relevance to environmental topics within technology or education, as well as other educators from smaller organisations such as professionals that provide one-off training courses to adults as a side-line from their normal line of work.

The partners from Greece and Italy collected 20 questionnaires each from University Professors, while the partner from Finland collected 29 questionnaires from the same target group. On the other hand, the partners from Austria and Malta each collected 20 questionnaires from Adult Education Trainers.

AUSTRIA

The desk research was based mostly on the online research of available adult education programmes which are currently under implementation or are planned to be implemented. The field research is based on the analysis of the questionnaires gathered by BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH. The objective of the research was to identify the degree of inclusion of environmental topics in the AE curricula, as well as the position of the AE teachers and trainers towards this issue.

The questionnaires were distributed to a random sample of AE teachers and trainers in Austria, which was selected from the respective database of BEST, which, being a very active AE provider in the country, maintains and regularly updates a registry of professionals who could be involved at the trainings that BEST is organising.

FINLAND

For the research in Finland, the University of Helsinki was too large to analyse and therefore the scope of the analysis was narrowed to the Helsinki University Centre for Environment (HENVI), an umbrella organisation within the university, and to academic teachers of department of teacher education of four Finnish Universities. Department of Teacher Education at Helsinki University was selected because there is close co-operation between Department of Teacher Education and HENVI and some of lecturers and professors of the Department are teaching also in HENVI centre courses. Four other Finnish universities were selected based on their availability on that time the research was carried out.

GREECE

The Greek research started with a research on the relevant literature online and through governmental data. The environmental courses, which were already integrated in the current curricula of the UOI and HOU were recorded. The research for environmental or sustainable development courses was extended to the curricula of other Greek Universities. These were the Aristotle University of Thessaloniki, the National and Kapodistrian University of Athens, the University of Patras, the Aegean University some Technical Universities and the Crete University.

The questionnaire designed for University Professor's Questionnaire was put in in "google docs" format and sent via e-mail. The responses were collected via the google docs platform and evaluated in an excel file. The data was analysed per question and finally, conclusions were drawn.

ITALY

This analysis targeted professors in Italian universities and researchers whose interests are focussed on environment-related topics. The sample chosen for the field research included university professors working at the University of Naples Federico II (UNINA) in different departments of the scientific and technologic area, professors working at the second university of Naples (UNINA2) who are involved in the activities of the bachelor degree course in environmental sciences, professors working at the university of Milano Bicocca (UNIMIB) (both involved in the teaching activities of the training courses devoted to the initial formation of primary school teachers), the Scientific Coordinator of the Italian Centre for Environmental Research and Education (CIRESA, based at the University of Parma) and 1 professor in science education from Turkey who was working as a visiting researcher at UNINA.

For the desk research, official data from the Ministry of education and research was used.

MALTA

The population of educators/trainers that provide educational courses with relevance to environmental topics within technology or education in Malta are mainly concentrated within 4 organisations (see appendix 4).

When executing the process of distributing the questionnaires to the adult educators' databank for the purpose of O1 data collection care was taken to source adult educators from all the above organisations, as well as other educators from smaller organisations such as professionals that provide one-off training courses to adults as a side-line from their normal line of work. We also solicited responses from Non-Governmental Organisations (NGOs) which also provide numerous and recurrent training courses for adult education.

2 ENVIRONMENTAL STUDIES: AN INVESTIGATION IN THE CURRICULA OF THE UNIVERSITIES AND ADULT EDUCATION

This section includes the analysis of the desk research on the incorporation of environmental issues in both the University Curricula in Finland, Greece and Italy, as well as the Adult Education programmes available in Austria and Malta. The main aim of the section is to establish whether environmental studies are connected to the courses delivered in the Universities and Adult Education providers for the enhancement of skills and competences, as a means to significantly improve the professional profile of students and adults. The section is divided into three paragraphs: the first presents the current situation in the Universities of the aforementioned countries, the second the situation in the Adult Education sector and the third the overview of the findings across the countries. More information on the findings is available in the County Reports, produced by each one of the partners.

2.1 OVERVIEW OF THE UNIVERSITY CURRICULA IN PARTNERS' COUNTRIES

FINLAND

The Finnish Universities in general have incorporated environmental topics in the courses offered, especially related to didactics of natural sciences, such as biology didactics course. For example, the University of Eastern Finland offers courses in sustainable development in the studies for nutrition and food systems, as part of the curriculum of master of education degree programme and in the courses of subject specific didactics (typically biology and geography). In the University of Jyväskylä the principles of sustainable future are introduced in the course of craft education target for master of education degree programme. The curriculum of teacher education degree programme in Tampere University does not introduce sustainable future in any courses. In the University of Turku, the environmental education and principles of sustainable future are introduced in few courses of subject specific didactics. The department of teacher education in the University of Helsinki sets the sustainable future as one of core views of all education in the department of teacher education. Nevertheless, there are only a few references of sustainable future in the department level curricula documents of these five Finnish Universities. The concepts of environmental portfolio, green technology, sustainable development, renewable energy sources, retrofitting were not used at all and environmental issues do not have similar emphasis on departments' curricula as, for example, multicultural issues or need for special education issues has.

GREECE

The desk research in Greece across eleven Universities has demonstrated that there is a considerable gap between the courses provided, both at undergraduate, as well as master's level in the country. The Greek partners studied the courses included in the curriculum of different departments of the eleven Universities and the outcome was that there are some courses related to sustainable development and environmental issues, however, these are isolated and in most cases offered for post-graduate studies. For example, the University of the Aegean offers courses on sustainable development both at undergraduate, as well as post-graduate level, being one of the few Greek Universities that directly focuses on the issue at both Higher Education levels, through the School of the Environment. Courses at undergraduate and post graduate level related to the environmental sustainability are also

offered at the Technical University of Crete, across all the departments available (i.e. production engineering and management, mineral resources engineering, electronic and computer engineering and architectural engineering), but especially through the Environmental Engineering Department. It is therefore evident that in Greece environmental issues as a means to upskill young students in this topic, especially given the importance of the matter at European Union level, which also affects the situation in the labour market.

ITALY

As far as the Italian Universities are concerned, the desk research has demonstrated that environmental related courses are offered by more than 20 Universities across the country, most of which approach environmental sciences, while few of them are more oriented to topics such as biotechnologies, technologies for the environment, preservation and recovery of natural environments and natural risk management. The typical bachelor degree program in environmental sciences includes basic disciplinary courses (such as mathematics, physics, chemistry, biology), together with more specific courses with topics ranging from earth science, to ecology, to environmental technologies and engineering, to environmental jurisprudence. At master's level, there is a broad offer of environmental engineering curricula that are present in almost all the main Universities in Italy. It is evident that much has been done during the last decades, in terms of introducing elements related to environmental issues in the University didactics of scientific disciplines; nevertheless, very little has been done (if anything) in order to introduce environmental science as an independent discipline in high-level University and post-University courses. In some cases, the presence in singled-out Universities of research groups active in the field has given birth to promising experimentations (e.g. this is the case of the University of Parma, where environmental education courses have been made available thanks to the presence of CIREA). Some (second level) master courses, especially focused on environmental sciences were also available in the recent past, however they are now closed. This means there is no systemic boost going in the direction of creating an Italian Research School in environmental education.

2.2 OVERVIEW OF THE ENVIRONMENTAL TOPICS IN ADULT EDUCATION IN PARTNERS' COUNTRIES

AUSTRIA

The desk research carried out in Austria, aiming at identifying and highlighting the extent to which environmentally related topics are included in the Adult Education curricula has indicated that despite the fact that social responsibility and environmental awareness have been in the spotlight of the labour market demands for a few years now, the corresponding offer is limited. The Adult Education courses available for the enhancement of professional skills have not yet been aligned with the current trends for environmental sustainability and the European Directives, which focus on the promotion of alternative energy sources, environmental awareness and green entrepreneurship. On the other hand, though, the labour market itself is putting much emphasis on environmental aspects and their necessity for upskilling professionals. In this sense, environmental topics are adapted for relevant vocational training (e.g., apprenticeship, professional training). An example is the introduction of modular apprenticeships in special schools for eco-engineering in Austria. In particular, some Adult Education programmes have been identified, but they are sparse and predominantly the result of local initiatives.

Such initiatives include the *Ländliches Fortbildungsinstitut*¹, nationwide adult learning institution for the rural areas, and the *Volkswirtschaftliche Gesellschaft Österreich*², an independent training organisation which aims at providing training on economics and environmental policy in the regions. Moreover, BEST already promotes projects on “green employability” aiming at equipping the Adult Education teachers/trainers with “sustainability skills”. Finally, special trainings on environment and energy related issues through the TÜV Austria Academy on Environment and Energy, however these are targeted to specific professional categories.

MALTA

The results of the desk research investigating the availability of environmental topics within the courses offered to adult learners in Malta has shown that there are many possibilities available for fostering one’s education and professional capabilities. The major organisations providing such educational courses are easily accessible to adults and offer them the possibility to enhance their knowledge in a wide range of environmental topics. It is also worth pointing out that as part of its strategy of widening public awareness as well as contributing to general cultural education, the University of Malta has identified a number of lectures offered by various Universities, Institutes and/or Centres which may be attended by members of the public. This selection of lectures also includes environmental aspects of technology and education courses that are offered within the University. This scheme is targeted towards adults who have an interest in following particular lectures with the aim of widening their general and cultural knowledge. Attendance to the lectures is free of charge and is not graded by examination or assessment. Therefore, no certification is obtained. The sole aim of this scheme is to offer the adults the possibility to widen their knowledge and maybe encourage them to take up the formal education course at a later opportunity.

2.3 SUMMARY OF FINDINGS

The desk research carried out in the five countries of the partnership has provided very useful results for the ÉPOQUE project. In particular, the Higher Education institutions investigated in their countries (Greece, Italy and Finland) are evidence that despite the fact that environmental issues are in a certain degree taken into consideration in the courses delivered, both at undergraduate, as well as postgraduate level, it is not through a targeted effort to incorporate the topic across all disciplines. On the contrary, environmental issues are addressed, as a topic which can also be viewed in the framework of specific disciplines.

In the Adult Education context, the results in the two countries are to a certain degree divergent. In Austria, the provision of environmentally related topics is infrequent, mostly based on independent initiatives and in under no circumstance viewed as necessary for the improvement of the professional profile of adults who are in search of employment. In Malta, though, the supply of environmental related issues is considerably higher, confirming thus the importance placed on the issue. It is clear that in Malta, environmental courses are not solely regarded as a means for upskilling adults, but also for educating people about the matter and changing the way they understand and care for the environment in general.

¹ <http://www.lfi.at/>

² <http://www.vwgooe.at/de/home>

In conclusion, the development of the ÉPOQUE Environmental Portfolio will significantly contribute on one hand to the lack of courses available in Austria, Greece and Finland, while on the other hand, it will complement the existing opportunities and alternatives currently offered in Italy and Malta, by providing a structured and comprehensive training solution, which is not restrictive to specific areas, but can be considered as “universal” and transversal to all sectors of activity.

3 THE ROLE AND POSITION OF THE UNIVERSITY PROFESSORS AND ADULT EDUCATION TEACHERS/TRAINERS

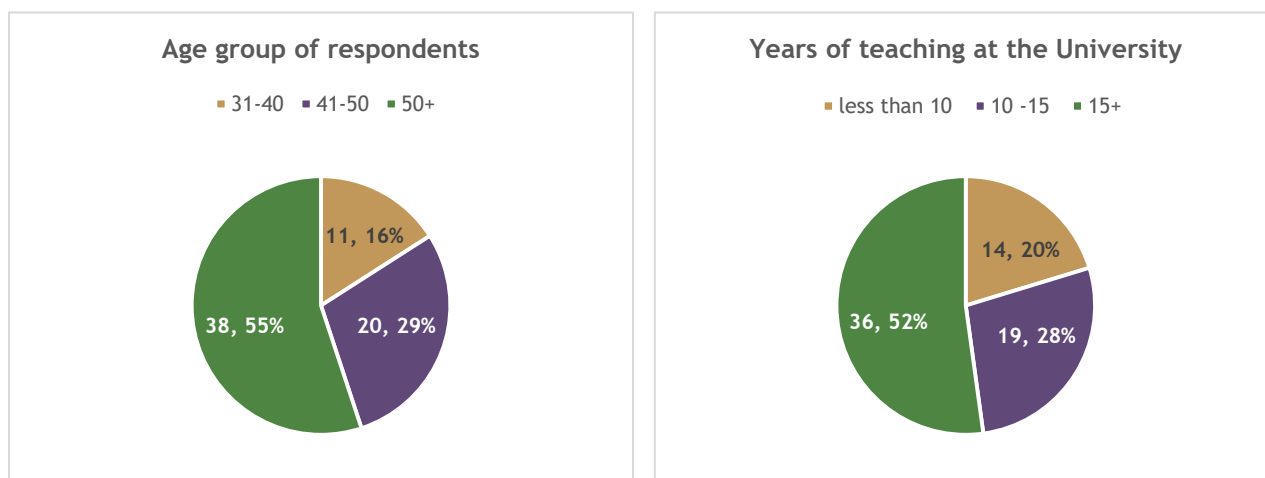
This section of the report summarises the findings from the field research carried out in Austria, Finland, Greece, Italy and Malta. The objective of the field research was to collect the opinion and position of the University Professors and Adult Education teachers/trainers in relation to the importance of environmental issues in the courses provided, as a step towards improving the professional profile of students and adult learners. To achieve this, two questionnaires were developed and compiled: one addressed to University Professors and the other to Adult Education teachers/trainers.

Following the compilation of the questionnaires and their validation from the partnership, a total of 69 University Professors were approached in Finland, Greece and Italy. Likewise, 40 Adult Education teachers/trainers were involved in Austria and Malta. The results from the analysis of the questionnaires collected are provided in the Country Reports that were compiled and a summary of the findings is provided hereinafter, representing the overall tendencies registered in the participating countries.

3.1 ENVIRONMENTAL TOPICS IN HIGHER EDUCATION

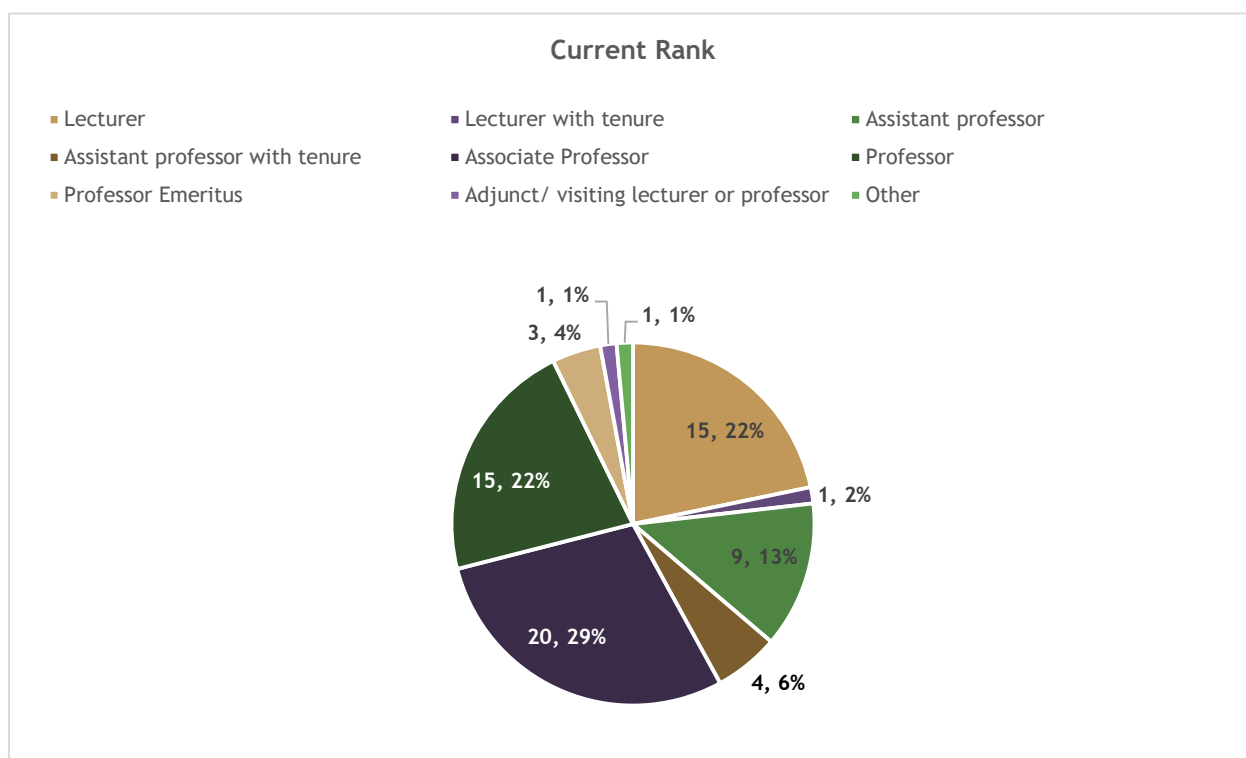
3.1.1 Demographic information on the profile of the University Professors who participated at the field research

Most of the University Professors who replied to the questionnaire, are over 50 years old (in total 38 people, or 55%), while 20 (29%) of them are aged between 41-50 and the remaining 11 (16%) are under 40 years old. As expected, from the 69 University Professors, 36 (52%) have been teaching at the University for over 15 years and 19 from 10 to 15.

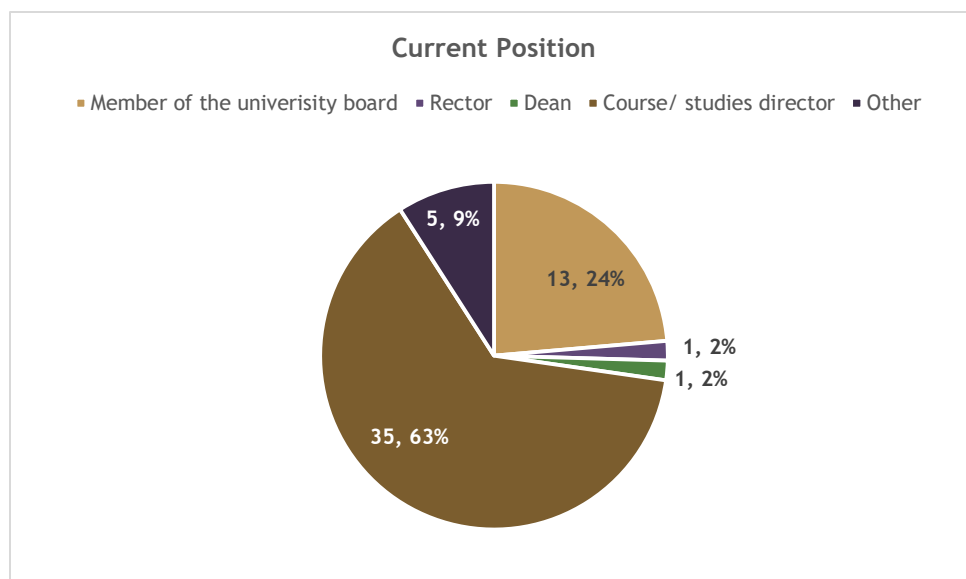


The current rank for the majority of the respondents is Associate Professor (20 out of the total of 69, or 29%), 15 people are lecturers (22%) and another 15 (22%) are Professors. It can be therefore safely

argued that the survey sample is representative enough to incorporate the views and opinions of a broad range of University academics, who belong to different age groups, have different positions, some of them being much more involved in the academia, while others less.



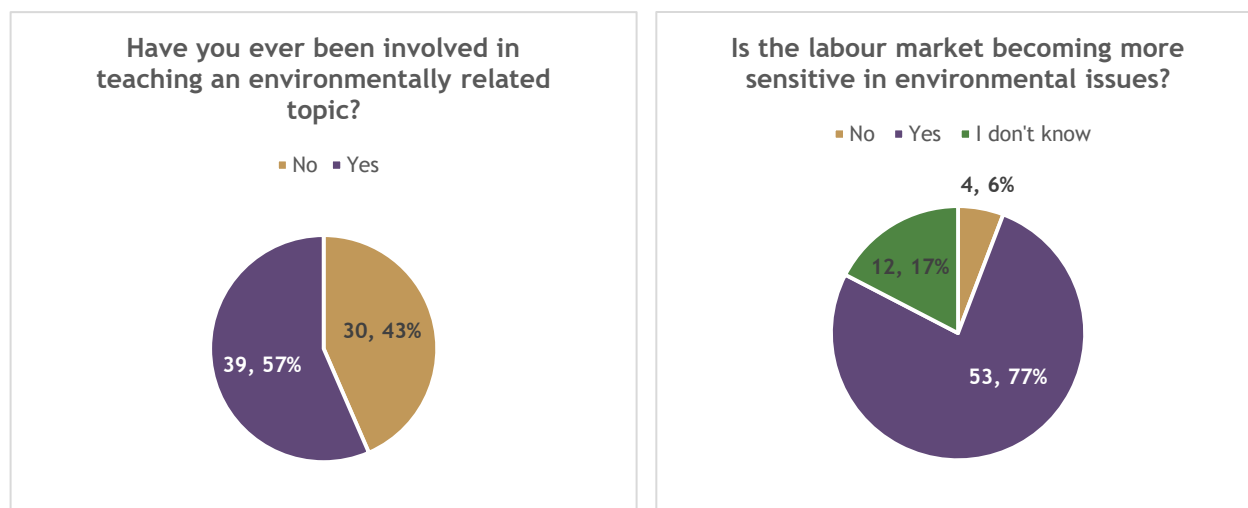
The respondents were then asked to indicate their current position, in order to check whether they are involved in the decision making process of their University when it comes to curriculum development. Most of them (35 out of the 69, or 63%) are course and/ or studies directors and 13 (24%) are members of the University Board. This could prove to be very positive for the ÉPOQUE project, given the access gained to Professors and the multiplier effect that could be achieved in terms of the project results.



3.1.2 Incorporation of Environmental Topics in the University Curricula

When asked whether they have already been involved in teaching environmental topics, most of them indicated that they have already. However, the results are mostly affected by the Finnish inputs to the field research. In particular, the majority of the Professors who were involved in the research have already been involved in the delivery of environmental topics already (i.e. 39 out of the 69 who replied, or 57%). Another factor which should be taken into consideration is the fact that the Professors who replied belong only to one Department of the contacted Universities (Teacher and/ or school education), whereas the results from the other countries spread across various disciplines. Based on the country reports, 14 out of the 20 Greek University Professors have not been involved in teaching any environmental topics and 11 out of the 20 Italian Professors.

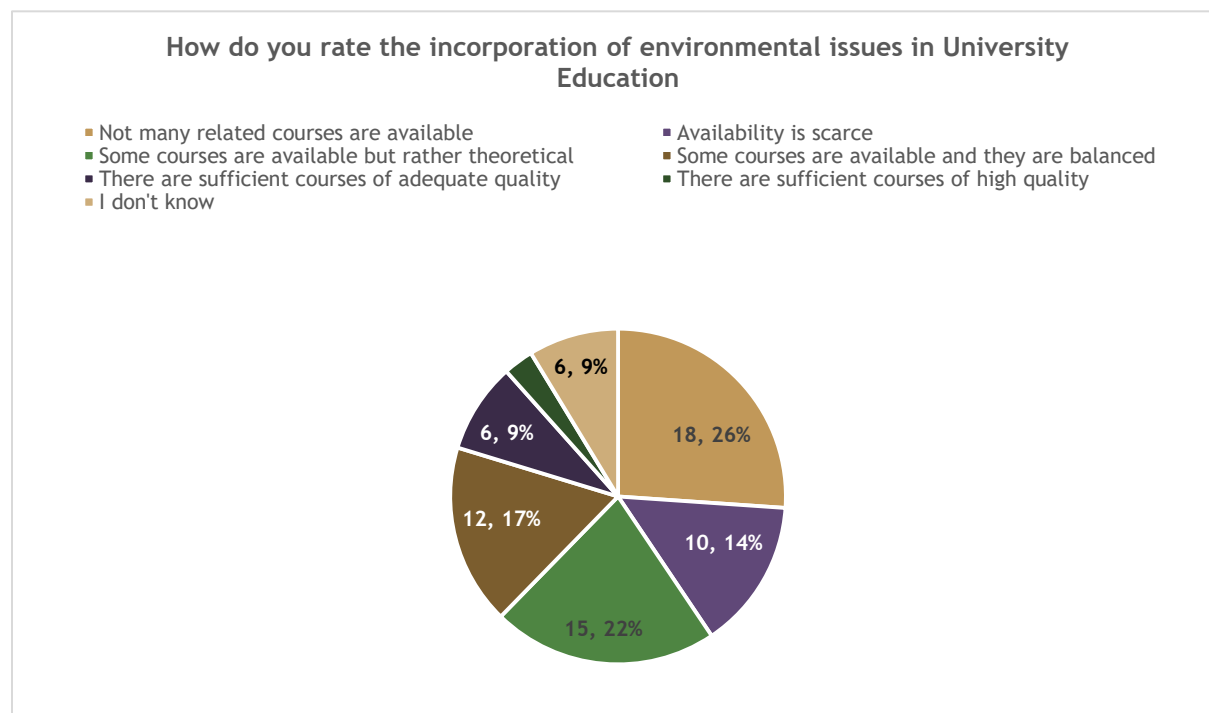
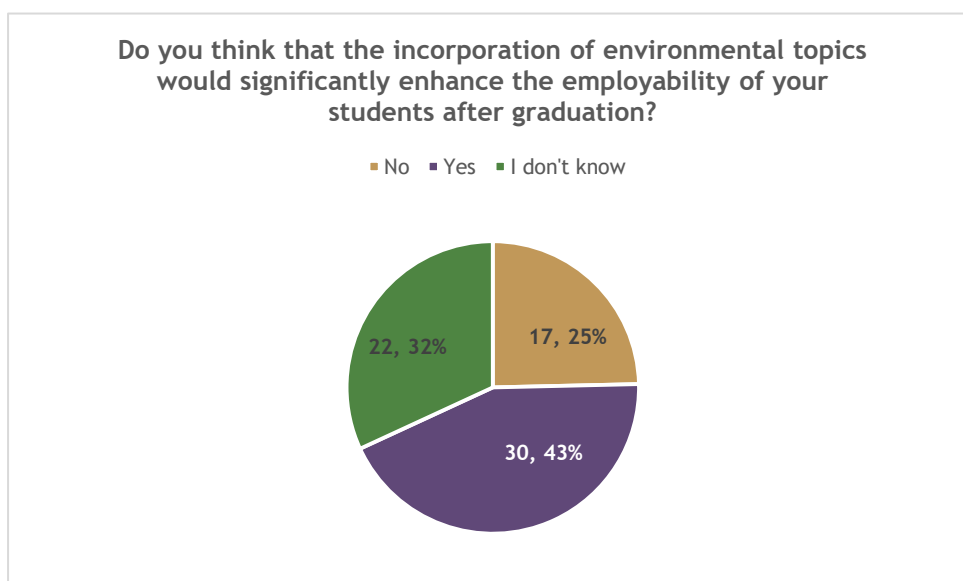
The Professors were then asked to provide their opinion on whether they think that the labour market is becoming more sensitive in environmental issues; the majority of the respondents indicated that they agree with this statement (i.e., 53 out of the 69 who replied, or 77%). The opinions to this question are also similar across the participating countries.



The Professors provided their opinion regarding the improvement of the professional profile of the students if they would be participating at courses related to environmental topics: the majority of them are convinced that indeed, the students would benefit from being taught environmental issues during their University studies (30 out of the 69, or 43%); 22 (i.e., 32%) indicated that they do not know if such a focus would help their students and the remaining 17 (i.e., 25%) answered “no”.

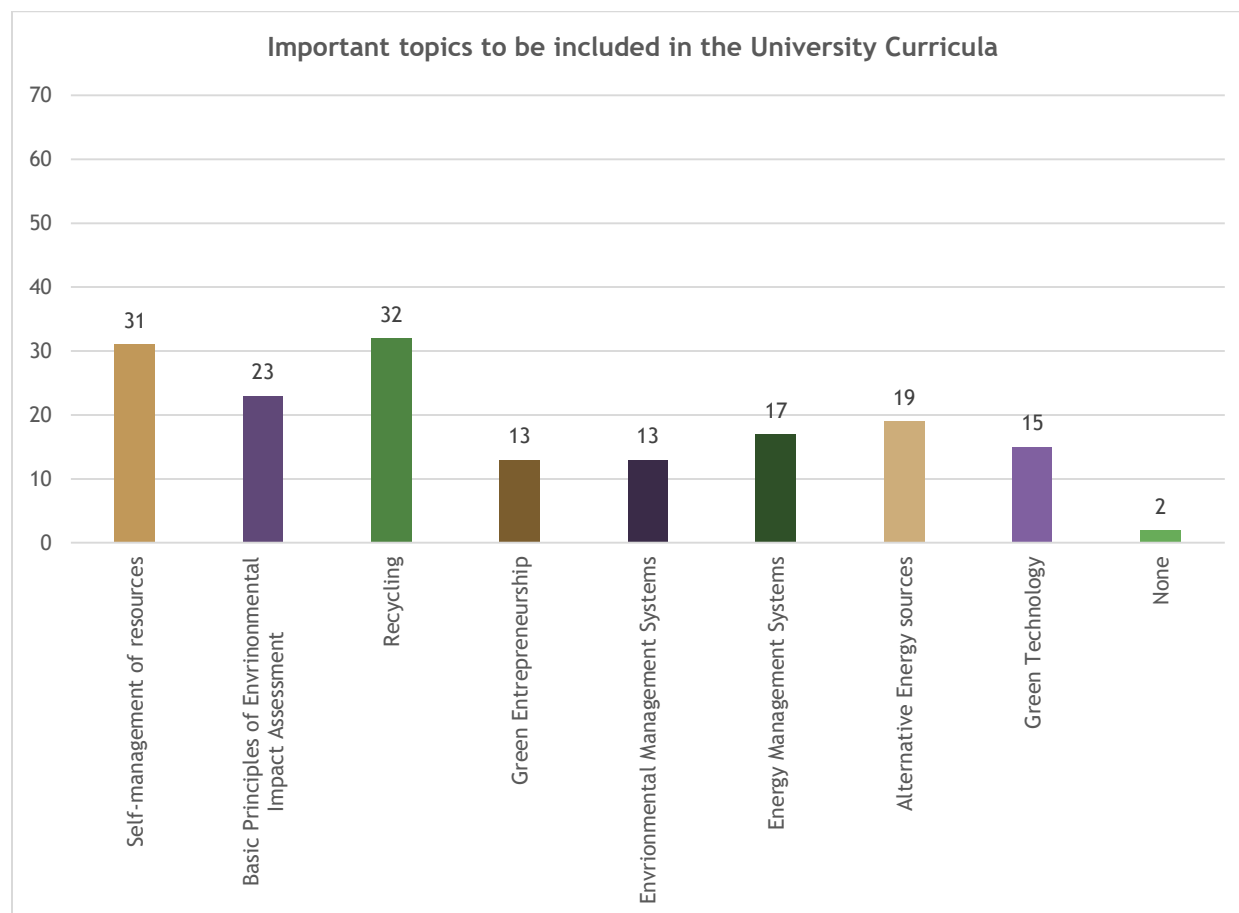
The question which followed was related to the opinion that the University Professors have regarding the environmentally related courses currently available in Higher Education. The replies were to a significant extent non-conclusive; however, it can be concluded that 28 of the 69 respondents (i.e., 40%) have indicated that the supply of course is either scarce (i.e., 14%), or practically inexistent (i.e., 26%), 27 (i.e., 39%) indicated that some courses are available, 6 claimed that there are sufficient courses to cover the demand of adequate quality and 6 (i.e., 9%) replied that they do not know (the remaining two respondents have selected the reply that there are available courses of high quality). Therefore, it can be safely argued that, based on the opinion of the Professors who replied to the ÉPOQUE questionnaire, the portfolio due to be developed will either cover a very significant gap in the

University curriculum, or provide a solution different from the already available courses, which are not very satisfactory, based on the replies provided.



The final question in the distributed questionnaire asked the University Professors to select the topics they thought were most important to be included in the University curriculum. The respondents were free to select any number of topics they considered necessary. As it is evidenced from the graph that follows, the most important topic to be included is “Recycling” (with 32 answers), followed by “Self-management of resources” (31 responses). The next topics included “Basic Principles of Environmental Impact Assessment” (pointed by 32 respondents) and “Alternative Energy Sources” (considered by 19).

The topics less selected by the respondents, with 13 answers each, were “Green Entrepreneurship” and “Environmental Management Systems”.



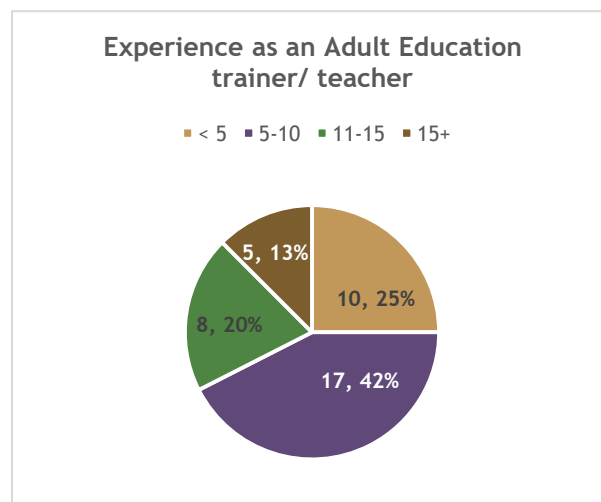
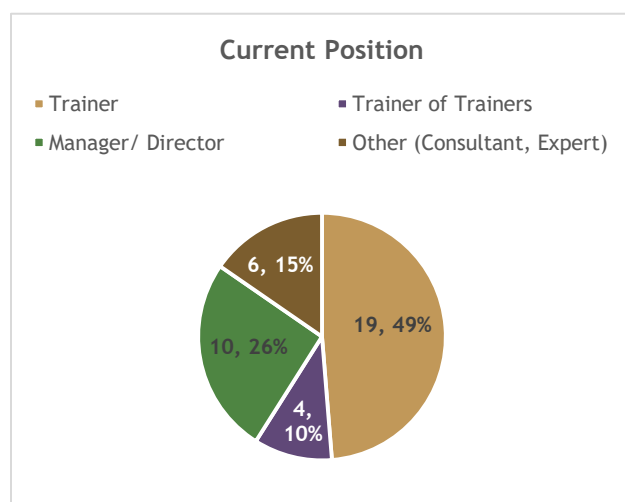
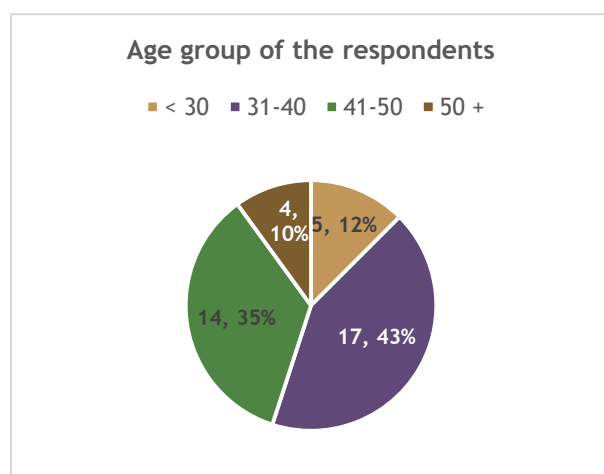
In addition to the topics indicated by the ÉPOQUE partners, the respondents were also free to indicate any topic they considered important and wasn't included in the list. A selection from the most relevant replies is the following:

- ☐ Electricity usage by individual devices and -most importantly- large computer centres.
- ☐ Aesthetics of environment, philosophical anthropology, philosophy of nature, rights of the human and rights of the animals
- ☐ Green consumption
- ☐ Understand system nature of environmental issues. They are cultural, ecological, economical.... As well as understanding of behaviour change
- ☐ Bioenergy resources
- ☐ Anthropological and ethical questions about humanness and relations between humans and non-humans (wider concepts of justice, democracy, maintenance and promotion of life etc.)
- ☐ Environmental awareness and participation is most important for everybody.
- ☐ Biology of conservation; Global changes
- ☐ Biogeochemical cycles; global change ecology
- ☐ Environmental education; Sustainability (Sustainable Development); Environmental Ethics

3.2 ENVIRONMENTAL TOPICS IN ADULT EDUCATION

3.2.1. Demographic information on the profile of the Adult Education Teachers/Trainers who participated at the field research

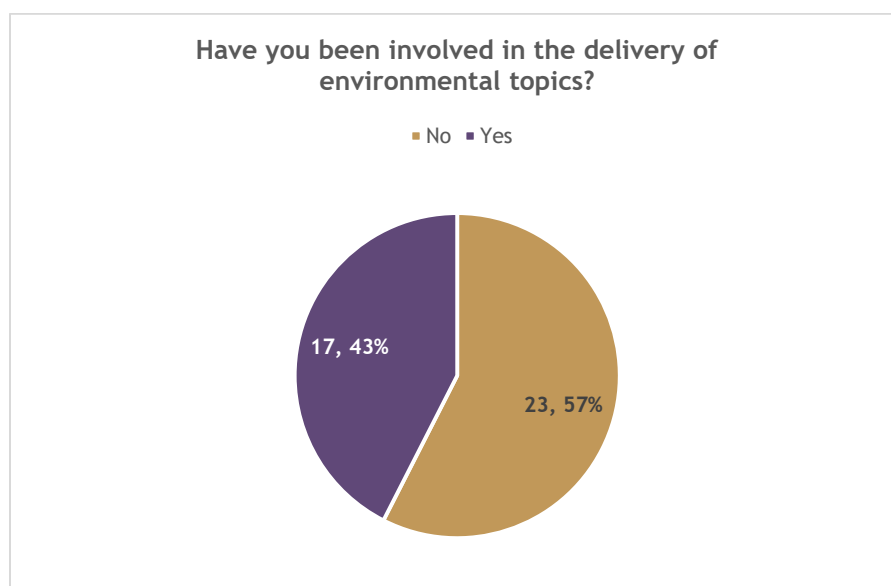
In the context of Adult Education, the majority of the respondents belong to the age group of 31-40 years old (17 people, or 43%), followed 14 (or 35%) who belong to the age group of 41-50. When it comes to professional experience, 22 of the Adult Education teachers/trainers (55%) approached possess 11-20 years of overall professional experience and eight (20%) over 20 years. Their specific professional experience (i.e. as an active Adult Education teacher/ trainer) is five-10 years for 17 (43%) of the respondents and over 10 years for 13 of them. Moreover, 19 of the Adult Education trainers approached are currently trainers, four are trainers of trainers, 10 occupy managerial positions and six are consultants and experts in environmental issues.



The Adult Education teachers/trainers were then asked to indicate the target group with which they work mostly with. The majority of the respondents selected one group, however they were others who selected more. Most of the trainers are in contact with people with certified qualifications (i.e. they have obtained a certificate for completing a cycle of qualification courses). The second group with big representation are people with some basic skills, followed by those who possess vocational qualifications.

3.2.2. Incorporation of Environmental Topics in Adult Education

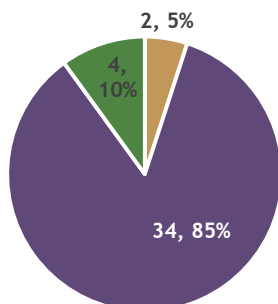
From the collation of the results from Austria and Malta, the majority of the Adult Education teachers/trainers have not been involved in the delivery of topics that relate to environmental sustainability (23 people out of the 40 who replied, or 57%).



When asked to share their opinion whether the labour market is becoming much more sensitive in environmental issues, the replies from the sample selected are much more convergent, as 34 Adult Education teachers/trainers replied “yes” (85%), two replied “no” (5%) and four people (10%) do not know. The same quality of feedback was also compiled for the question on whether they believe that it is important to incorporate environmental topics in the courses delivered to adults in the two countries. In particular, 31 people (78%) replied “yes”, seven people replied “no” and two people do not know.

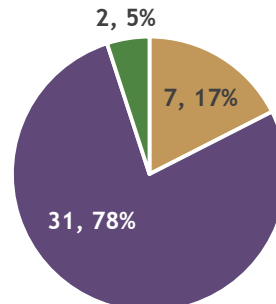
Do you believe that the labour market is now becoming more sensitive in environmental issues?

■ No ■ Yes ■ I don't know



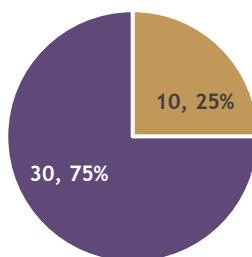
Do you think it is important to include environmental topics in the Adult Education curricula?

■ No ■ Yes ■ I don't know



Could you deliver trainings that relate to environmental topics?

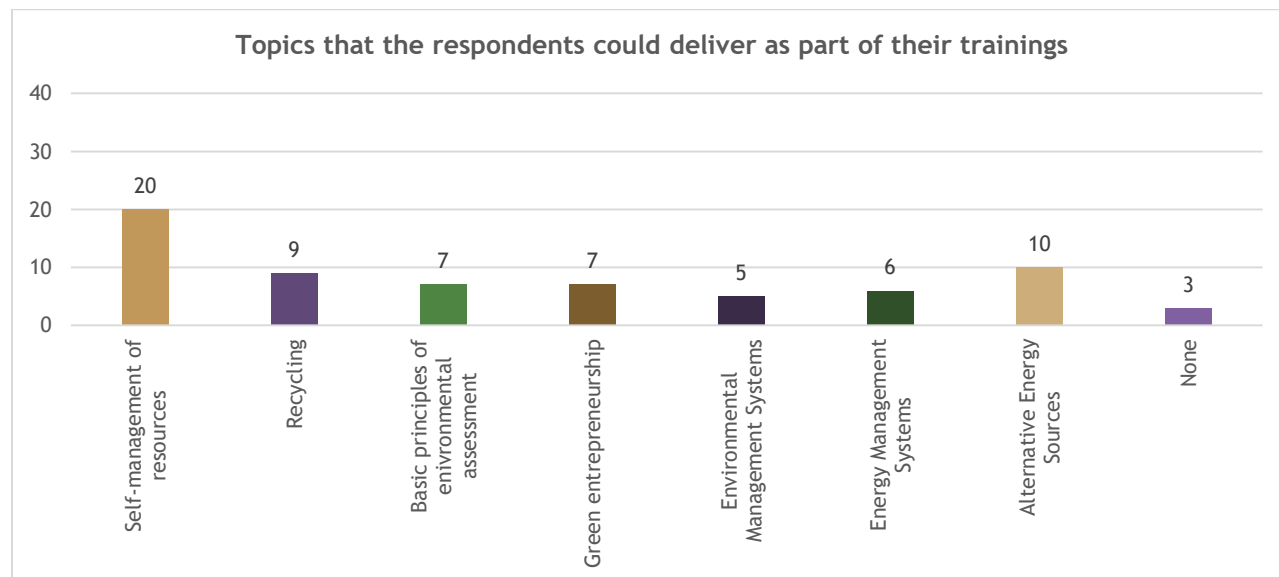
■ No ■ Yes



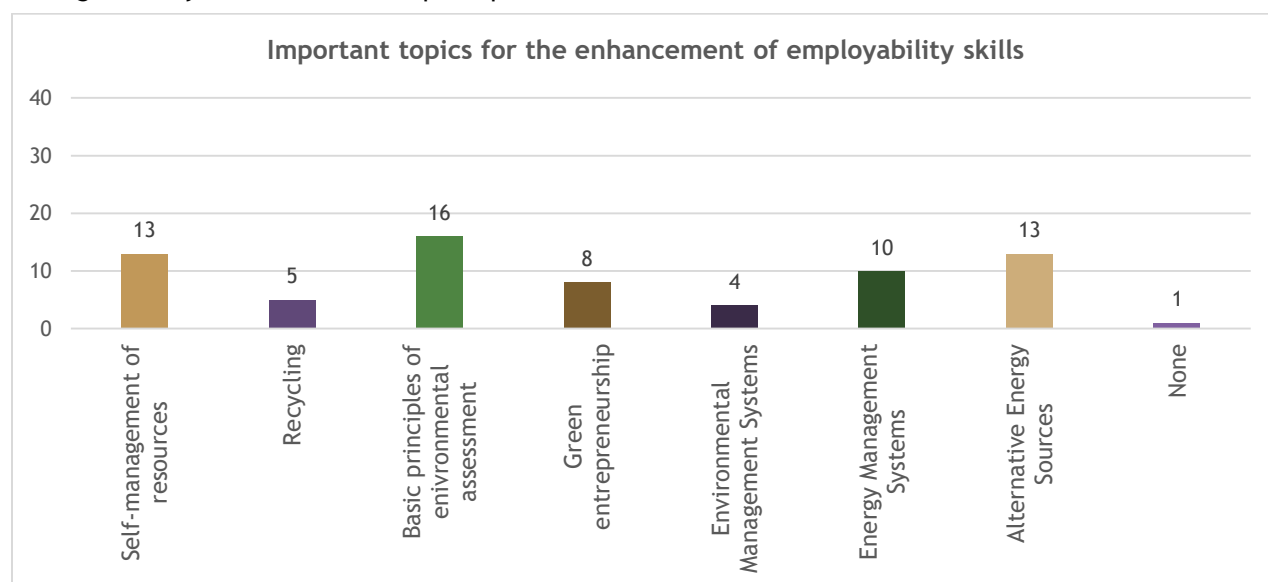
The Adult Education professionals were asked if they could deliver trainings related to environmental topics. The compilation of the results indicates that the majority of the respondents (75%) think they can. Nevertheless, it should be taken into consideration that almost all Adult Education teachers/trainers (but one) from Malta have indicated that they are in the position to carry this out, while almost half of the Austrian Adult Education teachers/trainers replied yes. It is again an issue to be considered for the differences between the two countries.

When it comes to the incorporation of topics, the graph below illustrates the topics indicated by the professionals from both countries as ones they would feel comfortable delivering. The compiled results indicate that the most important topic is “Self-management of resources” (with 20 replies), followed by “Alternative Energy Resources” (with 10 answers) and “Recycling” (selected by nine respondents). The remaining topics have been selected with a somewhat similar amount of votes. Nevertheless, it should be highlighted that the results illustrate only the summation of times a topic has been selected; the National Reports though, indicate that the priorities for each country, as indicated by the Adult Education professionals are somewhat different. In particular, the most important topics to be included in the Adult Education curricula identified in Austria were “Self-management of resources” and

“Recycling”, while for the Maltese professionals they were “Alternative Energy Resources”, “Energy Management Systems” and “Self-Management of resources”.



Finally, as far as the employability skills of the adults that belong to their groups of trainees are concerned, the collated results from both countries are summarised in the graph that follows. It is evident that most of the Adult Education professionals have indicated that the most important topics are “Basic principles of environmental assessment” (identified 16 types), “self-management of resources” and “Alternative Energy Sources” (each by 13 respondents). Once more, the results are to a significant extent different between the two countries, with the Austrian Adult Education teachers/trainers highlighting mostly “self-management of resources” and “basic principles of environmental assessment”, each receiving eight votes, while coming to a very close second of seven votes with “Recycling”, “Green Entrepreneurship” and “Environmental Management Systems”. On the other hand, the Maltese Adult Education trainers indicated “alternative energy sources”, “energy management systems” and “basic principles of environmental assessment”.

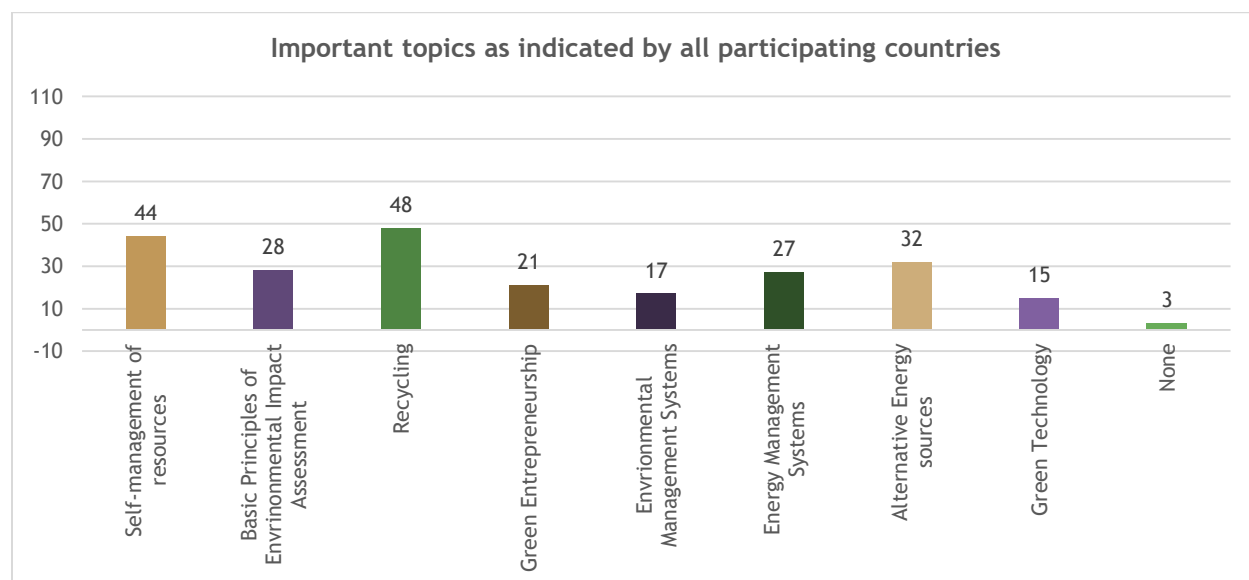


The respondents also had the opportunity to indicate additional topics, apart from the ones in the list, should they consider them as important. A selection of the replies provided is the following:

- ☐ *Attractive skills for companies with focus on sustainability; Needed skill for specific activities*
- ☐ *EMAS (Eco-Management and Audit Scheme)*
- ☐ *Environmentally friendly building techniques and resources*

3.3 SUMMARY OF CONCLUSIONS RESULTING FROM THE DATA ANALYSIS

The analysis of the feedback collected through the questionnaires developed in the framework of the ÉPOQUE project has indicated some very useful findings. In principle, even though the situation is considerably different in some of the participating countries in terms of how mature the University or Adult Education provision of environmentally related topics is, under no circumstance does it reveal that the ÉPOQUE Environmental portfolio could not be implemented across the countries very successfully. The graph that follows illustrates the compilation of the feedback provided from both the University Professors, as well as the Adult Education teachers/trainers about the topics that are considered as important to be included in the curricula. The most important one, based on the cumulative replies is “Recycling” (gathering a total of 48 answers), followed by “Self-management of resources” (with 44 responses). The topics less selected were “Green technology” (by 15 respondents) and “Environmental Management Systems” (with 17 replies).



The most important result which derives from the data analysis is the fact that the original selection of topics to be included in the ÉPOQUE Environmental portfolio is very much in line with the priorities set by the education experts approached in the context of this Intellectual Output report..

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS RELATED TO THE UNIVERSITY CURRICULA

The analysis undertaken from the partners and relates to the University curricula currently available can be summarise as follows:

- ❑ In **Finland**, only a few references of sustainable future were noted in curricula documents of the five Finnish Universities which were investigated. The concepts of environmental portfolio, green technology, sustainable development, renewable energy sources, retrofitting were not used at all. Moreover, environmental issues do not have similar emphasis on the Universities', faculties' and departments' strategic documents, or degree programme descriptions or curricula as, for example, multicultural issues or need for special education issues has;
- ❑ In **Greece**, a big gap between the number of the courses provided in each Department and/or University and the courses which are oriented to sustainable development and education was identified. As already presented, the majority of the curricula offered in the Universities across the country does not have any link to environmental issues, with the exception of specific cases, where the studies only relate to the environment and/ or engineering. Moreover, the findings from the questionnaires, demonstrate the lack of information and awareness for a big group of University Professors who don't perceive the incorporation of the environmental topics within their courses as vital;
- ❑ In **Italy**, the need for the introduction of elements that could ignite the process of change in the way that environmental issues are perceived in the University system has been evidenced. Introducing elements of environmental education in the available University courses or specific courses devoted to environmental education could be a good way to bring some change in the perceptions of all students who are building a professional profile focused on environmental issues in our Universities. This change of perspective cannot pass by a "green washing" of the existing, but should be based on interventions that are in line with internationally established principles that underlie environmental education. It would be important to start planning spaces for post-graduate training that go in this direction. An audience of students interested in the path exists and has currently no outlet.

Therefore, it can be evidenced that irrespectively of the country, environmental issues remain a topic that hasn't been considered as much as it should have been when compiling the University Curricula. This could be attributed to the fact that the need to foster environmental awareness and to care for natural resources and energy are managed was not highlighted enough until very recently. It is a matter of a change in culture and mind-sets, which can only be achieved by including environmental issues across all education levels, as a means to actively involve people and help them realise that to care for the environment is not related to the educational background or the professional orientation, but a way of living.

4.2 CONCLUSIONS RELATED TO THE ADULT EDUCATION PROVISION

The summary of the conclusions from the analysis undertaken for the Adult Education sector in Austria and Malta can be summarised as follows:

- ❑ In **Austria**, the need for a comprehensive set of environmentally related courses has been validated, as has the project objective. Adult education provision in Austria is in need of courses that raise awareness on environmental issues and sustainable use of resources, as a means to improve the qualifications and skills of the adults and as a means to match the course delivery to the needs of the labour market. Based on the replies of the adult education teachers/trainers, special focus during the development of the training courses (which is due to be carried out in the framework of the second Intellectual Output: Environmental Portfolio) on the issues mentioned above, i.e. self-management of resources, basic principles of environmental assessment, green entrepreneurship and alternative energy resources;
- ❑ In **Malta**, there are many possibilities available for improving one's education and professional capabilities. The major organisations providing such educational courses are easily accessible to adults and offer the possibility for adults to further their knowledge in a wide range of environmental topics. Nevertheless, despite the fact that the desk research showed that a varied list of course opportunities is available, the result obtained from the questionnaire responses shows that the general perception of local adult educators is that some courses are available, but topics are limited. This therefore implies that the availability and variability of the courses on offer by local educational institutions and organisations needs to be improved in order to ensure adequate opportunities for adults to further their professional capabilities in the environmental area.

Therefore, it is clear that the ÉPOQUE Environmental Portfolio is a tool that can be actively used by the Adult Education providers, irrespectively of the extent to which environmental topics are covered or not already in the Adult Education courses provided already. In the case of Austria, it will offer a very dynamic alternative for adults who are in search of employment, giving them the opportunity to focus on an area that is not characterised by excessive supply and demand, therefore providing them with a competitive advantage. For Malta, it will offer a comprehensive set of courses which will address the issue of availability and quality that the Adult Education professionals have already identified, as per their feedback in the questionnaires.

4.3 RECOMMENDATIONS FOR THE DEVELOPMENT OF THE ENVIRONMENTAL PORTFOLIO

The previous sections presented the analytical situation in the participating countries in relation to the incorporation of environmental issues both in the University curricula, as well as those of Adult Education provision. The overall conclusion from the analysis remains that irrespectively of the extent to which environmental topics have already been incorporated in the curricula, there is still a lot of distance to cover until it can be evidenced that they are perceived as an indispensable part of a person's education, irrespectively of the level or the discipline they pursue.

The desk research carried out by the partners has demonstrated quite satisfactorily the existing gaps; however, the field research and the opinion of the education professionals has highlighted them even

further. On the other hand, though, it has also shed light into the original design of the ÉPOQUE Environmental Portfolio and has actually validated the topics selected and the structure, but, most importantly, the need for its development.

For the development of the ÉPOQUE Environmental Portfolio, which is the topic of the following Intellectual Output (IO2), in the framework of this project, the partners should focus mostly on the development of the topics which have already been highlighted in the field research. These are

- ☐ Recycling;
- ☐ Self-Management of resources;
- ☐ Alternative Energy Sources;
- ☐ Basic Principles of Environmental Impact Assessment;

The remaining topics (i.e. Energy Management Systems, Green Entrepreneurship, Environmental Management Systems and Green Technology) should also be included as part of the courses due to be developed, given that they are a means to foster further specialisation and offer alternatives to the students and/ or adults that they have not considered yet. This is mostly evident in the National Report from Finland: awareness on the concrete subject of certain topics, as well as opportunities for further use and added value are not very advanced in some cases. Therefore, the ÉPOQUE Environmental Portfolio can be used not only as a (further) training tool, but also as a means to involve people more in these issues, as well as to provide them with alternatives which they might have not considered yet.

APPENDIX 1: QUESTIONNAIRE FOR UNIVERSITY PROFESSORS

1. Please provide your name (optional).
Use this space to give us your name if you wish to

2. Which country are you from? Please, select the appropriate answer.
 - ☐ Finland
 - ☐ Greece
 - ☐ Italy
 - ☐ Other (please specify): Use this space to specify

3. Please, indicate the age group you belong to by selecting the appropriate answer.
 - ☐ 31-40
 - ☐ 41-50
 - ☐ 50+

4. How many years have you been teaching at the University? Please, select the appropriate answer.
 - ☐ Less than 10 years
 - ☐ 11-15 years
 - ☐ 15+ years

5. Please, indicate the department of the University you are currently teaching in:
Use this space to indicate your department

6. Please indicate which your current rank:
 - ☐ Lecturer
 - ☐ Lecturer with tenure
 - ☐ Assistant Professor
 - ☐ Assistant Professor with tenure
 - ☐ Associate Professor
 - ☐ Professor
 - ☐ Professor Emeritus
 - ☐ Adjunct / Visiting Lecturer or Professor
 - ☐ Other: Please, specify here

7. Please indicate your current position:
 - ☐ Member of University Board
 - ☐ Rector
 - ☐ Dean
 - ☐ Course / studies director
 - ☐ Other: Please, specify here

8. Please indicate whether you are a member of University committee(s) that deal with academic / educational / research / student issues:
☐ Yes: Please, specify here
☐ No
9. Have you ever been involved in teaching an environmentally related topic? If yes, please, specify.
☐ Yes: Please, specify here
☐ No
10. Do you believe that the labour market is now becoming more sensitive in environmental issues?
☐ Yes
☐ No
☐ I don't know
11. How do you rate the incorporation of environmental issues (as a horizontal discipline) in your courses?
☐ Not many related courses are available
☐ Availability is scarce and needs to be enhanced
☐ Some courses are available, but are rather theoretical
☐ Some courses are available and their theoretical part is balanced to the practical one
☐ There are sufficient courses available which are of adequate quality
☐ There are sufficient courses of high quality that correspond to international standards
☐ I don't know
12. Do you think that the incorporation of environmental topics would significantly enhance the employability of your students after graduation?
☐ Yes
☐ No
☐ I don't know
13. Which are the topics you think it is essential to be incorporated in the University curricula? Please, select up to two answers, based on your priorities.
☐ Self-management of resources (i.e. printing habits, water usage, electricity habits, etc.)
☐ Recycling
☐ Basic principles of environmental impact assessment
☐ Green entrepreneurship
☐ Environmental management systems
☐ Energy management systems
☐ Alternative energy sources
☐ Green technology
☐ None
14. You may use the space below to suggest more topics than the ones listed above.

Please, specify here

15. Would you be interested in participating in a blended course for University Professors on the topics mentioned above?

☐ Yes

☐ No

16. Would you like to be informed about the upcoming project activities?

☐ Yes

☐ No

If you replied yes to any or both questions 15 and 16, please fill in your email below.

Use this space to write your email

Thank you very much for your participation

APPENDIX 2: QUESTIONNAIRE FOR ADULT EDUCATION TEACHERS/TRAINERS

1. Please provide your name (optional).
Use this space to give us your name if you wish to

2. Which country are you from? Please, select the appropriate answer.
 - ☐ Austria
 - ☐ Malta
 - ☐ Other: Please, specify here

3. Please, indicate the age group you belong to by selecting the appropriate answer.
 - ☐ Younger than 30
 - ☐ 31-40
 - ☐ 41-50
 - ☐ 50+

4. How many years of overall professional experience do you possess? Please, select the appropriate answer.
 - ☐ Less than 10 years of overall professional experience
 - ☐ 11-20 years of professional experience
 - ☐ 20+ years of professional experience

5. Please, write the type of organisation are you currently involved in:
Use this space to write the type of organisation

6. What is your highest level of education you have accomplished so far? Please, select the appropriate answer.
 - ☐ Higher
 - ☐ Master's
 - ☐ Bachelors
 - ☐ Diploma

7. Please indicate which your current position is.
Use this space to indicate your position

8. How long have you been involved as an adult education trainer/ teacher? Please, select the appropriate answer.
 - ☐ Less than 5 years
 - ☐ 5-10 years
 - ☐ 11-15 years
 - ☐ Over 15 years

9. Which is the most predominant target group of your trainings?
 - ☐ Low skilled candidates;
 - ☐ Candidates with some basic skills
 - ☐ Candidates with vocational qualifications, without certificate
 - ☐ Candidates with certified vocational qualifications
 - ☐ Candidates with a diploma
10. What is the main topic of your trainings?

Use this space for the main topic of your trainings
11. Have you ever been involved in the training of an environmentally related topic? If yes, please, specify.
 - ☐ Yes: Please, specify here
 - ☐ No
12. Do you believe that the labour market is now becoming more sensitive in environmental issues?
 - ☐ Yes
 - ☐ No
 - ☐ I don't know
13. How do you rate the availability of adult learning environmental related courses in general?
 - ☐ There are none available
 - ☐ Availability is scarce and needs to be enhanced
 - ☐ Some courses are available but selection and variation of topics is limited
 - ☐ There are sufficient courses available
 - ☐ I don't know
14. Do you think that the incorporation of environmental topics would significantly enhance the skills of adults to integrate or improve their position in the labour market?
 - ☐ Yes
 - ☐ No
 - ☐ I don't know
15. Do you believe you would be in the position to include in your training environmental topics, such as usage of resources, environmental sensitivity, energy consumption, etc.?
 - ☐ Yes
 - ☐ No, because: Choose an item.
16. Which is the topic you would feel most comfortable with to include in your training? You may choose up to two replies.
 - ☐ Self-management of resources (i.e. printing habits, water usage, electricity habits, etc.)
 - ☐ Recycling
 - ☐ Basic principles of environmental assessment

- ☐ Green entrepreneurship
- ☐ Environmental management systems
- ☐ Energy management systems
- ☐ Alternative energy sources
- ☐ None

17. Which topic do you believe would contribute the most to increasing the employability skills of your trainees/ learners? You may select up to two options. Please, elaborate on the reason of your selection

- ☐ Self-management of resources (i.e. printing habits, water usage, electricity habits, etc.)
- ☐ Recycling
- ☐ Basic principles of environmental assessment
- ☐ Green entrepreneurship
- ☐ Environmental management systems
- ☐ Energy management systems
- ☐ Alternative energy sources
- ☐ Other: Please, specify here

18. Please, suggest another topic, other than the ones listed above?

Use this space to suggest another topic

19. Would you be interested in participating in a blended course for adult education trainers/teachers on the topics mentioned above?

- ☐ Yes
- ☐ No

20. Would you like to be informed about the upcoming project activities?

- ☐ Yes
- ☐ No

If you replied yes to any or both questions 19 and 20, please fill in your email below.

Use this space to write your email, if you wish to

Thank you very much for your participation

APPENDIX 3: DESK RESEARCH GUIDE

Environmental Studies: An Investigation in the Curricula of the Universities

This section includes the results of the desk research in the participating countries. In specific, the University partners will investigate the extent to which environmental issues are being included in the university curricula in their countries.

The objective of this section is to gather information on what is already incorporated in the university curricula in the sectors of sciences and engineering on topics related to the environment, the sustainable usage of natural resources and especially how energy can be managed.

Please, limit your input to 4-6 pages each partner.

The Role and Position of the University Professors

Section 3 of O1 includes the analysis of the field research carried out for University Professors in Greece, Finland and Italy. The sample size from each country is 20 university professors.

The objective of the desk research is to understand how university professors perceive the incorporation of environmental topics within their courses and if they share the same vision, i.e. that an environmental course is relevant to any discipline.

Please, limit your input to 2-4 pages each partner.

Environmental Topics in Adult Education

This section includes the analysis of the desk research on the incorporation of environmental issues in adult education programmes available in Austria and Malta. The two partners aim to establish whether environmental studies are connected to the courses delivered for the enhancement of skills and competencies, as a means to significantly improve the professional profile of adults.

Please, limit your input to 4-6 pages each partner.

The Role and Position of Adult Education Trainers/ Teachers

Under section 5, the results of the field research in Austria and Malta will be presented. The sample size from each country is 20 adult education teachers and trainers.

The objective of the field research is to understand how adult education teachers and trainers perceive the incorporation of environmental topics within their courses and whether they consider that this is an element which could significantly improve the professional profile of a person who is looking for a job.

Please, limit your input to 2-4 pages each partner.

Conclusions and Recommendations

The conclusions and recommendations will guide us to the development of the tools i.e.02.

Please, limit your input to 2 pages per partner

APPENDIX 4: LIST OF PARTICIPATED INSTITUTIONS

Participated Institution		Country	Type of Institution	
			HE	AE
1	BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH	Austria		X
2	Ländliches Fortbildungsinstitut	Austria		X
3	Volkswirtschaftliche Gesellschaft Österreich	Austria		X
4	TÜV AUSTRIA Academy on Environment and Energy	Austria		X
5	VHS Floridsdorf	Austria		X
6	AK Wien	Austria		X
7	BABE KV	Austria		X
8	Vienna Adult Education Network	Austria		X
9	Weidinger & Partner	Austria		X
10	College Environmental Education	Austria		X
11	University of Helsinki	Finland	X	
12	University of Ioannina	Greece	X	
13	University of Patras	Greece	X	
14	National and Kapodistrian University of Athens	Greece	X	
15	University of the Aegean	Greece	X	
16	Aristotle University of Thessaloniki	Greece	X	
17	University of Naples Federico II	Italy	X	
18	Second University of Naples	Italy	X	
19	University of Milano Bicocca	Italy	X	
20	University of Parma	Italy	X	
21	Nature Trust Malta	Malta		X
22	Engineria Ltd	Malta		X
23	St Martins' Institute of Higher Education	Malta		X
24	Malta Regional Development and Dialogue Foundation	Malta		X
25	Trigold Training Ltd	Malta		X
26	Malta College of Arts, Science & Technology (MCAST)	Malta	X	X
27	Employment & Training Corporation (ETC)	Malta		X
28	Institute for Sustainable Energy, University of Malta (ISE at UoM)	Malta	X	X
29	Institute for Climate Change & Sustainable Development, University of Malta (ICCS at UoM)	Malta	X	X
30	Nature Trust Malta	Malta		X

APPENDIX 5: NATIONAL REPORTS

ÉPOQUE: ENVIRONMENTAL PORTFOLIO FOR QUALITY IN UNIVERSITY EDUCATION

O1 AUSTRIAN REPORT

ENVIRONMENTAL PORTFOLIO: THE NEED FOR MODERNISED CURRICULA FOCUSING ON ENVIRONMENTAL ISSUES

PROJECT COORDINATOR

University of Ioannina (Greece)

PROJECT PARTNERS

Helsingin Yliopisto (Finland)

Hellenic Open University (Greece)

Università degli Studi di Napoli Federico II (Italy)

BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH (Austria)

Projects in Motion (Malta)

Title of the Project	ÉPOQUE: Environmental Portfolio for Quality in University Education
Project number	2014-1-EL01-KA200-001373
Intellectual Output	O1: ENVIRONMENTAL PORTFOLIO: THE NEED FOR MODERNISED CURRICULA FOCUSING ON ENVIRONMENTAL ISSUES
Developed by	BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH
Date:	16.01.2015

LIST OF ABBREVIATIONS

AE	Adult Education
AT	Austria
EC	European Commission
EQF	European Qualifications Framework
EU	European Union
HE	Higher Education
HTL	Higher Technical School
IBL	Image-based lightning
ICT	Information and Communications Technology
IT	Internet Technology
RDI	Research, Development and Innovation
VET	Vocational Education and Training

EXECUTIVE SUMMARY

This report is the result of a two-part investigation carried out in Austria by BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH, in the framework of Intellectual Output 1 “Environmental Portfolio: the need for modernised curricula focusing on environmental issues” of the ÉPOQUE project.

The first part of the report focuses on the desk research carried out, in order to identify the extent to which the Adult Education (AE) programmes and courses which are currently available in Austria and have already incorporated environmentally related topics in their curricula, as a need arising from the EU policies, as well as related developments of the labour market.

The second part of the report includes the analysis of the results of the field research conducted through a common questionnaire for 20 AE teachers and trainers. The main objective of this research was to identify the knowledge gaps of these professionals in terms of selected environmental topics, which would also validate the selection of training contents of the ÉPOQUE project and the need for the incorporation of related topics in the AE curriculum, given the importance that the labour market places on the sustainable use of energy resources, energy consumption and other related topics analysed.

The results of the Austrian research confirm the initial expectation of the ÉPOQUE partnership and along with the selection of key aspects provides the evidence of the need for having an Environmental Portfolio applied to the AE field.

Furthermore, the fact that the majority of the AE teachers and trainers have expressed their interest in participating at a related training on environmental topics and have access to other results of the project also stresses the relevance of the ÉPOQUE for the Austrian context.

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1 INTRODUCTION

The Environmental Portfolio for Quality in University Education (ÉPOQUE) is a project which is funded by the European Commission, under the Erasmus+ programme, Key Action 2: Cooperation for Innovation and the Exchange of Good Practices.

The project started in September 2014 and its duration is 2 years (until August 2016). The consortium consists of six partners, which are:

- ☐ University of Ioannina (Greece)-Project coordinator
- ☐ Helsingin Yliopisto (Finland)
- ☐ Hellenic Open University (Greece)
- ☐ Università degli Studi di Napoli Federico II (Italy)
- ☐ BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH(Austria)
- ☐ Projects in Motion (Malta)

1.1 PROJECT OBJECTIVE

The European Commission stresses the importance for the sustainable use of Natural Resources. In specific, on 21st December 2005 the EC proposed a Strategy on the Sustainable Use of Natural Resources used in Europe, having as an objective to reduce the environmental impacts associated with resource use and to do so in a growing economy. Focusing on the environmental impacts of resource use will be a decisive factor in helping the EU achieve sustainable development. The current dialogue between the Commission, Council, Parliament, civil society and business aims at building consensus on the strategic orientations for environment policy, to ensure broad ownership and to secure mobilisation for action.

In addition, the Roadmap to a Resource Efficient Europe outlines how the European economy can be transformed into a sustainable one by 2050. It proposes ways to increase resource productivity and decouple economic growth from resource use and its environmental impact. It illustrates how policies interrelate and build on each other. Areas where policy action can make a real difference are a particular focus, and specific bottlenecks like inconsistencies in policy and market failures are tackled to ensure that policies are all going in the same direction. Cross-cutting themes such as addressing prices that do not reflect the real costs of resource use and the need for more long-term innovative thinking are also in the spotlight.

Reducing energy consumption and eliminating energy wastage are among the main goals of the European Union. EU support for improving energy efficiency will prove decisive for competitiveness, security of supply and for meeting the commitments on climate change made under the Kyoto Protocol. There is significant potential for reducing consumption, especially in energy-intensive sectors such as buildings, manufacturing, energy conversion and transport. At the end of 2006, the EU pledged to cut its annual consumption of primary energy by 20% by 2020. To achieve this goal, it is working to mobilise

public opinion, decision-makers and market operators and to set minimum energy efficiency standards and rules on labelling for products, services and infrastructure.

The members of the consortium, fully aware of the EC priorities to promote sustainable development through better and more effective management of natural resources, have developed this project, which addresses both the necessity for building up the capacities of future professionals towards a more sustainable usage of natural resources, but also the need for the modernisation of the University Curricula. At the same time, by involving adult education as a parallel, yet important component in the project, both during the course development as well as the validation period, they manage to bridge the gap between the provision of knowledge from HE with the specific needs of the labour market. Therefore, the project does not "just" aim at the modernisation of the HE curricula, but it does so by interlinking it with the business reality.

The partners understand that schools function as the testing tubes where citizens grow up. In parallel, the universities where teachers, scientists and engineers are been trained for societal actions lag to create green professionals and, in general, citizens with high environmental awareness. Therefore, the project ÉPOQUE promotes a smart specialisation of prospective teachers, scientists and engineers through an environmental portfolio which can be fully integrated to the university syllabuses. It creates a new generation of green professionals in the context of higher education modernization agenda connected to SMEs and enterprises (including schools). Moreover, the direct involvement of schools during the project validation can act as a catalyst towards the sensitisation of the teachers for sustainable use of natural resources, with a concrete focus on energy, while it promotes the prompt awareness of young pupils on energy issues. It is believed that this project can bring about a change in the mindset of all the target groups, stakeholders and actors involved, which can subsequently lead to a wider change in how people understand the environment, the resources, as well as the impact of our everyday activities.

The objective of the ÉPOQUE project is to promote a smart specialisation of prospective teachers, scientists and engineers through an environmental portfolio which can be fully integrated to the university syllabuses, as well as the adult education courses provided and which aim at increasing the employability skills of the participants. It creates a new generation of green professionals in the context of higher education modernisation agenda connected to SMEs and enterprises.

1.2 TARGET GROUPS

The target groups identified in the framework of the project are the following:

- ☐ University students (direct target group) of a variety of disciplines, who are intended to participate in the delivery of the course and gain new knowledge which will not only expand their skills and competencies and help them become more environmentally conscientious, but will also improve their position in the labour market, equipping them with additional qualifications of significant added value. It is expected that throughout the course of the project, a total number of 200 university students will be trained on the joint course from the participating universities (University of Ioannina, Hellenic Open University, University of Naples and University of Helsinki);
- ☐ University teachers (direct target group) who will be trained within the project to deliver the Environmental Portfolio and will have the opportunity to integrate (through the validation period) in their current curricula an innovative and very flexible set of courses. It is expected

that a total number of 8 teachers from the participating Universities will be directly involved during the course development and the validation period. In addition, through the dissemination workshops a total number of 80 additional university teachers will be let known about the project and the results;

- ❑ Adult learners (direct target group) who will also be involved in the project, representing the second sector addressed through this project. From the partners who have direct access to adult learners (BEST and PiM), it is expected that a total number of 30 adult learners will participate at the course validation period. An additional number of 40 adult learners will be informed about the project through the dissemination workshops;
- ❑ Adult education teachers/ trainers (direct target group) will be participating during the course development and the validation period of the project. BEST and PiM will involve 4 teachers/ trainers in total across the aforementioned activities and an additional number of 30 through the dissemination workshops;
- ❑ Pre-primary, primary and secondary schools (indirect target group) that will participate during the validation period as pilots for the development of the EnMS by the students/ adult learners. The partners aim to involve a total number of 5 schools per country.
- ❑ SMEs (indirect target group) that will participate during the validation period as pilots for the development of the EnMS by the students/ adult learners. The partners aim to involve 3 SMEs per country.

1.3 SCOPE OF THIS DOCUMENT

This report is drafted in the framework of **Intellectual Output (IO) 1-Environmental Portfolio: the need for modernised curricula focusing on environmental issues**. The objective of the document is to present the situation in Austria, one of the partnership countries, of the provision of environmentally related topics in adult education. To achieve that, a desk research was carried out, aiming at identifying the extent to which adult education curricula include topics which aim at increasing the environmental awareness of the learners. Moreover, a field research for adult education teachers and trainers was undertaken, with the intention to measure the extent to which they (adult education teachers and trainers) have already delivered training courses related to environmental issues, if they think that these topics would improve the professional profile of their learners and how important they believe that these topics are in adult education.

The objective of IO1 is to identify the trends in the curricula in adult education and higher education of the participating countries and highlight the importance for including issues related to the environment, the sustainable usage of natural resources and energy management.

The recommendations and conclusions of IO1 will provide the basis for the partners to develop the courses described in IO2: Environmental Portfolio, based on the actual needs of the target groups.

1.4 METHODOLOGICAL FRAMEWORK

This section provides an overview of the methodology used to carry out the desk and field research, which are the sources of information for this deliverable.

The desk research, the results of which are presented under paragraph 2 was based mostly on the online search of available adult education programmes which are currently under implementation or are planned to be implemented. It should be highlighted that there are no legal provisions for adult education (AE) provision in Austria. Moreover, adult education serves as a third pillar in the Austrian education system. Contrary to school and university education, there is no constitutional law regulating adult education. The only federal law concerning adult education is the 1973 “Law for Promotional Measures” [Erwachsenenbildungs-Förderungsgesetz] which regulates financial support of adult education and public libraries. Apart from providing support to adult education institutions the “Law for Promotional Measures” also contains provisions on the maintenance and management of Federal Centres for the Promotion of Adult Education [Förderungsstellen des Bundes für Erwachsenenbildung] within the individual provinces. This means that public private providers have the possibility to offer a variety of complementary courses on personal as well as vocational matters. The range of courses offered for employed persons is similar to those offered by secondary education, just as the objectives correspond to those of the respective schools and colleges. Regional non-profit organisations offer courses, which enhance and improve key qualifications and skills.

On the other hand, the field research is based on the analysis of the questionnaires gathered by BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH. The objective of the research was to identify the degree of inclusion of environmental topics in the AE curricula, as well as the position of the AE teachers and trainers towards this issue.

The questionnaires were distributed to a random sample of AE teachers and trainers in Austria, which was selected from the respective database of BEST, which, being a very active AE provider in the country, maintains and regularly updates a registry of professionals who could be involved at the trainings that BEST is organising. Based on the initial design of the field research, the total number of questionnaires gathered was 20. The analysis of the information collected is presented in paragraph 3.

2 ENVIRONMENTAL TOPICS IN ADULT EDUCATION

2.1 INTRODUCTION

This section includes the analysis of the desk research on the incorporation of environmental issues in adult education programmes available in Austria and Malta. The two partners aim to establish whether environmental studies are connected to the courses delivered for the enhancement of skills and competencies, as a means to significantly improve the professional profile of adults.

2.2 AWARENESS FOR SUSTAINABILITY AS SPECIAL SKILL

Many of environmental professions can be found in another sector of the economy as the environmental sector. In most cases only the actual work environment can identify the environmental professional. Professionals like civil engineering, spatial planner, an electrical engineer, chemical process engineer or traffic engineer, but also ecologist, just to name a few.

Environmental aspects are used to upgrade existing professions. Sustainability should be included in all levels of education, which argues against the development of "own environmental professions". Professions might rather get appropriate additional qualifications towards "advanced sustainability aspects". Inter alia, good employment opportunities would be opened for graduates of lower educational levels.

As the higher education sector is already well covered with renewable energy technologies contents, the education and training system in this field of is less about the anchoring of completely new formations but often a matter of new or improved modules to complete existing training and to connect and enrich requirement to establish careers in the renewable energy technologies sector. These requirements could be applied and extended to other similar future technologies.

2.3 THE REQUIREMENT OF BASIC TECHNICAL AND MANAGEMENT SKILLS

A field-covering subject complex includes basic competences. Basis knowledge at technical level, which is often absent, concerns: Electrical engineering, security regulations, norms as well as an improved understanding for materials and the right treatment. Another essential condition is the raising of awareness regarding the meaning of energy efficiency, energy management and the effects of lasting action. Basic knowledge in the areas of purchasing, procurement or logistics is consistently required.

In general, a holistic view of the entire business process is necessary. This includes questions of quality management, financing and risk management. The latter has greatly gained in importance in the recent years, especially in light of political upheavals and environmental disasters. Even on a coherent view the entire business process aims the understanding of value chains and material cycles.

Since it is assumed for the next few years that a particularly innovative company focused on market will be successful, it is a growing importance of strategically oriented qualifications. Necessary strategic thinking skills are connected to economic competence requirements in order to bring innovations to the market.

The education providers have recognised environmental contents and also partly set great expectations in this area. It is particularly striking that more and more traditional technical and economic formations have taken up environmental contents in regular classes and thus a medium-awareness of graduates has been raised. The improvement of information between providers of education based on their offers is a key recommendation, especially for providers of further education. The European Qualifications Framework (EQF) provides orientation; new learning outcomes and competence orientation can be achieved and is already seen in some descriptions of training and education.

2.4 RENEWABLE ENERGY TECHNOLOGIES CONTENTS IN TRAINING AND TEACHING

The environmental theme is forth adapted for relevant vocational training (apprenticeship, master training). An example is the introduction of modular apprenticeships in special schools for eco-engineering. Accordingly the demand for training in this field depends on many factors (such as the order situation or personal training motivation).

But the anchoring of renewable energy technologies issues largely depends on the commitment of the teaching staff. In this sense, starting points can be seen in teacher trainings. The HTL (Higher Technical School) is a particularly relevant for the anchoring of environmental issues in schools. There were 27 courses and research in the various fields of renewable energy technologies. An educational standard is already underway. There are also projects on “green employability” (BEST) of VET provider which address students but focus on the teachers. In this sense teachers and trainers can be seen as an important target group for “sustainability skills”.

2.5 PROVISION OF ENVIRONMENTALLY RELATED TOPICS IN THE AUSTRIAN AE

2.5.1. Ländliches Fortbildungsinstitut (LFI)¹

The Ländliches Fortbildungsinstitut was founded as an educational enterprise of the Chamber of Agriculture and of the people in rural areas in 1972 and is a nationwide adult learning institution for the rural area. The LFI's key activity area is vocational adult training in agriculture and forestry and in rural home economics. Teaching is understood as a help to master the economic and cultural changes in the rural area.

The programmes offered by the LFI vary, depending on the region of the country and the specific needs they seek to address. The main topics of training provided are: production, marketing and business administration in agriculture and forestry; related areas of environmental education; legal and tax issues and political education; rural technology; rural living and construction; rural home economics including the related educational areas of health; family and free-time.

¹ <http://www.lfi.at/>

Apart from the regular training courses which are offered, there are also workshops and other events, which are organised at regular intervals. As already mentioned, based on the region and its needs, the provision of the courses vary. For example, there is one course available in the Lower Austria region on “Self-sufficiency through Photovoltaic”, which focuses on fostering the use of photovoltaic systems for energy production. The topics covered are: Fundamentals of Photovoltaic: What does the technology? What must be taken in planning? Which operating branches self-supply is particularly interesting? Of the system size is for my business the most sensible? Promotion models, legal situation; Procedure for installation license; Practical examples.

In addition, there are other courses, some of which are also offered online, which relate to green entrepreneurship. In general though, the offer through LFI is mostly related to farming, not emphasising enough on environmental and energy issues.

2.5.2. Volkswirtschaftliche Gesellschaft Österreich (VG-Ö)²

The Volkswirtschaftliche Gesellschaft Österreich and the connected regional adult education associations are training institutions oriented towards the economy. The VG-Ö was founded as an independent association in 1958. Its members, the regional associations, are active as autonomous associations in the Länder. Their specific aim is to inform on interconnections in economic and social policies. Among their main target groups are managers and employees from the economic and administration sectors as well as teachers and the school sector in general.

The programme delivered includes many topics, such as social and economic systems, educational policies, economics, business administration, social policies, communications, as well as environmental policy. The trainings carried out are in the forms of seminars, lectures and workshops.

2.5.3. TÜV AUSTRIA Academy on Environment and Energy³

The academy of TÜV AUSTRIA is offering the following programmes for adult for upskilling professionals on environmental management systems & environmental protection audits. The courses offered are:

- ☐ Certified environmental manager including training as certified waste management officer, training as certified environmental officers and internal environmental auditor. The course consists of 123 lessons on safety, quality and environmental agendas applied to a big number of companies
- ☐ Innovations in waste legislation which consists of 8 lessons. The current legislation of the European Union is constantly introducing new features for operational waste management.
- ☐ Environmental management systems and environmental audits obtained through participation at 32 lessons.
- ☐ Training for certified environmental manager, including training as certified waste management officer, certified environmental officers and internal environmental auditor.
- ☐ Business and environment-related laws.
- ☐ Crisis Management
- ☐ Hazardous substances
- ☐ (Environmental) communication

² <http://www.vwgooe.at/de/home>

³ <https://www.tuv-akademie.at/kursprogramm/Bereich/abfallwirtschaft.html>

 Officer in operation: Responsibility & organization

2.6 SUMMARY

Based on the desk research, the offer for environmentally related topics in Austria is rather low. In specific, the courses available have not yet been in line with the needs of the labour market for environmental sustainability, as well as the European Directives focusing on the promotion of alternative energy sources, environmental awareness and green entrepreneurship. Especially when it comes to the labour market, social responsibility and environmental awareness have been in the spotlight for a few years now and their importance is further increasing.

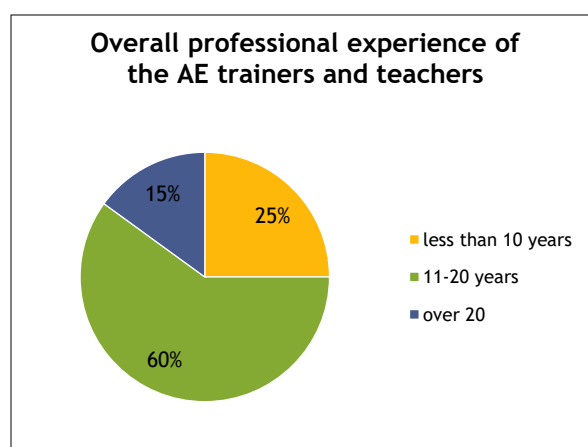
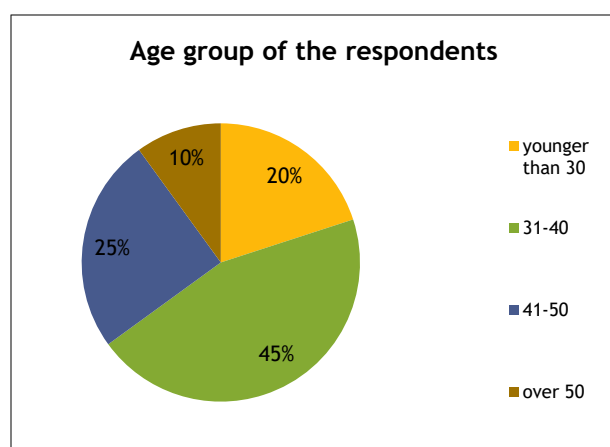
Some adult education programmes can be evidenced, but these initiatives are sparse and mostly the result of local initiatives. The results of the desk research corroborate also the results of the desk research which are presented in the following paragraph.

Therefore, the development of a portfolio of environmentally related topics for their introduction in the adult education provision in Austria is very much in line with the needs of the target groups, as well as the labour market. Equipping adults, especially ones who are in search of employment opportunities with skills which relate to the management of resources, elements of environmental assessment, energy and environment management systems, depending on the sector they are addressing will provide them with powerful tools, improve their professional profile and increase their chances of entering the labour market.

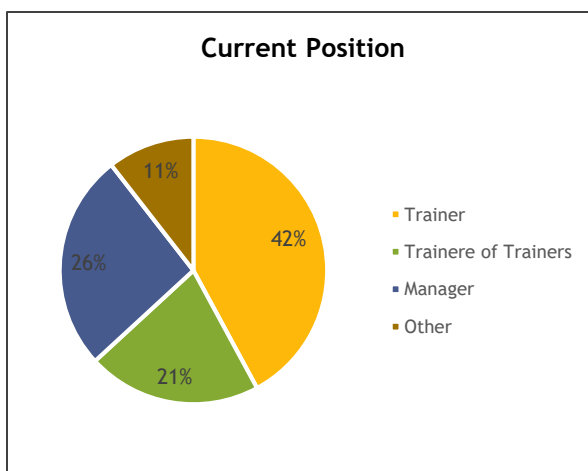
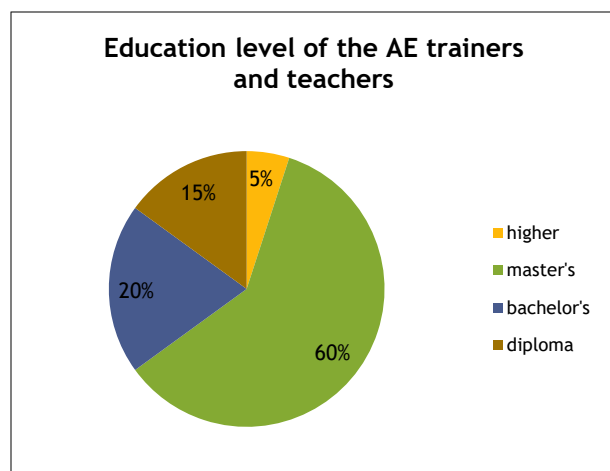
3 THE ROLE AND POSITION OF ADULT EDUCATION TRAINERS/TEACHERS

3.1 DEMOGRAPHIC DATA ON THE AE TEACHERS AND TRAINERS WHO PARTICIPATED AT THE FIELD RESEARCH

A total of 20 questionnaires were gathered on behalf of the Austrian partner of the consortium. All but one of the AE trainers and teachers who completed the questionnaire are Austrian, while one person is from Portugal. The majority of them belong to the age group of 31-40 years old, having overall professional experience of 11-20 years.



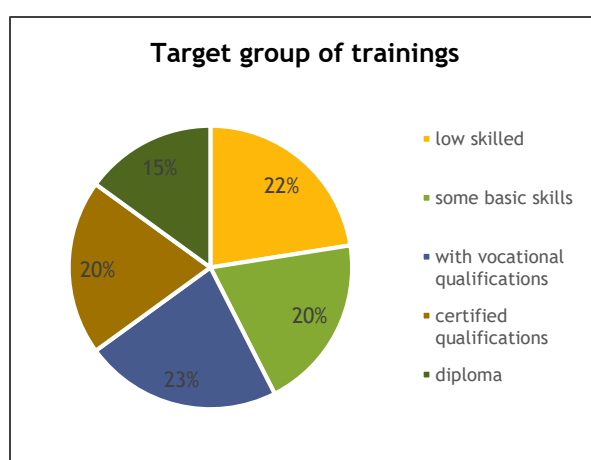
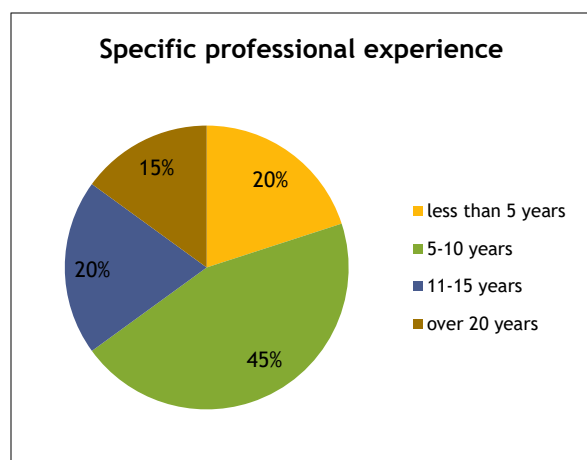
Most of the respondents of the survey (60%) have obtained a Master's degree, while 20% have a bachelor's. Furthermore, as expected, all of them are working for an education provider (either a Vocational training or adult education provider); 42% is involved as a trainer, 21% as a trainer of trainers, 26% as managers and 11% are classified as "other, which includes a consultant and a coach.



Their specific experience in the field of adult education is significant, given that 45% have been employed as AE adult trainers and teachers 5-10 years, 20% 11-15 years and 15% over 20 years. The remaining 20% has been active as AE trainer for less than 5 years. The topics of training of the respondents are the following:

- ☐ Economics and business
- ☐ Management oriented topics
- ☐ Enhancement of basic professional skills
- ☐ Improvement of basic skills
- ☐ ICT
- ☐ Language and culture
- ☐ Behaviour sciences
- ☐ Employability
- ☐ Guidance counselling
- ☐ Communication
- ☐ Social skills

When it comes to the target group of their trainings, the results are somewhat balanced, given that the AE trainers who replied to the questionnaire do not address one specific group of trainees. This may vary according to the specific needs of the programme and the course which is delivered.

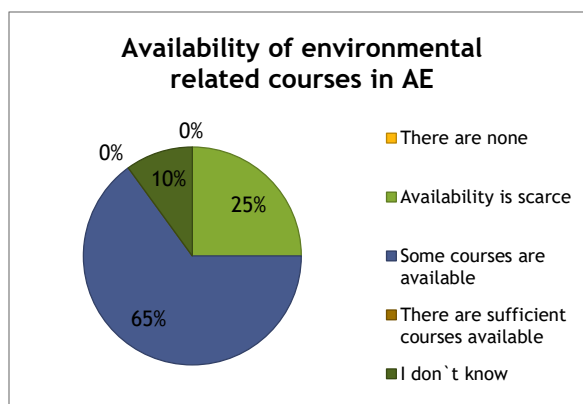
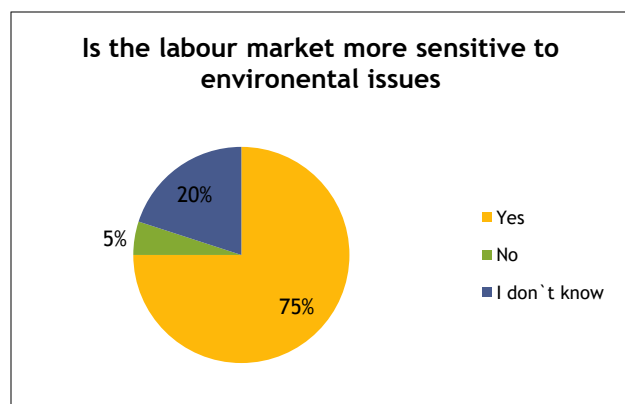


3.2 ENVIRONMENTAL TOPICS IN ADULT EDUCATION

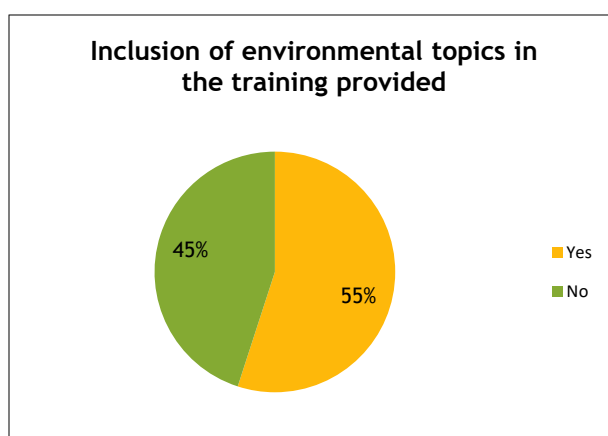
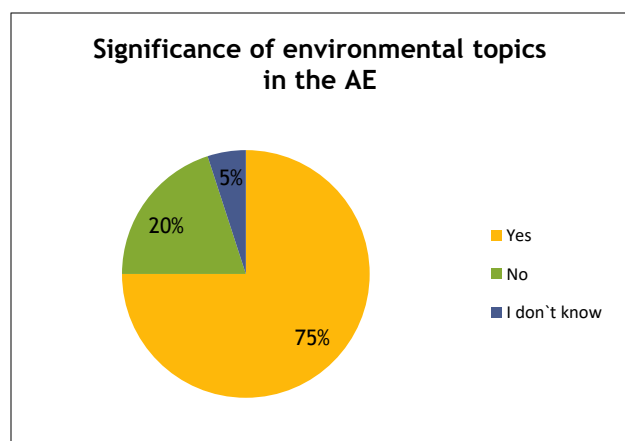
The next section of the questionnaire was focused on topics related to the incorporation of environmentally related topics in the provision of adult education. The trainers and teachers were first asked to mention their experience in the delivery of such topics: the vast majority of them replied that they have no experience in the field. Only one trainer replied that they have experience in the delivery of impact assessment to adult learners.

The respondents were then asked to provide their opinion on whether the labour market is becoming more sensitive in environmental topics, which would imply the necessity for the development of courses which are related to the topics addressed by the EPOQUE project. Most of the AE trainers confirmed

that the labour market is indeed becoming more sensitive in environmental issues, 20% of the trainers claimed that they don't know and 5% provided a negative reply. The trainers were then asked to assess the availability of environmentally related topics in the Austrian Adult education. Based on their replies it is evident that some courses are available and some of them think it is even scarce. None of the respondents replied that the availability of such courses is sufficient, although some of them (10%) claimed that they don't know.

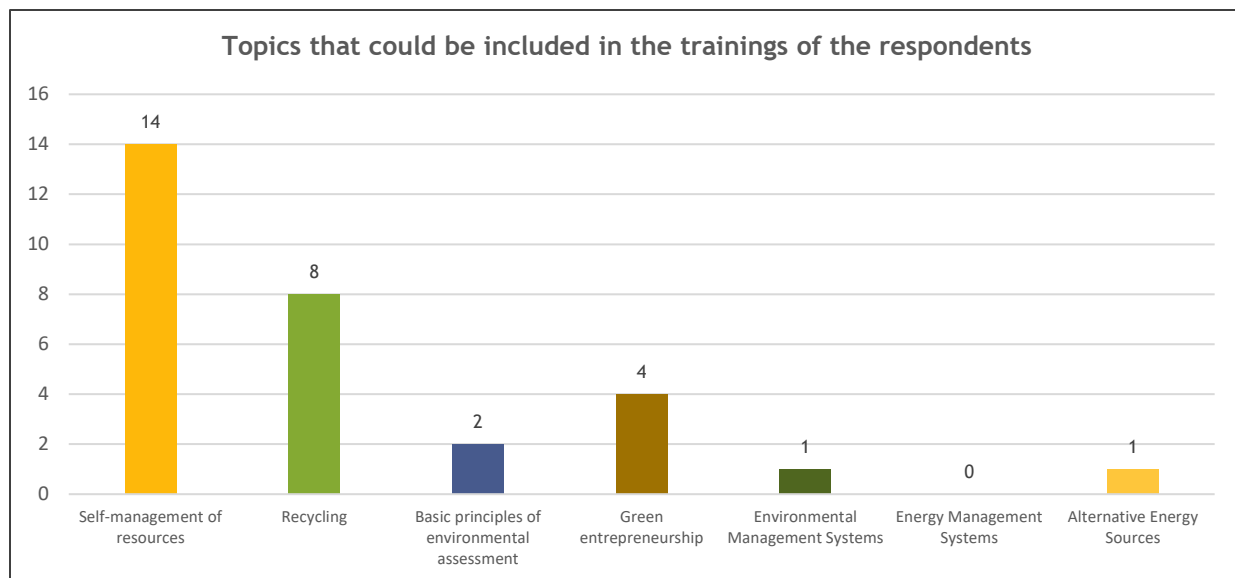


The trainers were then asked to provide their personal opinion in terms of the importance of environmentally related topics to the adult education provision, as a means to significantly enhance the employability skills of the adult learners who seek a position in the labour market. 75% of them confirmed the need, 20% do not think that it is important while one person does not know.

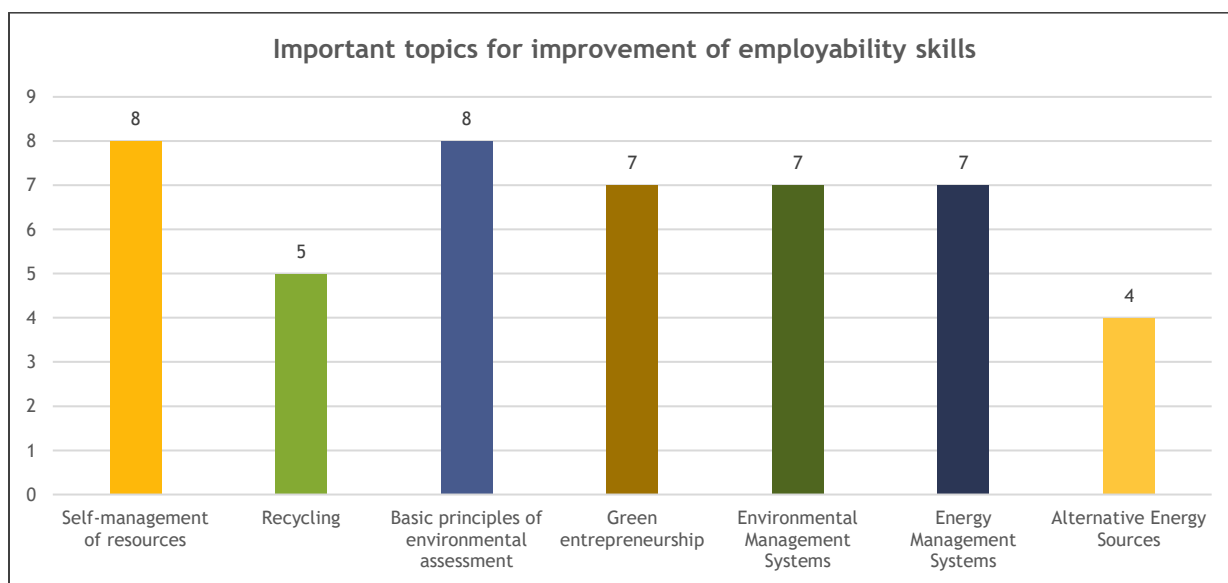


The following question included in the questionnaire was related to the degree of readiness of the AE trainers and teachers to include and deliver environmental topics to their training. Most of them think that they could (55%), although the difference between the ones who could and the ones who couldn't is not very big (45% have replied no to this question). When asked to state the reasons why they have replied in this way, most of them said that they don't possess the necessary skills and knowledge to do so. Only one trainer mentioned that environmental topics are not relevant to their topic of the trainings they deliver, being behaviour sciences.

The respondents were asked to prioritise the topics with which they feel mostly comfortable to deliver, as part of their training (they could select two options). The first selection by the majority of the respondents (14 votes collected) was self-management of resources, while the second (collecting 6 votes) was recycling. Green employability was also considered as an option by some of the trainers.



The following question was related to the topic they believe that would play an important role in the employability skills of the adult learners: the results from the replies of the AE trainers, as shown in the graph that follows, distinguish the self-management of resources and the basic principles of environmental assessment, which are followed by the topics of Green Entrepreneurship, Environmental Management Systems and Energy Management Systems.



The respondents had the opportunity to make suggestions for other topics they consider as important, but which were not included in the list above. One person suggested that environmental skills may be attractive for companies with focus on sustainability.

3.3 SUMMARY OF FINDINGS

The results show that there is a positive reaction regarding the inclusion of environmental topics in the adult education training programmes which are currently provided. For the needs of the labour market and as these are being formed, environmental skills are useful as a means to further increase the skills and qualifications of adults who wish to integrate the labour market. The offer of trainings on environmental topics can be developed and further enforced, as the teachers and trainers understand the importance that is allocated to these issues. Nevertheless, the trainers need to be trained themselves, to be in the position to teach such topics and achieve the results desired.

The replies provided in the questionnaire by the AE trainers and teachers, along with their intention declared in the corresponding fields, validate for Austria the need for the development of the Environmental Portfolio, which is the main result of the EPOQUE project.

4 CONCLUSIONS AND RECOMMENDATIONS

This report has focused on the investigation of the adult education curricula and the extent to which these already incorporate environmental topics. From the desk research in the adult education courses, a lot more can be said. The provision of environmentally related topics is somewhat applicable and usually related to upskilling of professionals. Some courses have also been integrated in the vocational education curricula, offering modular apprenticeships in eco-engineering.

In terms of the field research carried out, a total of 20 adult education teachers and trainers have completed the questionnaire prepared by the EPOQUE partners. The majority of them belong to the age group of 31-40 and possess a significant experience in the adult education provision (80% have been involved in the sector for over 5 years). Despite their experience, only one respondent has been involved in the delivery of courses related to the environment, while the others do not possess such an experience.

Most of the adult education trainers and teachers who completed the questionnaire (15/20) believe that the labour market has become much more environmentally aware and is in need of such skills and this is the reason why there are now some courses available in Austria which are relevant, according to the opinion of most of the respondents. Likewise, the majority of the trainers are convinced that the incorporation of environmental topics would improve the position in the labour market for their learners.

When asked whether they would be in the position to deliver such courses, the majority of the trainers believe they are capable of delivering them to their target groups. The remaining respondents, clarified that they would not be in the position to deliver relevant courses, given that they lack the necessary skills and training to do so. This validates the need for the EPOQUE project and the corresponding environmental portfolio of courses, given that it will aim at addressing the specific gaps and needs of the adult education teachers and trainers.

The topics which were selected from the respondents as the ones they would feel mostly convenient in delivering were: self-management of resources, recycling and green employability. When asked which they thing are the most important for increasing the employability skills of adult learners, their replies focused mostly on: self-management of resources, basic principles of environmental assessment, green entrepreneurship and alternative energy resources. Only one recommendation was made from one of the respondents about additional courses which were not included in the list of replies and it was related to the enhancement of skills for companies, with focus on sustainability.

Bearing in mind the results of the desk and field research in Austria, the need for a comprehensive set of environmentally related courses has been validated, as has the project objective. Adult education provision in Austria is in need of courses that raise awareness on environmental issues and sustainable use of resources, as a means to improve the qualifications and skills of the adults and as a means to match the course delivery to the needs of the labour market.

Based on the replies of the adult education trainers and teachers, special focus during the development of the training courses (which is due to be carried out in the framework of Intellectual Output 2: Environmental Portfolio) on the issues mentioned above, i.e. self-management of resources, basic principles of environmental assessment, green entrepreneurship and alternative energy resources.

The results which arise from the situation analysis in Austria, though, will be combined with the conclusions and recommendations from the other participating countries and the environmental portfolio of courses will be developed, bearing in mind the combined needs of all partner countries, in order to ascertain direct applicability of the course, across the target groups identified.

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ÉPOQUE: ENVIRONMENTAL PORTFOLIO FOR QUALITY IN UNIVERSITY EDUCATION

O1:GREEK REPORT

ENVIRONMENTAL PORTFOLIO: THE NEED FOR MODERNISED CURRICULA FOCUSING ON ENVIRONMENTAL ISSUES

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Projects in Motion (Malta)

Title of the Project	ÉPOQUE: Environmental Portfolio for Quality in University Education
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Intellectual Output	1: ENVIRONMENTAL PORTFOLIO: THE NEED FOR MODERNISED CURRICULA FOCUSING ON ENVIRONMENTAL ISSUES
Developed by	University of Ioannina and Hellenic Open University
Date:	09-01-2014

1 INTRODUCTION

1.1 PROJECT OBJECTIVE

The objective of this analysis is to bring out the gaps in the contemporary University curricula in terms of the knowledge and skills that are fostered through them, while on the other hand highlight the importance for the inclusion of Environmental issues, across the different disciplines. In specific, the partners will aim at identifying the trends in the curricula of the participating countries and highlight the importance for including issues related to the environment, the sustainable usage of natural resources and especially how energy can be managed. In parallel, the partners will also identify the gaps in the curricula of adult education, as incorporating the aforementioned issues in adult education will not only enhance the skills and knowledge of adults, but it will also improve their position in the labour market. The recommendations of the study will provide the basis for the partners to develop the courses described in O2, based on the actual needs of the target groups they have identified.

1.2 TARGET GROUPS

University Professors in Greek Universities

1.3 SCOPE OF THIS DOCUMENT

1st Intellectual Output

1.4 METHODOLOGICAL FRAMEWORK

GREEK EPOQUE structured research for the necessity of the Environmental portfolio to supplement the existing curricula

Introduction: The project study analysis

This activity aims at providing a solid basis for the development of the Environmental Portfolio set of courses. To achieve that the partners will undertake a desk research to identify the extent to which environmental issues are being included in the university curricula in the participating countries. Moreover, they will attempt to form the basis for the prior knowledge a person should have to be able to achieve the learning objectives of the Environmental Portfolio. This part of the study will assist them during the course development phase (connected to O2) and especially when they will be designing the framework of the course.

In addition, a survey will take place, through which the partners will try to address the question of how university teachers perceive the incorporation of environmental issues within their courses and if they share the same vision, i.e. that an environmental is relevant to any discipline.

At the same time, the partners that represent the provision of adult education will aim to identify the practice in their own country, especially focusing on whether environmental studies are connected to the courses delivered for the enhancement of skills and competencies, as well as to significantly improve the professional profile of adults who are in search of a job. Similarly, P5 and P6 will provide the respective analysis for adult education trainers.

It is expected that a total number of 80 university teachers (20 per country) and 40 adult education trainers will be involved in this preparatory phase of the project.

The partners will create an electronic database with the results collected, which be processed to create six country reports on the issues raised, summarising the results of both the desk research, as well as the ones from the survey. The partner responsible for this activity will gather all data from the partners, along with their reports and collate them, to deliver a unique study on the need for the development of the Environmental Portfolio and its incorporation in the existing curricula.

After having finalised the analysis, the partners will translate it in their own language and make it available for the public through the project website.

Greek report - Methodology inputs

In Greece, for the project study analysis, we conducted an **Internal and an External Desk Research**. An internal desk research can be treated as the most reasonable starting point of research for our universities, since we anticipate to integrate the project results into our curricula. Much Information could be generated internally within the organization as a course of normal process of UOI strategic planning. Following the partners' decision during the kick off meeting, we reviewed the syllabuses of the Pedagogical, Scientific and Engineering departments of the University of Ioannina and of the Master's Courses at the Hellenic Open University. We collected some quantitative data concerning how many courses are provided in each department or program as well as how many of them are related to sustainable development.

The External Desk Research involves research done outside the UOI and HOU boundaries and collecting relevant information. These outside resources are described below:

- a. **Online Desk Research** - Despite the fact that there is incredible amount of data available online on internet, we tried to access that results which are promising and relevant.
- b. **Government published data** providing most prominent information.

c. **University professors' views of sustainability** - University professors are the one who are considered the most informed as they are actually provide courses and services and are aware of the current trends more than any other.

Steps of the Greek research

1. At first we reviewed the relevant literature online and through Governmental data.
2. We recorded the already integrated environmental courses in the current curricula of the UOI and HOU.
3. We also searched for environmental or sustainable development courses into the curricula of many Greek Universities. These are Aristotle University of Thessaloniki, National and Kapodistrian University of Athens, University of Patras, Aegean University, some Technical Universities and Crete University. We included the biggest Greek Universities as well as Universities from the North to South and from East to West.
4. We transmitted the University Professor's Questionnaire in google docs format and we send an e-mail to different professor group mailing lists asking to fill in the Questionnaire and providing the link for this scope.
5. We collected the answers via the google docs platform and made an excel file with their answers and the accompanied pie charts.
6. We elaborate data making comments after each chart and ending with some general conclusions.

2 ENVIRONMENTAL STUDIES: AN INVESTIGATION IN THE CURRICULA OF THE UNIVERSITIES

2.1 THE CHARTER OF GREEK UNIVERSITIES FOR SUSTAINABLE DEVELOPMENT

2.1.1. INTRODUCTION

Summarising the results of the Online and Government Desk research, we tend to highlight the challenges that Humanity faces at the beginning of the 21st century and in the third millennium of modern times. The challenges are related to the exceptional problems created by the absence of proper management of the natural, anthropogenic and cultural environment and natural resources and are both directly and indirectly associated with the dramatic dispatches and inequalities in the socioeconomic and cultural development of the planet. This Charter is drafted in a historic moment that is internationally characterized by a series of crises at the economic, ecological, political, cultural and institutional level including the crisis of values. In Greece, these crises as well as the disproportionate, for the Greek society, interventions for their management, are particularly perceptible in intensity and depth. Universities and Education, as a whole, are influenced by the crisis but at the same time recognize that only with a radical reorientation of their function and role pertaining to both Society and State, could they contribute to a way of overcoming the crisis and founding a sustainable future for the coming generations.

Taking into consideration that:

- The process to Sustainable Development as initiated by the Rio Summit of 1992, and the resulting Agenda for the 21st century (Agenda 21) and specifically chapter 36 in which the role of all levels of Education is acknowledged and Universities are called upon to play a leading role. [The recommendation is repeated in 1996 from United Nations Commission on Sustainable Development (UNCSD) in the International Work Programme for Education, Public Awareness and Training for Sustainability. Since then,

the International Convention of Thessaloniki “For Environment and Society” (1997) set the path towards Education for Sustainable Development (ESD) at all levels.]

- The need for the promotion of education as an exceptionally important factor in the achievement of Sustainable Development and the role that the Universities will play, as well as the necessary and appropriate changes in Higher Education itself, was formulated in various ways in the declarations and conclusions of a number of International Conventions such as: the “World Conference on Higher Education” (Paris 1999), the “World Conference on Science” (Budapest 1999), the COPERNICUS Conference on “Higher Education for Sustainability” (Lüneburg 2001), the World Education Forum “Education for All” (Dakar 2002).

All the above as well as the recognition of ESD at the World Summit of Johannesburg, in 2002, have led UN General Assembly to declare the decade 2005-2014 as “The UN Decade of Education for Sustainable development”(UNDESD) led by UNESCO and with the Universities being vital levers in its realization.

- The adoption of the “Strategy for ESD”, by the 56 member states of UNECE (Economic Committee for Europe), in 2005, in a milestone Conference in Vilnius of Lithuania. The Strategy requests that Governments and all relative institutions promote ESD at all levels and invites Universities to considerably contribute by developing appropriate capacities and knowledge to reform their paradigms through their teaching, operation and governance.

- In a time when the boundaries of the planet are “shrinking” in a variety of ways and the problems and prospects of climate change, poverty, hunger, immigration, globalized economy and, undoubtedly, globalized knowledge are increasing, the close collaboration of Greek Universities with each other and with the corresponding Universities on a European, Mediterranean and Global scale, as well as with the corresponding networks (such as UNU, GUNI, MEDIES, The Network of the Mediterranean Universities for Sustainable Development, etc.) is absolutely necessary. The Session of Rectors that has jointly undersigned the present Charter embraces the principles of Sustainable Development, International Treaties and the results of International Conventions and is committed to the accordance of Greek Universities.

Specifically, Greek Universities will closely and thoroughly collaborate in the following axes:

1. Education and Research: Through these, the principles and essential knowledge and practices of Sustainable Development are promoted. The curricula should encourage the interdisciplinary approach and the various collaborations between Universities, Research Institutions and Social Partners, to promote both relevant and suitable basic and applied research, endorse innovation, strengthen the scientific and institutional background for the promotion of friendly to both the environment and society methods and modes of production and consumption alongside the evaluation of suitable new and/or “clearer” technologies, the relative possibilities that they provide and their potential dangers, but also for the environmental and energy planning of infrastructure and the built environment and the Protection of the Cultural Heritage with techno-economic optimization, aesthetic compatibility and the terms for quality of life. In all the above, a close collaboration within the Network of Sustainable Greek Universities will be sought, but also with foreign Universities, in the framework of existing exchange programmes and international networks:

- a. With an emphasis on assisting and promoting interdisciplinary undergraduate courses and curricula and particularly inter-university networks of distinction of postgraduate curricula.
- b. With an emphasis on assisting research in the fields of Environment, Energy, Quality of Life and Sustainable Development for the realization of which, the support of the State is welcome, through prioritisation of the aforementioned themes within the financing strategy for both pure and applied research.

They should also promote the appropriate education and training, according to the principles of ESD, of new teachers that are intended for all levels of formal, non formal and informal learning, as well as the relevant “in service” training of teachers, that are already in schools, and for lifelong learning according to the principles of Sustainable Development.

2. Application of suitable Principles, Methods and Practices that promote Sustainability within Universities: With the promotion of the planning and construction of buildings, means of transportation and management of materials and

services that achieve the reduction in energy and raw materials; consumption, promote renewable energy sources, recycling, proper management of toxic, dangerous or contagious substances and waste, the promotion of green products - including in the related food services- and in general the development and application of pioneering technologies, methods and practices that strengthen Sustainable Development in academic workspaces.

3. Governance of Higher Education Institutions: According to the principles of Sustainable Development with an emphasis on the principles of a democratic, constructive dialogue and consent, absolute transparency, reciprocal respect and responsibility of all elements of the Academic Community, as well as the principles of meritocracy, justice and self-government of Universities and free Public Education. The general administration of Universities should be compatible with a system of Integrated Environmental Management, including procedures such as procurement auctions, tenders, supplies etc. that should take into serious consideration the criteria and practices of Sustainable Development, e.g. by applying the E.U. Directive about Green Public Procurement (GPP), while simultaneously decreasing unnecessary bureaucratic processes.

4. Relationship between Higher Education Institutions and Society at both Local and International Levels: Taking into consideration the collaboration with all social partners, local society and the general public and the promotion of public awareness, dissemination and understanding through the distribution of valid and objective viewpoints and opinions around critical issues of our time, as well as the development of know-how and good practices in production and the facilitation of local societies in important communal decision-making for sustainable development. In this respect, Universities will contribute to the sustainable national orientation and planning, which also undeniably depends on the corresponding provisions and intentions of the State, so that it decrees scientifically-informed measures and processes in political decision-making with the active participation of Universities and their representatives. The support of initiatives from University volunteer organizations and particularly from students, towards green actions, viable mobility and energy conservation with

novel and contributing applications is of particular importance in strengthening the role of Universities in Society.

2.1.2. THE GAP BETWEEN THE NUMBER OF THE PROVIDED COURSES AND THE NUMBER OF THE COURSES ON SUSTAINABLE DEVELOPMENT AND EDUCATION

UNIVERSITY OF IOANNINA

Department/Faculty	Undergr.C.	Env.C.	Postgr.C.	EnV.C.
Philology	141	0	1	0
History and Archaeology	124	0	16	0
Philosophy, Education and Psychology	156	1	1	0
Mathematics	116	0	3	0
Physics	96	3	5	1
Chemistry	105	0	8	2
Computer Science and Engineering	104	0	5	0
Materials Science and Engineering	106	2	2	0
Primary School Education	89	2	4	1
Pre-School Education	109	5	6	1
Economics	79	1	1	0
Medicine	141	1	8	0
Biological Applications & Technologies	111	7	2	1
Fine Arts and Sciences of Arts	130	0	3	0

TABLE 1: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN UOI

In the TABLE 1 we can see that in Mathematics Department at the University of Ioannina there are 116 provided undergraduate courses in total, while there is none in sustainable development and education. The same is in the master's program of the Math Department. In Physics Department the proportion between the total number of courses is 96/3 for the undergraduate courses and 5/1 for the post graduate. In Chemistry Department even there is course entitled as environmental there are some researching groups and labs which carry out research in environmental technologies, foods, toxicity, and water. In Biology Department the proportion between the total number of courses is 111/7. There are also 2 master's programs with 1 of them on sustainable development and education issues. In Computer Science and Engineering Department there are no courses on sustainable development and education. According to the latest results, we can see that there are only a very few sustainable development courses in undergraduate level and the same situation is in master's

level. But, it is recorded a huge gap between the total number of the courses provided and the environmental or sustainable development and education oriented courses. Last years, the University of Ioannina tried to become a green university. In this context, several Conferences have been organised included Green Chemistry, as well as it's started to recycle the rubbish and the electronic devices. Also, many professors and researchers support the environmental strategic plan and action of the region of Epirus.

HELLENIC OPEN UNIVERSITY

Department	Undergr.C.	Env.C.	Postgr.C.	Env.C.
School of Humanities	50	0	6*	1*
School of Social Science	15	0	6*	0
School of Science & Technology	47	0	12*	4*
School of Applied Arts	-	-	3*	0

*STUDIES PROGRAMS

TABLE 2: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN HOU

In the TABLE 2 we can see that in School of Humanities at the Hellenic Open University there are 50 provided undergraduate courses in total, while there is none in sustainable development and education. There are also 6 master's programs with 1 of them on sustainable development and education issues. In School of Social Science there are 15 provided undergraduate courses in total, while there is none in sustainable development and education. There are also 6 master's programs with none of them on sustainable development and education issues. In School of Science & Technology there are 47 provided undergraduate courses in total, while there is none in sustainable development and education. But we see that there are 12 master's programs with 4 of them on sustainable development and education issues. In School of Applied Arts there are no undergraduate courses in general, while there are 3 master's programs with none of them on sustainable development and education issues. According to the latest results, we can see that there are no sustainable development courses in undergraduate level while the situation becomes a little better in master's level.

ARISTOTLE UNIVERSITY OF THESSALONIKI

Department	Undergr. C.	Env. C.	Postgr. C.	Env. C.
Math	73	0	41	0
Physics	78	2	113	9
Chemistry	104	7	79	5

Biology	52	5	10*	5*
Geology	100	4	6*	4*
Informatics	79	0	6*	0*

*STUDIES PROGRAMS

TABLE 3: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN AUTH

In the TABLE 3 we can see that in Mathematics Department at Aristotle University of Thessaloniki there are 73 provided undergraduate courses in total, while there is none in sustainable development and education. The same is in the master's program of the Math Department. In Physics Department the proportion between the total number of courses is 78/2 for the undergraduate courses and 113/9 for the post graduate. In Chemistry Department the proportion between the total number of courses is 104/7 for the undergraduate courses and 79/5 for the post graduate. In Biology Department the proportion between the total number of courses is 52/5. There are also 10 master's programs with 5 of them on sustainable development and education issues. In Geology Department the proportion between the total number of courses is 100/4 for the undergraduate courses. But, we see that in their master's programs there are 6 in total with 4 environmental ones. In Informatics Department there are no courses on sustainable development and education. According to the latest results, we can see that there are only a very few sustainable development course in undergraduate level while the situation becomes better in master's level. But, it is recorded a huge gap between the total number of the courses provided and the environmental or sustainable development and education oriented courses.

UNIVERSITY OF PATRAS

Department	Undergr.C.	Env.C.	Postgr.C.	Env.C.
Mathematics	94	0	41	02
Physics	82	3	10	4
Chemistry	64	4	7	3
Biology	55	12	3	1
Geology	84	7	2	2
Environmental and Natural Resources Management	104	43		
Cultural Heritage Management and New Technologies	101	0		
Business Administration of Food and Agricultural Enterprises	74	5	2	0
Material Science	82	3		
Business Administration	70	0		
Educational Sciences and Early Childhood Education	117	1	28	0
Computer Engineering and Informatics	280	5	3	1

Medicine	100	1	6	6?
Electrical and Computer Engineering	115	0	3	0
Mechanical and Aeronautical Engineering	195	4	1(35)	1
Economics	52	1	2	0
Primary Education	130	1	61	0
Civil Engineering	112	3	56	12
Chemical Engineering	100	4	28	2

TABLE 4: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN UPATRAS

In the TABLE 4 we can see that in Mathematics Department at University of Patras there are 94 provided undergraduate courses in total, while there is none in sustainable development and education. In the master's program of the Math Department there are 45 courses while only 2 refer to sustainable development and education. In Physics Department the proportion between the total number of courses is 82/3 for the undergraduate courses and 10/4 for the post graduate. In Chemistry Department the proportion between the total number of courses is 64/4 for the undergraduate courses and 7/3 for the post graduate. In Biology Department the proportion between the total number of courses is 55/12. There are also 3 master's programs with 1 of them on sustainable development and education issues. In Geology Department the proportion between the total number of courses is 84/7 for the undergraduate courses. But, we see that all their master's programs are environmental programs. In Informatics Department there are no courses on sustainable development and education. According to the latest results, we can see that there are only a very few sustainable development course in undergraduate level while the situation becomes better in master's level. But, it is recorded a huge gap between the total number of the courses provided and the environmental or sustainable development and education oriented courses.

UNIVERSITY OF THE AEGEAN

Department	Undergr.C.	Env.C.	Postgr.C.	Env.C.
Geography	89	9	2	1
Sociology	68	2	3	1
Cultural Technology and Communication	80	1	2	1
Environment	87	35	3	3
Marine Sciences	64	4	2	2
Shipping, Trade and Transport	73	3	1	0
Financial Manager and Engineering	76	2	4	0
Primary Education	95	3	1	0
Pre-School Education and Education Design	53	8	5	1

Mediterranean Studies	139	3	4	1
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TABLE 5: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN AEGEAN UNIVERSITY

In the TABLE 5 we can see that in Aegean University there much more courses on sustainable development and education. Especially there are some Departments and Faculties on dedicated on environmental issues, as well as many environmental masters' programs. Also, reading the content of the different courses, one can see environmental and sustainability aspects in different disciplines. Comparing the Pedagogical Departments we still see the lack we met in the other tables of the other Universities.

NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS

Department/Faculty	Undergr.C.	Env.C.	Postgr.C.	Env.C.
Primary School Education	125	2	10	0
Pharmacy	67	1	3	1
Theology	105	1	1(18)	0
Social Theology	0	0		
Biology	54	8	6	3
Philosophy and History of Science	123	1	5	1
Physics	90	3	2	1
Chemistry	63	5	8	2
Law	103	1	6	0
Communication and MassMedia	—	0	5	0
Economics	—	0	5	0
Political Science and Public Administration	129	1	4	0
Philosophy, Pedagogy and Psychology	129	4	6	0
Informatics and Telecommunications	—	0	6	0
Mathematics	0	0	4	0
Geology and Geoenvironment	N/A	N/A	N/A	N/A
Physical Education and Sport Science	—	0		
Early Childhood Education	—	0		
Medicine	—	0		
Nursing	—	0		
Dentistry	—	0		
Σπουδών και Σύγχρονων Ασιατικών Σπουδών	—	0		
English Language and Literature	—	0		
French Language and Literature	—	0		
German Language and Literature	—	0		
Theatre Studies	—	0		
Spanish Language and Literature	—	0		
History and Archaeology	—	0		
Music Studies	—	0		

Slavic Studies	—	0		
Philology	—	0		
Psychology	—	0		

TABLE 6: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN UOA

In the TABLE 6 we can see that in Mathematics Department at National and Kapodistrian University of Athens there are neither undergraduate courses nor master's program on sustainable development and education. In Physics Department the proportion between the total number of courses is 90/3 for the undergraduate courses and 2/1 for the post graduate. In Chemistry Department the proportion between the total number of courses is 63/5 for the undergraduate courses and 8/2 for the post graduate. In Biology Department the proportion between the total number of courses is 54/8. There are also 6 master's programs with 3 of them on sustainable development and education issues. In Informatics and in Mass Media Departments there are no courses on sustainable development and education. According to the latest results, we can see that there are only a very few sustainable development course in undergraduate level while the situation becomes better in master's level. But, it is recorded a huge gap between the total number of the courses provided and the environmental or sustainable development and education oriented courses.

NATIONAL TECHNICAL UNIVERSITY OF ATHENS

Department	Undergr.C.	Env.C.	Postgr.C.	Env.C.
Civil Engineering	129	13	70	11
Mechanical Engineering	141	7	13*	2*
Electrical and Computer Engineering	206	5	127	1
Architecture	100	3	4*	1*
Chemical Engineering	113	9	10*	2*
Rural and Surveying Engineering	113	8	56	26
Mining and Metallurgical Engineering	117	12	34	6
Naval Architecture and Mechanical Engineering	137	2	-	-
School of Applied Mathematical and Physical Sciences	201	5	16*	1*

*STUDIES PROGRAMS

TABLE 7: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN NTUA

In the TABLE 7 we can see that in Civil Engineering Department at National Technical University of Athens the proportion between the total number of courses is 129/13 for

the undergraduate courses and 70/11 for the post graduate. In Mechanical Engineering Department the proportion between the total number of courses is 141/7 for the undergraduate courses. There are also 13 master's programs with 2 of them on sustainable development and education issues. In Electrical and Computer Engineering Department the proportion between the total number of courses is 206/5 for the undergraduate courses and 127/1 for the post graduate. In Architecture Department the proportion between the total number of courses is 100/3. There are also 4 master's programs with 1 of them on sustainable development and education issues. In Chemical Engineering Department the proportion between the total number of courses is 113/9 for the undergraduate courses. There are also 10 master's programs with 2 of them on sustainable development and education issues. In Rural and Surveying Engineering Department the proportion between the total number of courses is 113/8 for the undergraduate courses. But, we see that in their master's program the proportion between the total number of courses is 56/26. In Mining and Metallurgical Engineering Department the proportion between the total number of courses is 117/12 for the undergraduate courses and 34/6 for the post graduate. In Naval Architecture and Mechanical Engineering Department the proportion between the total number of courses is 135/2 for the undergraduate courses, while there no master's programs provided. Finally, in School of Applied Mathematical and Physical Sciences the proportion between the total number of courses is 201/5 for the undergraduate courses. There are also 16 master's programs with 1 of them on sustainable development and education issues. According to the latest results, we can see that there are only a very few sustainable development course in undergraduate level while the situation becomes better in master's level. But, it is recorded a huge gap between the total number of the courses provided and the environmental or sustainable development and education oriented courses.

TECHNICAL UNIVERSITY OF CRETE

Department	Undergr.C.	Env.C.	Postgr.C.	Env.C.
Production Engineering and Management	117	3	73	3
Mineral Resources Engineering	98	4	55	12
Electronic and Computer Engineering	121	2	69	1
Environmental Engineering	78	27	30	20
Architectural Engineering	77	3	26	4

TABLE 8: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN TECHNICAL UNIVERSITY OF CRETE

In the TABLE 8 we can see that in Production Engineering and Management Department at Technical University of Crete the proportion between the total number of courses is 117/3 for the undergraduate courses and 73/3 for the post graduate. In Mineral Resources Engineering Department the proportion between the total number

of courses is 98/4 for the undergraduate courses and 55/12 for the post graduate. In Electronic and Computer Engineering Department the proportion between the total number of courses is 121/2 for the undergraduate courses and 69/1 for the post graduate. In Environmental Engineering Department the proportion between the total number of courses is 78/27 and 30/20 for the post graduate. In Architectural Engineering Department the proportion between the total number of courses is 77/3 for the undergraduate courses and 26/4 for the post graduate. According to the latest results, we can see that there are a very few sustainable development courses in undergraduate level while the situation becomes better in master's level, except for the Environmental Engineering Department, which provides a sufficient number of undergraduate and post graduate environmental courses. But, it is generally recorded a huge gap between the total number of the courses provided and the environmental or sustainable development and education oriented courses.

UNIVERSITY OF CRETE

Department	Undergr.C.	Env.C.	Postgr.C.	Env.C.
Philosophy	2*(77 & 94)	0	5*	0
History and Archeology	42	0	10	0
Philology	48	0	5*	0
Primary Education	5*	1*	5*	1*
Preschool Education	54	1	10	0
Economics	65	3	20	1
Psychology	84	0	2*	0
Sociology	40	0	5*	0
Political Sciences	58	0	40	0
Mathematics	76	0	90	0
Physics	110	0	2*	0
Computer Science	-	0	-	-
Biology	85	8	5*	1*
Chemistry	5*	1*	4*	2*
Mathematics and Applied Mathematics	86	0	3*	0
Materials Science	83	0	17	0
Medicine	100	0	9*	0

*STUDIES PROGRAMS

TABLE 9: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN UNIVERSITY OF CRETE

In the TABLE 9 we can see that in Philosophy Department, History and Archaeology Department, Philology Department, Psychology Department, Sociology Department, Political Sciences Department, Mathematics Department, Physics Department, Computer Science Department, Mathematics and Applied Mathematics Department,

Materials Science Department and Medicine Department at University of Crete there are no courses on sustainable development and education. In Primary Education Department there are 5 undergraduate programs with 1 of them on sustainable development and education issues. There are also 5 master's programs with 1 of them on sustainable development and education issues. In Preschool Education Department the proportion between the total number of courses is 54/1 for the undergraduate courses. There are also 10 master's programs with none of them on sustainable development and education issues. In Economics Department the proportion between the total number of courses is 65/3 for the undergraduate courses and 20/1 for the post graduate courses. In Biology Department the proportion between the total number of courses is 85/8 for the undergraduate courses. There are also 5 master's programs with 1 of them on sustainable development and education issues. In Chemistry Department there are 5 undergraduate programs with 1 of them on sustainable development and education issues. There are also 4 master's programs with 2 of them on sustainable development and education issues. According to the latest results, we can see that there are a very few sustainable development courses in both, undergraduate and master's level. In addition, it is recorded a huge gap between the total number of the courses provided and the environmental or sustainable development and education oriented courses.

TECHNOLOGICAL EDUCATIONAL INSTITUTE OF ATHENS

Department	Undergr.C.	Env.C.	Postgr.C.	Env.C.
Electronic Engineering	40	0	17	0
Biomedical Engineering	44	0	4*	0
Technology Engineering	48	5	10	2
Naval Architecture	44	1	-	-
Civil Engineering and Surveying & Geoinformatics Engineering	45	3	-	-
Library Science & Information Systems	44	0	15	0
Business Administration	3*	0	15	0
Marketing	44	0	-	-
Aesthetics and Cosmetology	43	0	15	13
Public Health	40	5	4*	0
Occupational Therapy	42	0	-	-
Medical Laboratory	40	0	25	7
Social Work	43	0	25	0
Midwifery Department	42	0	23	0
Nursing	40	0	7*	0
Dental Technology	38	0	20	0
Optics and Optometry	43	0	10	0
Preschool Education	42	0	-	-
Department of Radiologic Technologists	40	0	-	-

Physiotherapy Department	42	0	-	-
Beverage Technology	48	1	21	0
Food Science and Technology	40	1	18	0
Graphic Design	44	1	-	-
Department of Interior Architecture, Decorative Arts & Design	48	0	-	-
Conservation of Antiquities and Works of Art	48	0	22	12
Photography and Audiovisual Arts	44	0	-	-

*STUDIES PROGRAMS

TABLE 10: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN TECHNOLOGICAL EDUCATIONAL INSTITUTE OF ATHENS

In the TABLE 10 we can see that in Electronic Engineering Department, Biomedical Engineering Department, Library Science & Information Systems Department, Business Administration Department, Social Work Department, Midwifery Department, Nursing Department, Dental Technology Department, Optics and Optometry Department, Marketing Department, Occupational Therapy Department, Preschool Education Department, Department of Radiologic Technologists, Physiotherapy Department, Department of Interior Architecture, Decorative Arts & Design and Photography and Audiovisual Arts Department at Technological Educational Institute of Athens there are no courses on sustainable development and education. In Technology Engineering Department the proportion between the total number of courses is 48/5 for the undergraduate courses and 10/2 for the post graduate. In Naval Architecture Department the proportion between the total number of courses is 44/1 for the undergraduate courses, while post graduate programs are not provided at all. In Civil Engineering and Surveying & Geoinformatics Engineering Department the proportion between the total number of courses is 45/3 for the undergraduate courses, while post graduate programs are not provided at all. In Aesthetics and Cosmetology Department there are 43 provided undergraduate courses in total, while there is none in sustainable development and education. But as we can see, the proportion between the total number of courses is 15/13 for the post graduate. In Public Health Department the proportion between the total number of courses is 40/5 for the undergraduate courses. There are also 4 master's programs with none of them on sustainable development and education issues. In Medical Laboratory Department there are no undergraduate courses on sustainable development and education but the proportion between the total number of courses is 25/7 for the post graduate courses. In Beverage Technology Department the proportion between the total number of courses is 48/1 for the undergraduate courses. There are also 21 provided post graduate courses in total, while there is none in sustainable development and education. In Food Science and Technology Department the proportion between the total number of courses is 40/1 for the undergraduate courses. There are also 18 provided post graduate courses in total, while there is none in sustainable

development and education. In Graphic Design Department the proportion between the total number of courses is 44/1 for the undergraduate courses, while post graduate programs are not provided at all. Finally, in Conservation of Antiquities and Works of Art Department there are no undergraduate courses on sustainable development and education but the proportion between the total number of courses is 22/12 for the post graduate courses. According to the latest results, we can see that there are only a very few sustainable development course in undergraduate level as well as in master's level except for the post graduate program of Aesthetics and Cosmetology Department and Conservation of Antiquities and Works of Art Department.

TECHNOLOGICAL EDUCATIONAL INSTITUTE OF THESSALONIKI

Department	Undergr.C.	Env.C.	Postgr.C.	Env.C.
Electronic Engineering	52	1	-	-
Information Technology	39	0	10	0
Department of Automotive Engineering	42	0	-	-
Civil Engineering	45	1	-	-
Science departments	42	0	-	-
Faculty of Crop Science	40	1	-	-
Department of animal production	39	1	-	-
Agricultural Development and Agribusiness Management	42	3	-	-
Aesthetics	49	0	-	-
Early Childhood Care & Education	63	1	-	-
Medical Laboratory	48	0	-	-
Midwifery Department	40	0	-	-
Nursing	47	0	10	0
Physiotherapy	42	0	-	-
Library Department	39	0	-	-
Department of Marketing	42	0	-	-
Accounting and Finance	36	0	-	-
Degree of Tourism	70	0	-	-
Food Science and Technology	45	0	-	-
Food Technology Section	42	2	-	-
Department of Fisheries & Aquaculture Technology	42	11	-	-

TABLE 11: TOTAL NUMBER OF PROVIDED COURSES AND NUMBER OF SUSTAINABLE DEVELOPMENT COURSES IN TECHNOLOGICAL EDUCATIONAL INSTITUTE OF THESSALONIKI

In the TABLE 11 we can see that in Information Technology Department, Department of Automotive Engineering, Science departments, Aesthetics Department, Midwifery Department, Nursing Department, Physiotherapy Department, Library Department,

Department of Marketing, Accounting and Finance Department, Degree of Tourism Department, Food Science and Technology Department at Technological Educational Institute of Thessaloniki there are there are no courses on sustainable development and education. In Electronic Engineering Department the proportion between the total number of courses is 52/1 for the undergraduate courses, while post graduate programs are not provided at all. In Civil Engineering Department the proportion between the total number of courses is 45/1 for the undergraduate courses, while post graduate programs are not provided at all. In Faculty of Crop Science Department there are 40 provided undergraduate courses in total, while there is 1 in sustainable development and education. In Department of animal production there are 39 provided undergraduate courses in total, while there is 1 in sustainable development and education. In Agricultural Development and Agribusiness Management Department the proportion between the total number of courses is 42/3 for the undergraduate courses, while post graduate programs are not provided at all. In Food Technology Section Department there are 42 provided undergraduate courses in total, while there are 2 in sustainable development and education. According to the latest results, we can see that there are only a very few sustainable development courses in undergraduate level, while in master's level there are no sustainable development courses at all.

3 THE ROLE AND POSITION OF THE UNIVERSITY PROFESSORS

The objective of this research, based on the Questionnaire provided in Annex II, is to understand how university professors perceive the incorporation of environmental topics within their courses and if they share the same vision, i.e. that an environmental course is relevant to any discipline.

The process to sustainable development initiated by the Rio Summit 1992 where the significant role of all levels of education was emphasized and universities were called upon to play a leading role. Universities can promote sustainability through an interdisciplinary and holistic learning process.

Below there are some pie charts that show the profile details of the target group of the Greek university professors. The pies are referred to the Questions 3 to 7.

Chart 1: Question 3

Please, indicate the age group you belong to by selecting the appropriate answer.

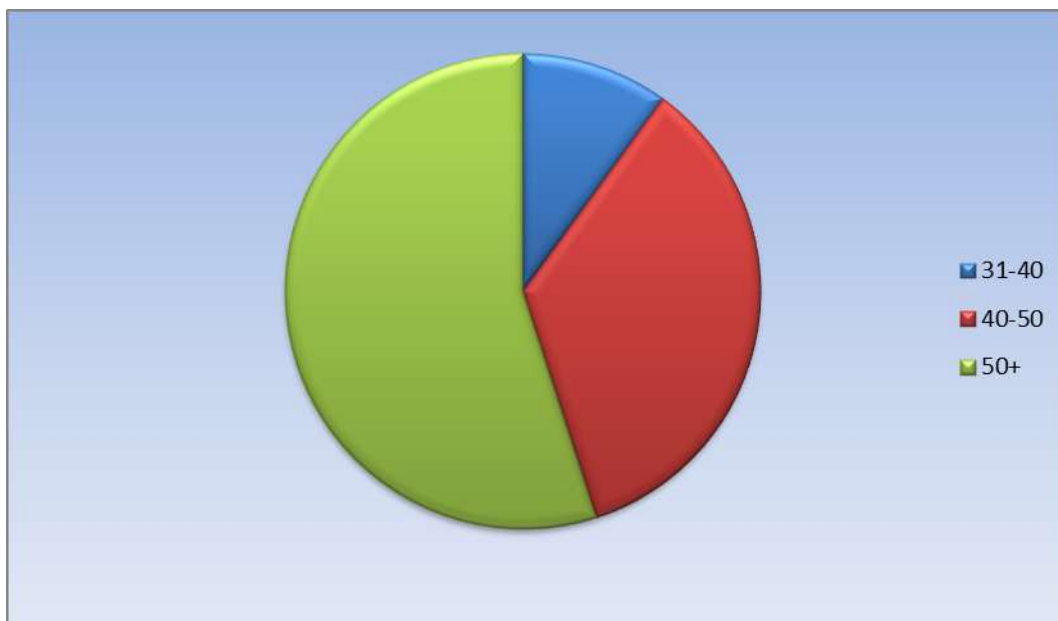


Chart 2: Question 4

How many years have you been teaching at the University?

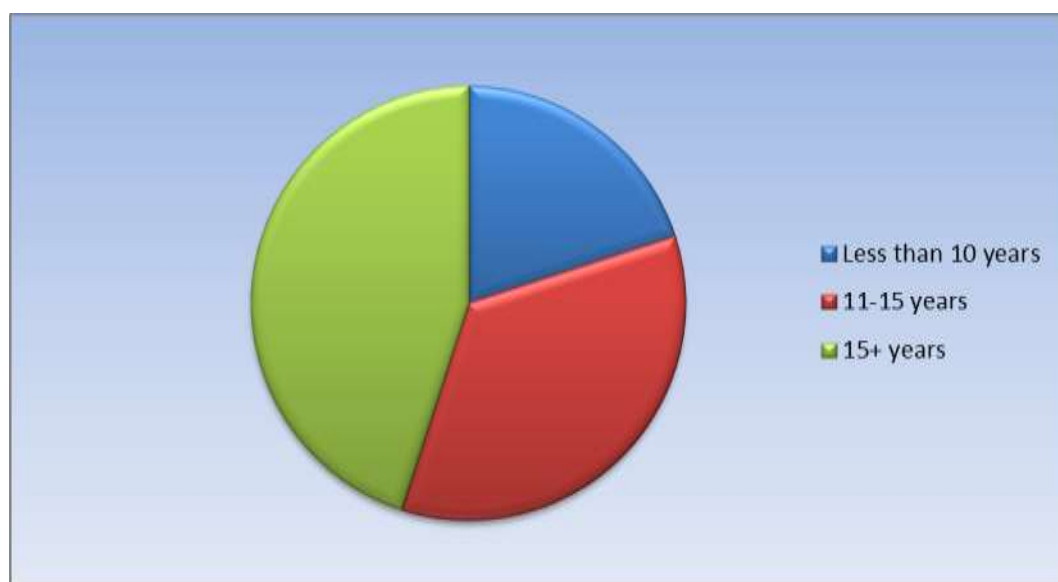


Chart 3: Question 5

Please, indicate the department of the University you are currently teaching in.

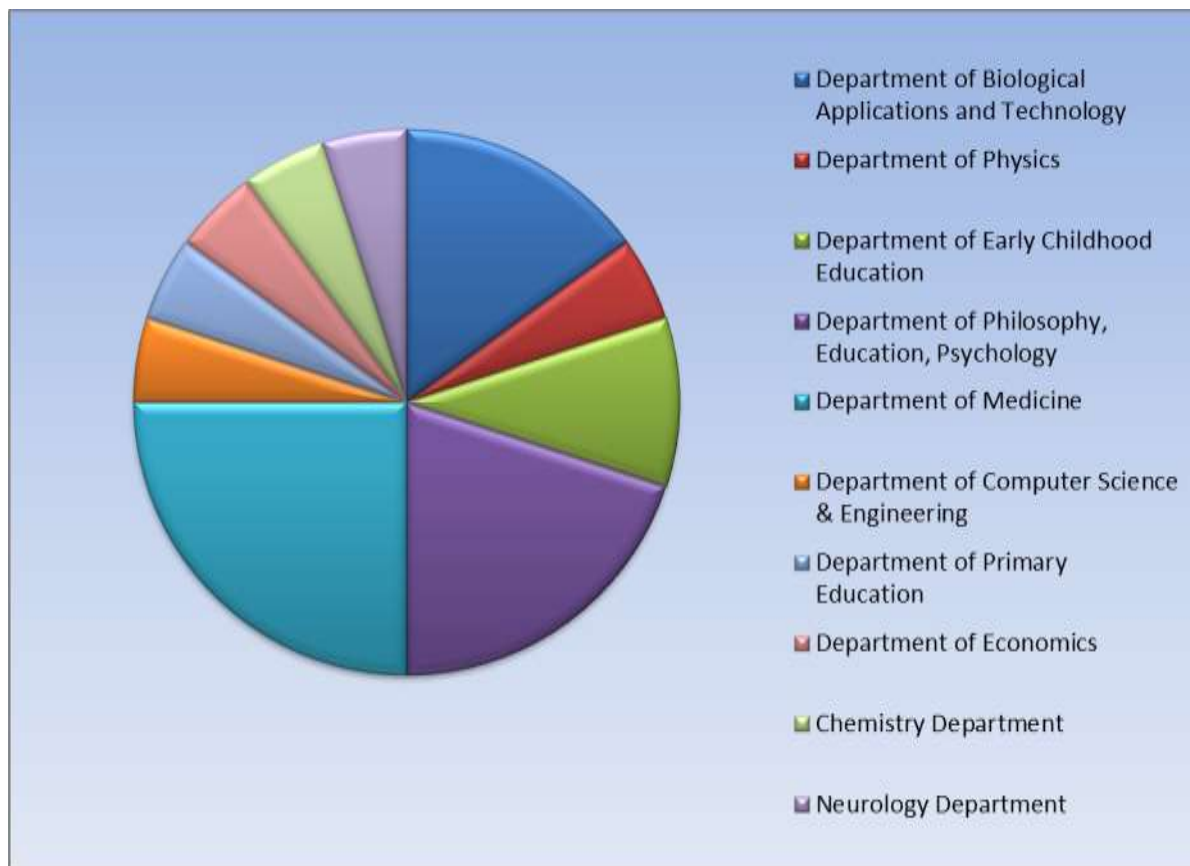


Chart 4: Question 6

Please indicate which is your current rank.

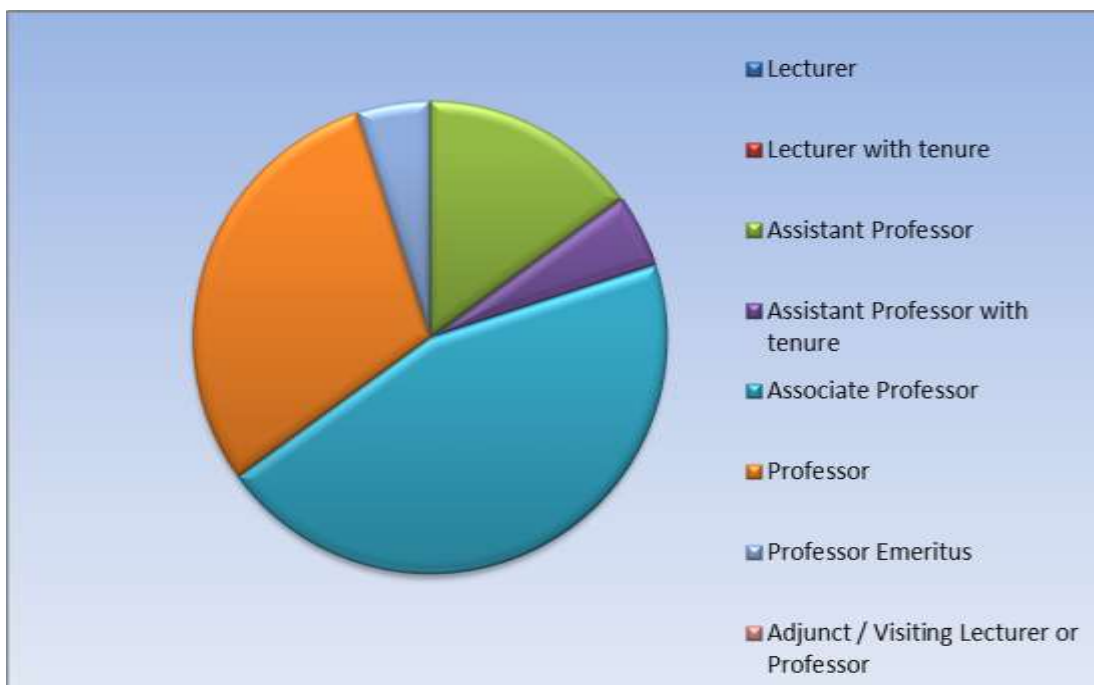
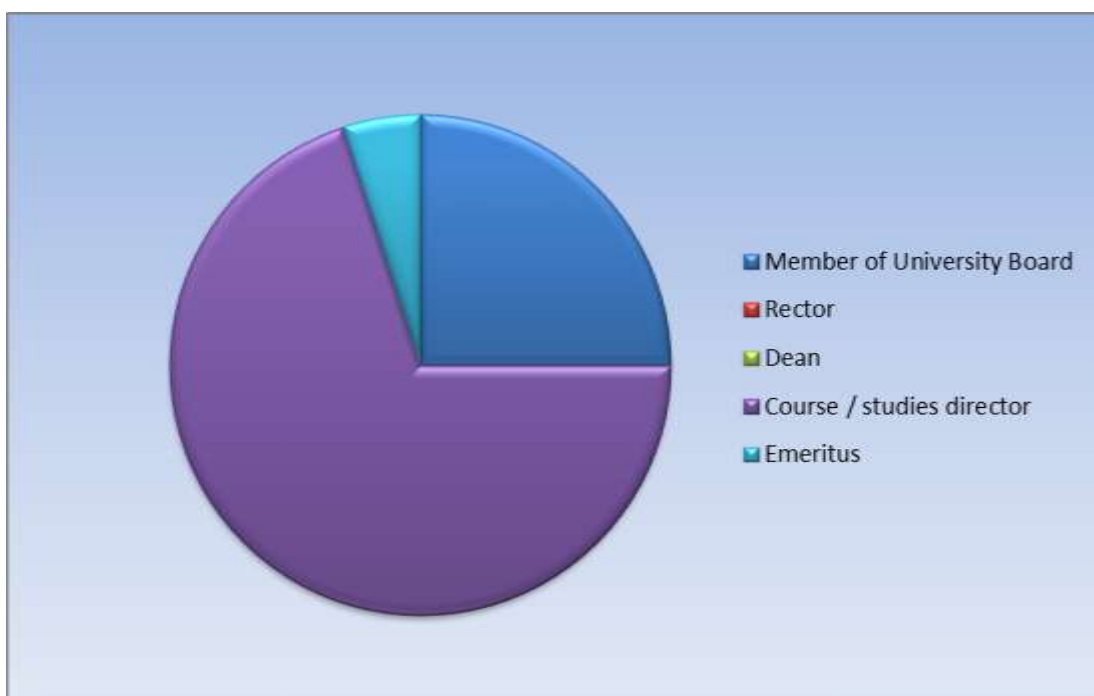


Chart 5: Question 7

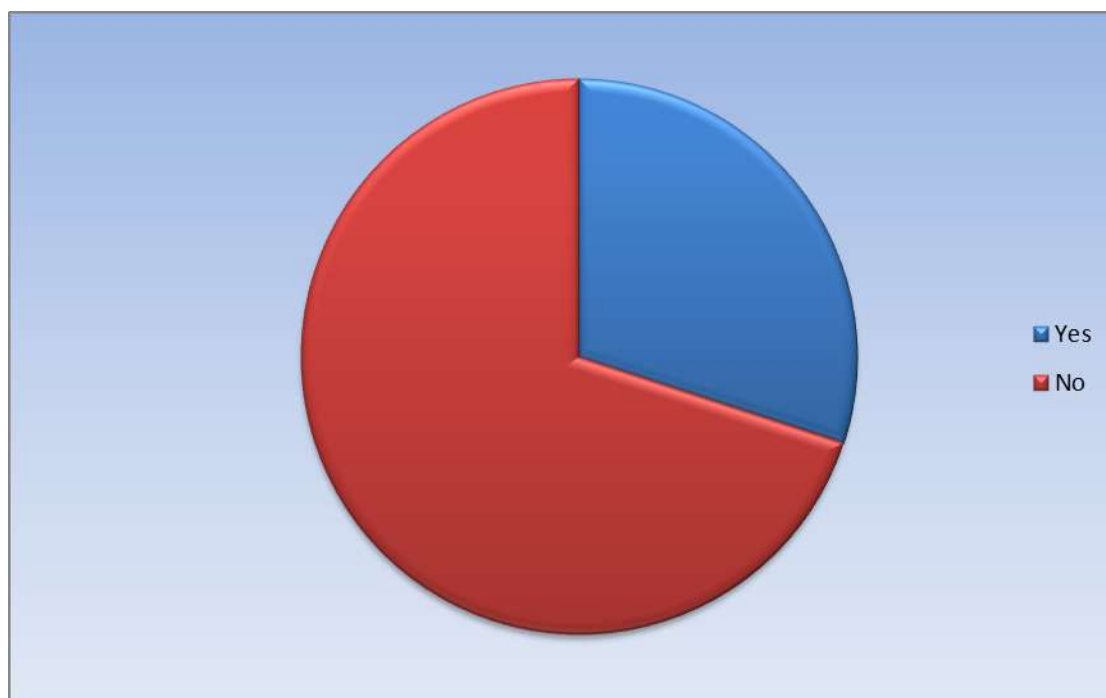
Please indicate your current position.



The sample of the field research consists of 20 university professors of different age, teaching experience, specialty, rank and position at the university as we can see on the charts of questions 3,4,5,6 and 7.

Chart 6: Question 8

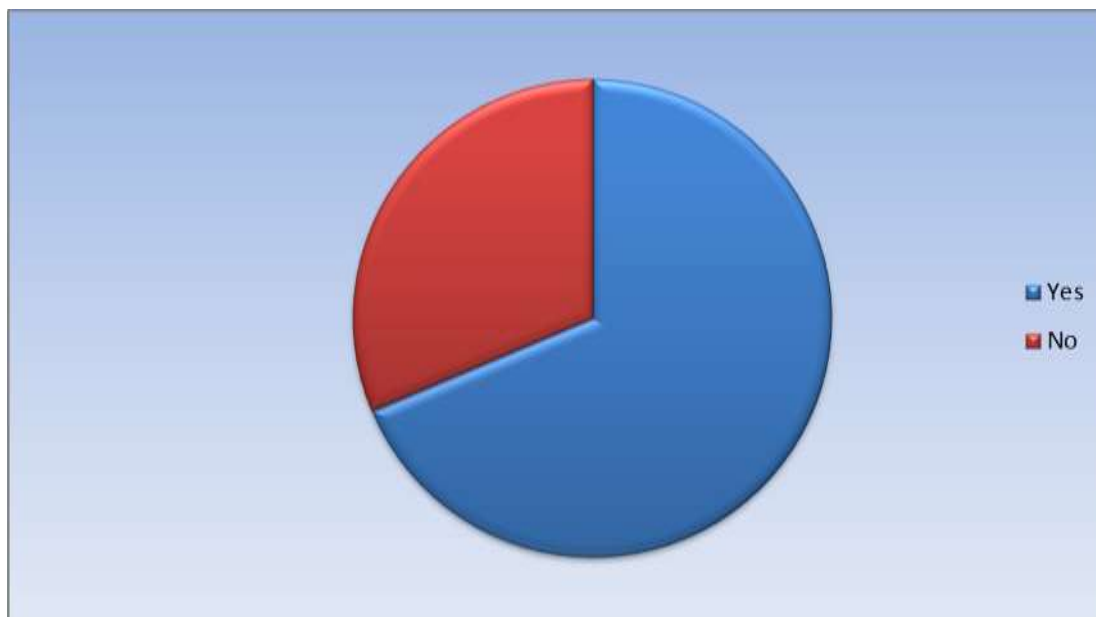
Please indicate whether you are a member of University committee(s).



One of the questions they were asked was if they are involved in university committee(s) that deal with academic / educational / research / student issues and only 35% of them gave a positive answer. From the 35%, two are members of the undergraduate committee, one is a member of the General Assembly of the Medical School, one is a member of the Committee of Postgraduate Studies, one is an Erasmus coordinator and one is a member of the Research Committee. It is important to say that the collaborations between Universities, Research Institutions and Social Partners promote the principles and essential knowledge and practices of Sustainable Development.

Chart 7: Question 9

Have you ever been involved in teaching an environmentally related topic?



When questioned if they have ever been involved in teaching an environmentally related topic, 69% of the subjects answered yes and 31% answered, no.

Specifically, the courses they teach, as they stated, are Epidemiology as well as Environmental Microbiology at the School of Medicine, Human Physiology at the School of Biological Applications and Technology (B.A.T.), Environmental Chemistry at both the School of Chemistry and B.A.T., Aesthetics of Environment at the School of Philosophy and other undergraduate courses in general at the Early Childhood Education Department. We should emphasize the fact that environmental topics have nothing to do with certain specialties and professions but they should be taught interdisciplinary.

Chart 8: Question 10

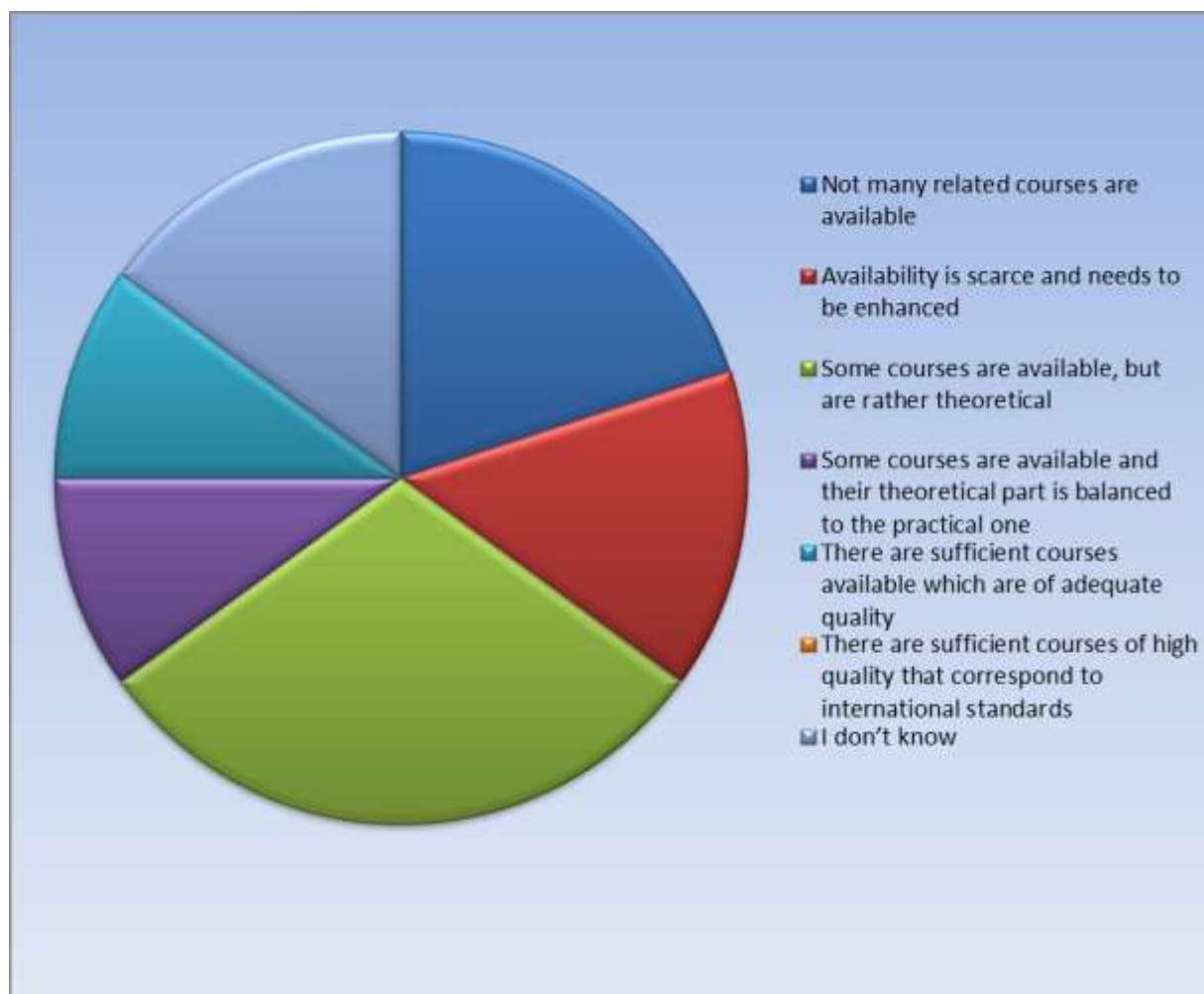
Do you believe that the labour market is now becoming more sensitive in environmental issues?



When questioned if the labor market is becoming more sensitive in environmental issues most of the respondents answered yes by 70%, 5% answered no and surprisingly 25% of the respondents answered they don't know. This raises questions whether the university professors are able to adjust their courses to the requirements of the labor market in order to "produce" professionals ready to assert a job in the future. And also shows the lack of a personal point of view on environmental concerns.

Chart 9: Question11

How do you rate the incorporation of environmental issues (as a horizontal discipline) in your courses?



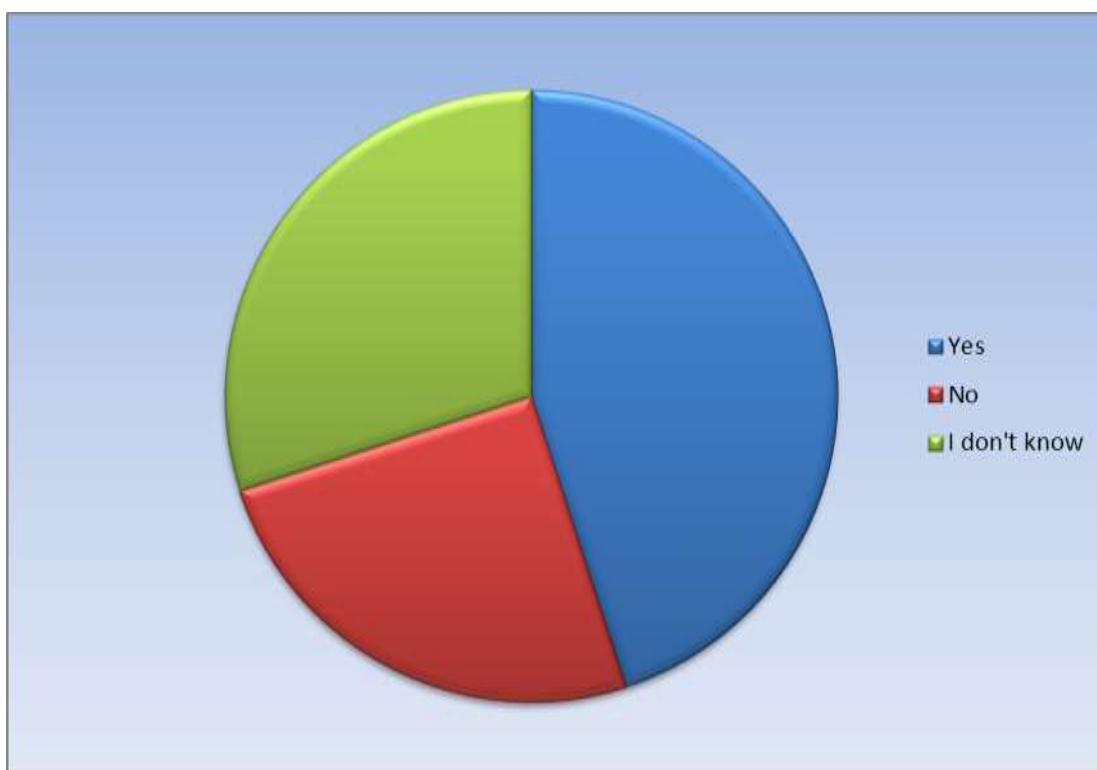
Another question given was how do university professors rate the incorporation of environmental issues (as a horizontal discipline) in their courses. In this question we took a number of different responses.

30% of the respondents said there are some available courses related to environmental issues, though rather theoretical. 20% of the respondents stated that there are not many available related courses. 15% believe that availability is scarce and needs to be enhanced, which shows that both groups acknowledge the need for more courses related to environmental issues in their university curricula. There are those who answered that they don't know by 15% and those who believe that there are sufficient courses available which are of adequate quality by 10% which could mean that they don't see any gaps to their curriculum concerning the environmental courses. Only a

small percentage by 10% answered that some courses are available and their theoretical part is balanced to the practical one, which makes it an example of good practice. None of the respondents answered that there are sufficient courses of high quality that correspond to international standards which in combination with the above results proves the lack of integration of environmental issues in the courses of the university curricula.

Chart 10: Question 12

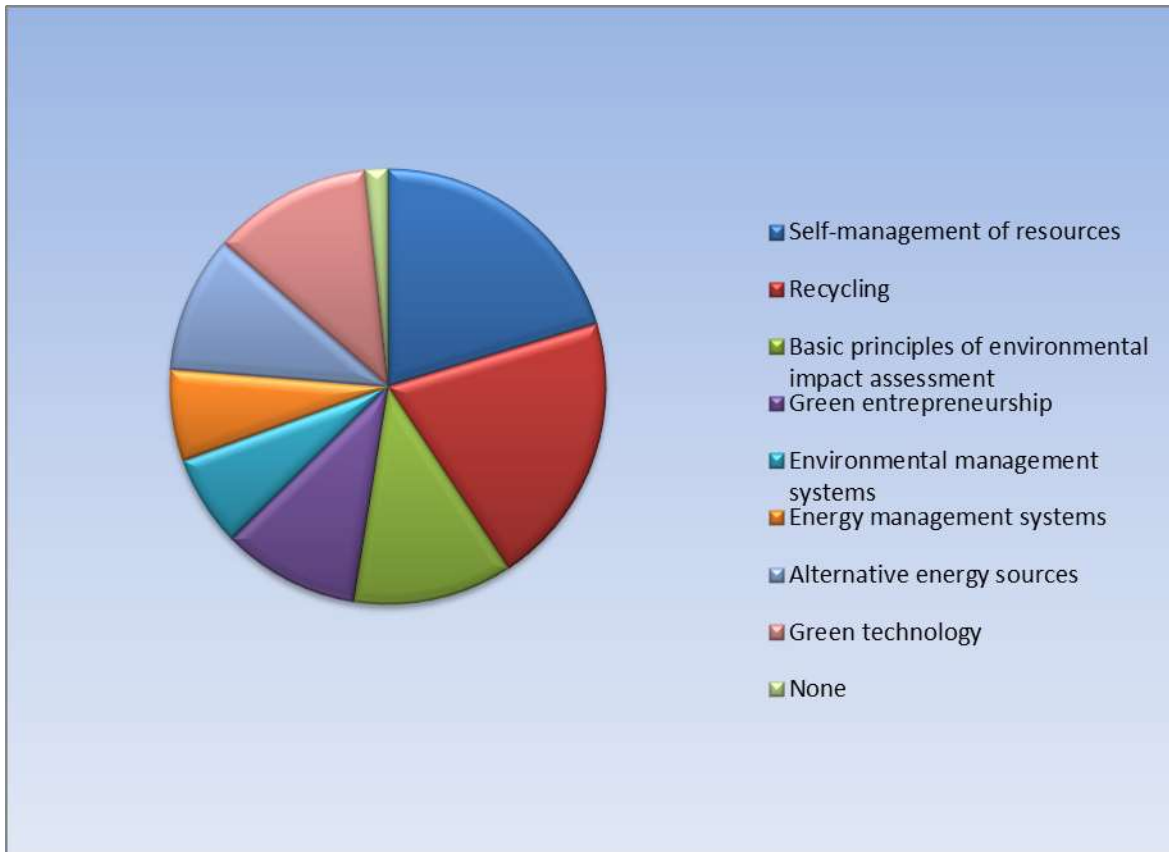
Do you think that the incorporation of environmental topics would significantly enhance the employability of your students after graduation?



The next question was if they think that the incorporation of environmental topics would significantly enhance the employability of their students after graduation. 45% of the participants are positive and they do believe that their students will enhance their employability with more environmental topics in their studies. On the other hand 25% of the whole believes the exact opposite i.e. environmental courses are not needed for the labor market. The remarkable in this question is that a quite big amount of the respondents, by 30%, answered that they don't know which rather shows their lack of knowledge on the requirements of the professions they teach.

Chart 11: Question 13

Which are the topics you think it is essential to be incorporated in the University curricula?



In this question the subjects were asked to put in order of priority those topics which they think are essential to incorporate in the university curricula. Most of the respondents chose as their first priority Self-management of resources (20%) and Recycling (20%) followed by the Basic principles of environmental impact assessment (12%) and Green Technology (12%). The least popular answers were Green Entrepreneurship (10%) and the Alternative energy sources (10%). Very few of the respondents chose Energy management systems (7%) and Environmental management systems (7%) and only the 2% answered that none of them should be incorporated to university curricula.

Question 14

You may use the space below to suggest more topics than the ones listed above.

The respondents gave several suggestions when they were asked to propose more environmental topics that could be incorporated in the current university curriculum. Philosophy professors suggested aesthetics of environment, philosophical anthropology, philosophy of nature, human rights and animal rights, all environmental oriented. In the area of computer science, professors stated that the main environmental aspects concern electricity usage by individual devices and -most importantly- large computer centers. They also suggested that IT and data management support for solar plants, wind turbines etc should be provided.

Chart 12: Question 15

Would you be interested in participating in a blended course for university professors on the topics mentioned above?

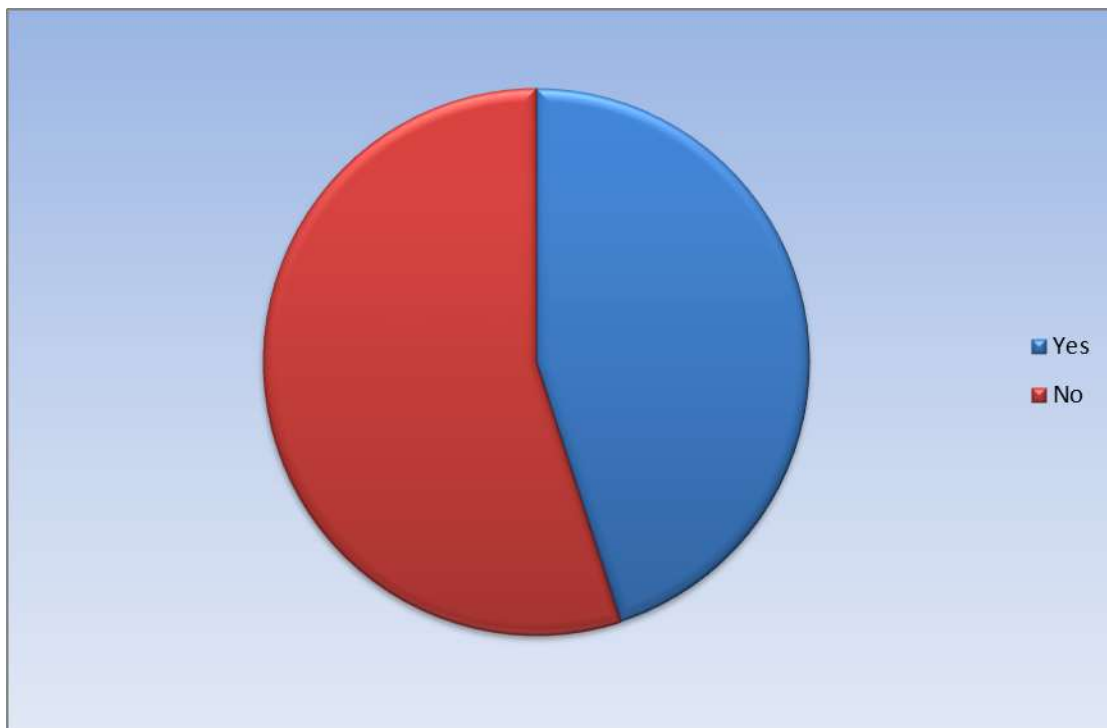
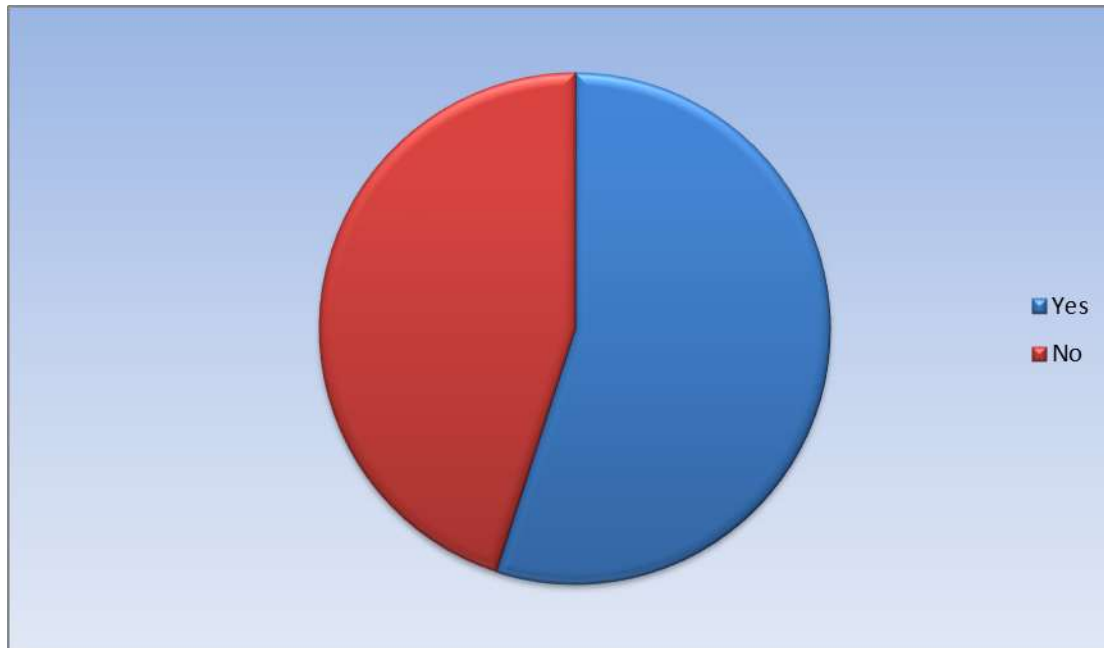


Chart 13: Question 16

Would you like to be informed about the upcoming project activities?



Finally the subjects were asked if they would be interested in participating in a blended course for university professors on the topics mentioned above and if they would like to be informed about the upcoming project activities. The answers are of great interest. A whopping 55% of the participants answered that they would not be interested in participating in a blended course for university professors on environmental topics and the remaining 45% showed interest. Making matters worse, 45% of the respondents would not like to be informed about the upcoming project activities. We should rather be worried about the absence of interest and awareness of environmental issues from the professors than of the students. If the professors are not sensitized on environmental matters, how do we expect to raise students' awareness? These numbers might be a result of not understanding that environmental issues are relevant to any discipline.

Overall this research rather proves the lack of information and awareness of a big group of university professors who don't perceive the incorporation of the environmental topics within their courses vital, regardless of the different specialties and disciplines.

4 CONCLUSIONS AND RECOMMENDATIONS

Despite the fact that in some European countries like Finland, almost every course ends in sustainable development knowledge, competences, skills or attitudes, in Greece we recorded a big gap between the number of the provided courses in each Department and/or University and the course which are oriented to sustainable development and education.

In all the above, a close collaboration within the Network of Sustainable Greek Universities will be sought, but also with foreign Universities, in the framework of existing exchange programmes and international networks:

- a. With an emphasis on assisting and promoting interdisciplinary undergraduate courses and curricula and particularly inter-university networks of distinction of postgraduate curricula.
- b. With an emphasis on assisting research in the fields of Environment, Energy, Quality of Life and Sustainable Development for the realization of which, the support of the State is welcome, through prioritisation of the aforementioned themes within the financing strategy for both pure and applied research.

They should also promote the appropriate education and training, according to the principles of ESD, of new teachers that are intended for all levels of formal, non formal and informal learning, as well as the relevant “in service” training of teachers, that are already in schools, and for lifelong learning according to the principles of Sustainable Development.

The support of initiatives from University volunteer organizations and particularly from students, towards green actions, viable mobility and energy conservation with novel and contributing applications is of particular importance in strengthening the role of Universities in Society.

In parallel, the research on professors' views rather proves the lack of information and awareness of a big group of them who don't perceive the incorporation of the

environmental topics within their courses vital, regardless of the different specialties and disciplines.

Overall, the GREEK REPORT strongly recommends the project EPOQUE, in order to promote the integration of the major sustainable development and education issues in the strategic planning of each University as well as in the current curricula.

The project ÉPOQUE promotes a smart specialization of prospective teachers, scientists and engineers through an environmental portfolio ready to be integrated into the university syllabuses. It creates a new generation of green teachers, green scientists, green engineers in the context of higher education modernization agenda connected to SMEs and organizations (including schools). Due to the previous experience, the project has a great impact to the regional development using tertiary education as a vehicle to achieve the Epirus regional priorities for convergence. The project produces a set of courses, comparative studies, teaching manuals and an EnMS for schools.

LIST OF REFERENCES

- University of Ioannina [HTTP://WWW.UOI.GR/EN/](http://www.uoi.gr/en/)
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<http://www.mastersportal.eu/universities/1949/hellenic-open-university.html>
- Aristotle University of Thessaloniki <http://www.auth.gr/en>
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- University of the Aegean <https://www.aegean.gr/aegean2/index.html>
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- Technical University of Crete <http://www.tuc.gr/3324.html>
- National Technical University of Athens http://www.ntua.gr/index_en.html
- University of Crete <http://www.en.uoc.gr/>
- Technological Educational Institute of Athens <http://www.teiath.gr/?lang=en>
- Alexander Technological Educational Institute of Thessaloniki
http://www.teithe.gr/index_en.html
- The chapter of Greek Universities for Sustainable Development
http://www.chem.uoa.gr/personel/Laboratories/EnvironChem/pdf/Xarta_GREEN_UNIV_ENG.pdf



ULSF

Association of

UNIVERSITY LEADERS
FOR A
SUSTAINABLE FUTURE

Sustainability Assessment Questionnaire (SAQ) **for Colleges and Universities**

The Sustainability Assessment Questionnaire (SAQ) is designed to assist you in assessing the extent to which your college or university is sustainable in its teaching, research, operations and outreach. “Sustainability” implies that the major activities on your campus are ecologically sound, socially just, economically viable and humane, and that they will continue to be so for future generations. Academic institutions vary considerably in how they approach sustainability: some concentrate on minimizing their ecological impact through changes in operations; others emphasize sustainability in the curriculum.

This survey of sustainability at your college or university asks you to give impressions of your institution’s accomplishments on seven critical dimensions of higher education: 1. Curriculum; 2. Research and Scholarship; 3. Operations; 4. Faculty and Staff Development and Rewards; 5. Outreach and Service; 6. Student Opportunities; 7. Administration, Mission and Planning. The SAQ is designed to stimulate discussion and further assessment by campus representatives who are knowledgeable about and responsible for the activities mentioned in each section.

If you wish to guide the process yourself, we suggest the following: 1. Assemble 10-15 representatives from critical campus constituencies, including students, faculty, staff, and administration; 2. Review the purpose and objectives of the exercise, the nature of sustainability in higher education, etc.; 3. Take about 30 minutes for each person to fill out the questionnaire individually or for small groups to work on specified sections; 4. Facilitate a discussion in which the whole group reviews the questionnaire section by section and gathers impressions; 5. Brainstorm possible next steps to strengthening

sustainability on your campus. Note: The exercise could take 2-3 hours or more, and may be best carried out over two sessions.

Directions: Please read through the definitions of sustainability and education for sustainability (p.3) and review the questions prior to completing the questionnaire. This will give you a sense of how we understand “sustainability.” Then answer each question to the best of your ability. Remember that this questionnaire is seeking your impressions on each dimension, so you need not have detailed information on all courses offered, transportation and recycling programs, etc., in order to complete it. If you lack enough information for a reliable impression, please indicate that you don’t know the answer to that question.

It is important to recognize that most institutions will not “score high.” Very few, if any, institutions embody sustainability on all these dimensions. Sustainability is not yet a major focus of the academic disciplines or the wider economy in which higher education functions. Thus it is difficult for any college or university to be very advanced in implementing sustainability.

Thank you.

Definitions of sustainable development, sustainability and education for sustainability:

- Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (Brundtland Commission (United Nations), 1987)
- Sustainability is an evolving paradigm for planning and decision-making. Sustainability is a promise. It is a dynamic condition, which requires a basic understanding of the interconnections and interdependency among ecological, economic, and social systems.” (The Sustainability Education Center, 2002)
- Historically, the term “sustainable” arose among those with environmental concerns, and most of the literature and assessment instruments reflect this emphasis. However, it is increasingly recognized that sustainability cannot be achieved without addressing social justice issues. There can be no sustainable communities and institutions without social justice. So too is humane consideration toward the whole community of life an essential part of true sustainability. An academic institution committed to sustainability should help students understand the roots of today’s injustices and motivate them to seek justice and humaneness in full integration with understanding the roots of environmental degradation and modeling environmentally sustainable practices. (John B. Cobb Jr., “Sustainability and the Liberal Arts” conference, 1998)
- Education for sustainable development is a dynamic concept that utilizes all aspects of public awareness, education and training to create or enhance an understanding of the linkages among the issues of sustainable development and to develop the knowledge, skills, perspectives and values which will empower people of all ages to assume responsibility for creating and enjoying a sustainable future. (From the UNESCO Decade of Education for Sustainable Development website, 2005)
- The concept of sustainability – which, at a minimum, addresses how humans can live on the planet over time in a manner that protects cultural and biological diversity, recognizes and appreciates ecological limits, offers just and accountable governments and economies for all, and draws on the human capacity for adaptive learning and innovation – offers a tremendous challenge for education. It requires educational institutions to rethink their missions and to re-structure their courses, research priorities, community outreach, and campus operations. By preparing students – and the whole campus community – to be more adept decision makers in the increasingly complex, dynamic, and uncertain future that we all face, integrating sustainability into all of the major activities of educational institutions also presents a tremendous opportunity. (Glasser & Calder, 2005)

Date: _____

Name: _____ Position: _____

Institution: _____

CURRICULUM

1. Indicate the extent to which your institution offers courses which address topics related to sustainability. (Such topics could include globalization and sustainable development; environmental policy and management; environmental philosophy; nature writing; land ethics and sustainable agriculture; urban ecology and social justice; population, women and development; sustainable production and consumption; and many others.)
[Please circle the appropriate number on this and the following questions]:

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please list any courses you are aware of in which such topics are taught: _____

2. What courses do you regard as essential that are not being taught?

3. Indicate the extent to which sustainability is a focus woven into traditional disciplinary education in science, math, literature, history, the arts, etc.?

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please comment on how this is done: _____

4. Are undergraduates required to take a course on issues related to the environment or sustainability?

_____ No _____ Yes If yes, please describe: _____

5. The shift to sustainability requires critical thinking about the role of the institution in its social and ecological systems. Circle which of the following your institution (through individual, group or departmental efforts) attempts to teach its students:
- a - how the campus functions in the ecosystem (e.g. its sources of food, water, energy, as well as the endpoint of waste and garbage)
 - b - a sense of place: the natural features, biota, history and culture of the region
 - c - the institution's contribution to a sustainable economy and sustainable local communities
 - d - how the institution views and treats its employees (such as staff and faculty involvement in decision-making, their status and benefits)
 - e - the basic values and core assumptions that shape the content and methods of the academic disciplines

Comments: _____

RESEARCH AND SCHOLARSHIP

6. a) Estimate the amount of faculty research or scholarship being done in the various disciplines in the area of sustainability (for example, renewable energy, sustainable building design, ecological economics, indigenous wisdom and technologies, population and development, total environmental quality management, etc.).

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please list any faculty research or scholarly activities you are aware of related to sustainability:

- b) Estimate the amount of student research or scholarship being done in the various disciplines in the area of sustainability.

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please list any student research or scholarly activities you are aware of related to sustainability:

7. a) What percentage of faculty members teach or do research on sustainability issues?

_____ %

- b) What percentage of faculty members do you estimate would be interested in teaching and research on sustainability issues?

_____ %

8. Does your institution have established multidisciplinary and interdisciplinary structures (such as an institute or center) for research, education and policy development on sustainability issues?

_____ No _____ Yes If yes, please describe: _____

OPERATIONS

9. The chart below lists some of the operational practices emphasized by institutions moving toward sustainability. Please complete the chart, adding a check (✓) for prime project areas and for more information needed, and indicating the extent to which your institution has implemented these practices using the following scale: 0 – don't know; 1 – none; 2 – a little; 3 – quite a bit; 4 – a great deal.

<u>Practices</u>	Rate from 0 – 4	Prime project area	Need more info.	Please comment (and attach additional information)
<u>Building construction and renovation</u> based on green design principles (LEED, etc.)				
<u>Energy conservation</u> practices (including lighting, heating, cooling, ventilation, windows, etc.)				
<u>Waste reduction</u> practices (such as e-communications, double-sided copying, “waste free lunch” program, etc.)				
<u>Recycling</u> of solid waste (including paper, plastic, metal, e-waste, etc.)				
<u>Sustainable food</u> program (such as local, organic, and/or fair trade food)				
<u>Water conservation</u> practices (including efficient toilets, minimal irrigation, harvested rainwater, etc.)				

<u>Practices</u>	Rate from 0 – 4	Prime project area	Need more info.	Please comment (and attach additional information)
<u>Sustainable landscaping</u> (emphasizing Integrated Pest Management practices, native plants, biodiversity, minimizing lawn, etc.)				
<u>Sustainable transportation program</u> (including bicycle/pedestrian friendly systems, car pools, bus pass programs, biodiesel projects, etc.)				
<u>Green purchasing</u> from environmentally and socially responsible companies (products are non-toxic, water and energy conserving, etc.)				
<u>Reduction of toxic materials</u> and radioactive waste				
<u>Environmental or sustainability assessments / audits</u>				
Others (please specify):				

10. What do you see when you walk around campus that tells you this is an institution committed to sustainability?

11. To what extent are your operations practices integrated into the educational and scholarly activities of the school?

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please provide examples of this integration: _____

FACULTY AND STAFF DEVELOPMENT AND REWARDS

12. a) To what extent does criteria for hiring recognize faculty member contributions to sustainability (in scholarship, teaching, or campus and community activities)?

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Describe how such considerations are weighed in these decisions: _____

b) To what extent do criteria for tenure and promotion recognize faculty member contributions to sustainability?

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Describe how such considerations are weighed in these decisions: _____

13. To what extent do criteria for hiring and promotion recognize staff member contributions to sustainability (in regular responsibilities and campus and community activities)?

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Describe how such considerations are weighed in these decisions: _____

14. To what extent does your college or university provide significant faculty and staff development opportunities to enhance understanding, teaching and research in sustainability?

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please describe recent faculty or staff development opportunities in these areas: _____

OUTREACH AND SERVICE

15. A sustainable institution supports sustainable community development in its local area and in the surrounding region through projects and partnerships with primary and secondary schools, local governments and businesses. It may also seek international cooperation in solving global environmental justice and sustainability challenges through conferences, student/faculty exchanges, etc. To what extent is your institution involved in sustainable development work through formal partnerships or relationships at regional, national or international levels?

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Please describe: _____

16. What local sustainability related community service, service learning and/or internship programs exist at your institution?

STUDENT OPPORTUNITIES

17. Institutions committed to sustainability provide students with specific opportunities and settings. Please check (✓) which of the following are present on your campus:

_____ Student Environmental Center
_____ Ecology House or Sustainable Dormitory
_____ Orientation program(s) on sustainability for students
_____ Student Group(s) with an environmental or sustainability focus
_____ Other: _____

18. How does your college or university encourage students to consider sustainability issues when choosing a career path? [Please check (✓) below where applicable]

_____ job fairs and career counseling focused on work in sustainable enterprises

_____ pledge of social and environmental responsibility

_____ other: _____

19. To what extent are student groups across campus directly involved in sustainability initiatives?

0 (don't know) 1 (none) 2 (a little) 3 (quite a bit) 4 (a great deal)

Describe which groups are most involved and how: _____

ADMINISTRATION, MISSION AND PLANNING

20. To what extent do the formal written statements describing the purposes and objectives of the units listed below reflect a commitment to sustainability? (Such statements include policy and planning documents, annual reports, brochures, catalogues, etc.)

[Please rate using the following scale: 0 – don't know; 1 – none; 2 – a little; 3 – quite a bit; 4 – a great deal]

_____ the institution as a whole

_____ your college or division

_____ your unit/department

_____ other units within the institution (please define: _____)

Comments: _____

21. Institutions committed to sustainability create certain positions and committees, as well as engage in certain practices, which reinforce this commitment. Please check (✓) which of the following are present on your campus:

- _____ Environmental Council or Task Force
- _____ Environmental Coordinator- () student or () staff member
- _____ Dean of Environmental Programs or Director of Sustainability Programs
(a high level officer responsible for these activities)
- _____ Energy Officer
- _____ Green Purchasing Coordinator
- _____ Institutional Declaration of Commitment to Sustainability/Environmental
Responsibility
- _____ Orientation programs on sustainability for faculty and staff
- _____ Socially responsible investment practices and policies
- _____ Regularly conducted environmental audits
- _____ Other: _____

22. How is a concern for, and commitment to, sustainability given broad visibility on your campus (for example, with guest speakers, conferences, Earth Day celebrations, etc.)? Please describe key events that have happened in the past year:

23. a) Please describe the greatest strengths of your institution in terms of sustainability.

b) Please describe the greatest weaknesses of your institution in terms of sustainability.

24. a) Please describe the key factors that support the advancement of environmental and sustainability issues on your campus?

b) What factors do you think account for resistance to or lack of responsiveness to these concerns?

25. a) What “next steps” are planned at your college or university to strengthen your commitment to sustainability (such as an energy conservation initiative, a sustainable food program, a course requirement on sustainability, or a new strategic plan reflecting sustainability)?

b) What “next steps” do you feel ought to be taken?

Please add any additional comments below:

ÉPOQUE: ENVIRONMENTAL PORTFOLIO FOR QUALITY IN UNIVERSITY EDUCATION

01:

ENVIRONMENTAL PORTFOLIO: THE NEED FOR MODERNISED CURRICULA FOCUSING ON ENVIRONMENTAL ISSUES

PROJECT COORDINATOR

University of Ioannina (Greece)

PROJECT PARTNERS

Helsingin Yliopisto (Finland)

Hellenic Open University (Greece)

Universita degli Studi di Napoli Federico II (Italy)

BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH(Austria)

Projects in Motion (Malta)

Title of the Project	ÉPOQUE: Environmental Portfolio for Quality in University Education
Project number	2014-1-EL01-KA200-001373
Intellectual Output	1: ENVIRONMENTAL PORTFOLIO: THE NEED FOR MODERNISED CURRICULA FOCUSING ON ENVIRONMENTAL ISSUES
Developed by	BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH
Date:	

EXECUTIVE SUMMARY

- We conclude that the exemplary arrangements in Helsinki University's HENVI centre may be taken as a model for a swift and systematic reorientation of environmental issues at partner universities.
- A major concern is the generally observed lack of environmental issues in all partner universities' curricula of teacher training. Some successful measures have been made in Helsinki and Turku, however, more thorough actions are needed in all departments participating in this study.

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1 INTRODUCTION

1.1 TARGET GROUPS FOR HELSINKI REPORT

The University of Helsinki is an international academic community of 40,000 students and staff members. It operates on four campuses in Helsinki and at 17 other locations. It was acknowledged that Helsinki University as it is too large unit to analyse and therefore we narrowed the scope of the analysis to the HENVI-centre of Helsinki University and to academic teachers of department of teacher education of four Finnish Universities. Department of Teacher Education at Helsinki University was selected because there is close co-operation between Department of Teacher Education and HENVI centre and some of lecturers and professors of the Department are teaching also in HENVI centre courses. Four other Finnish universities were selected based on their availability on that time the research was carried out.

2 ENVIRONMENTAL STUDIES: AN INVESTIGATION IN THE CURRICULA OF THE UNIVERSITIES

Helsinki University Centre for Environment HENVI was founded in the spring 2008 when Helsinki University Environmental Research Centre HERC and the network of environmental studies merged. HENVI is an umbrella organisation within the university. It concentrates on environmental research and teaching. In addition HENVI organises seminars, science days and interactive events.

HENVI's goal is to be an active actor in a society. HENVI actively follows and promotes topical environmental research and raises important issues to public awareness. HENVI also develops new forms of fundraising. HENVI collaborates with environmental administration, research institutes and other interest groups both nationally and internationally.

HENVI employs a coordinator of environmental research and a university lecturer in environmental studies. HENVI is led by a steering committee accompanied by the environmental scientific board. In addition HENVI has an advisory board representing interest groups and partners. Altogether 40 researchers and teachers take part in the functions of HENVI.

2.1 ENVIRONMENTAL TEACHING

2.1.1 Environmental Courses in English 2014-15

HENVI coordinates and arranges minor subject studies called Environmental multidisciplinary study module. The study module includes the following courses taught in English. The courses are open to all students.

Campus	Period	Course	Cr.
C		Global Environmental Challenges	6
C	4	Urban Environmental Movements	5
K		Environmental Problems, Physics and Chemistry Not given in 2014-15	7
V	4	Environmental GIS	5
V	2	Multidisciplinary environmental teaching in DENVI seminar Urban sustainability - climate change and ecosystem services	1

V	4	Environmental special course and workshop at HENVI:	4
V	4	Horticulture for human well-being	5
V	2	Multidisciplinary environmental teaching in HENVI seminars	1
V	1	Participatory methods in sustainable management of natural resources	5
V	2	Plant Production in the Tropics	5
V		Sustainable agri-food systems Not given in 2014-15	3-5
V	2	Sustainable forest ecosystem management	4
V	4	Sustainable Agricultural and Rural Development	3
V	4	Tropical forest and climate change	5

Abbreviations

C: City Centre Campus

K: Kumpula Campus

V: Viikki Campus

Period: Timing of the course according to the teaching periods at UH. The University of Helsinki uses a system of teaching periods. The academic year is divided into four seven-week teaching periods – each beginning and ending simultaneously throughout the University. There is a week's break between each of the periods. Teaching organized in the summer does not belong to the teaching periods. Examinations and special courses may, however, be arranged outside the teaching periods.

2.1.2 Environmental special course and workshop at HENVI , 4 credits

HENVI organises annually an environmental special course and a workshop, which are linked to the theme of the HENVI Science Day. We invite the speakers of the Science Day to act as visiting teachers of the workshop. Next course will be organised in 4th teaching period in spring 2015. The theme of the workshop is Circular Economy. The aim of the workshop is to help students with different backgrounds (i.e., natural sciences, humanities or social sciences) to deepen their understanding of issues dealing with environmental problems. We aim at concentrating on subjects represented by those invited speakers of the HENVI Science Day who act as workshop teachers.

2.1.3 HENVI Seminar Series

Students are invited to participate in HENVI Seminar Series. In connection to the seminars students can gain 1 ECTS credit by reviewing and writing summaries of selected presentations. The seminar will be

merged with the seminar organised by DENVI Doctoral Programme. The past HENVI seminar series titles have been:

- The Arctic Environment in the Changing World (spring 2014)
- Managing the Risks - Managing the Environment (autumn 2013)
- Green economy (spring 2013)
- Controlling Climate Change (autumn 2012)
- Managing chemicals in our environment (spring 2012)
- Food and Environment (Autumn 2011)
- Design for Sustainability (Spring 2011)
- HENVI funded research projects 2008-2001(Autumn 2010)
- Environment and Development (Spring 2010)
- Environment, Media and Arts (Autumn 2009)
- The studies carried out in HENVI's research programme Global Environmental Change were introduced. Seminar programme and the presentations (Spring 2009)
- New projects funded by HENVI presented their research. The programme and presentations (Autumn 2008)
- Multidisciplinary research on the Baltic Sea (Spring 2008)

Students can gain one credit by participating in the HENVI Seminar Series

2.1.4 Special seminars

HENVI and WW Finland organized a joint seminar 2012. The topic of the seminar was Green Economy and Biodiversity. The objective of the seminar was to find out connections and complementary interactions between green economy and global biodiversity protection. The panel discussion highlighted possibilities of better management of biodiversity with greening economy.

Year 2011 HENVI organized a final seminar where results from the Global Environmental Change Research Program were introduced by the research program researchers. Seminar was placed in new Environment House at Viikki –campus. Also, HENVI organized together with Department of Political and Economic Studies, Development Communication (Ministry for Foreign Affairs of Finland), Development Studies and Research Network (HU-DEVNET) and Siemenpuu Foundation. The topic of the seminar was “Footprints in Forest. Does Forestry Assistance Matter?”

On September 2009 HENVI organized in collaboration with US Science Academy, Academy of Sciences of IR Iran and Hellenberg Internation Ltd. an environmental workshop: " Towards New Solutions in Managing Environmental Crisis" at Haikko, Porvoo.

Several other seminars have been organized, among others, at Lahti and Helsinki.

2.2 ENVIRONMENTAL TEACHING

HENVI coordinates and arranges minor subject studies called Environmental multidisciplinary study module. The study module includes the following courses taught in English. The courses are open to all students.

Environmental and Natural Resources MENVI

The international and interdisciplinary Master's Degree Programme in Environment and Natural Resources (MENVI) aims to educate environmental experts with outstanding scientific skills. The research and problem based education provides the student with an excellent basis for a career in environmental authorities, industries, as well as in research.

Multidisciplinary Studies on Urban Environmental Issues MURE

The goal of the Master's Degree Programme in Multidisciplinary Studies on Urban Environmental Issues (MURE) is to respond, in part, to challenges brought about by urbanisation and environmental awareness. The programme pursues to understand and mitigate environmental problems due to urbanisation, such as human-induced impacts on the urban biota, changes to the hydrology and biogeochemistry of soil, terrestrial and aquatic ecosystems, as well as their socioeconomic couplings and feedbacks. The emphasis of the programme is on urban environmental ecology, addressing terrestrial, soil and aquatic ecology as well as ecotoxicology and environmental chemistry. The major subject study of the programme is ecological and environmental sciences. The programme is organised by the Department of Environmental Sciences, located at university campuses in the cities of Lahti and Helsinki.

2.3 DENVI – DOCTORAL PROGRAMME IN INTERDISCIPLINARY ENVIRONMENTAL SCIENCES

DENVi doctoral programme started in January 2014 and is coordinated by the Helsinki University Centre for Environment, HENVi. DENVi belongs to the Doctoral School in Environmental, Food and Biological Sciences (YEB) and is funded by the University of Helsinki. There are approximately 100 PhD students in DENVi.

The central themes of DENVi are environmental change and sustainable development. The program gathers together the essential fields of natural and social sciences, law and humanities that are needed to study the complexity of environmental change and pathways to sustainable development. DENVi aims to study environmental change from biological processes to environmental governance – seeking solutions for a more sustainable future. DENVi considers environment broadly from natural habitats to built environments.

The aim of the program is to provide skills for interdisciplinary research and interaction, which are needed to solve complex environmental problems. However, the starting point for each student's interdisciplinary studies is expertise in the student's own field. Doctoral education in the program bases on courses from the student's own field as well as specific interdisciplinary (IDS) courses, in which the student's own research is put into a wider interdisciplinary research approach. The central themes in DENVi are climate change, land use, and the Baltic Sea and its catchment area. See the figure below for the idea of DENVi.

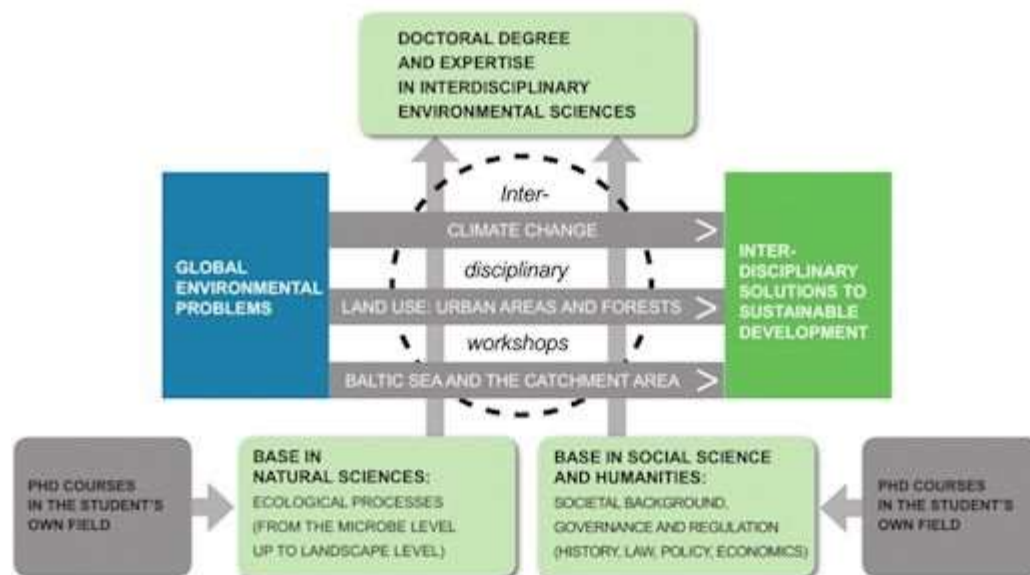


Figure 1. The themes and the idea of DENVI

2.3.1 DENVI courses

Scientific writing in English (2 ECTS)

This course aims to improve scientific writing skills in English. It examines the important characteristics of scientific writing, common problems with grammar, punctuation and vocabulary, and takes a step-by-step approach to the writing process. Article submission and both interpreting and responding to comments from referees are also considered. Writing skills will be developed by combining theoretical background with practical exercises in which participants will prepare and revise their own scientific text.

Data, graphics, and programming in R (2 credits)

The course will provide basic knowledge and abilities for using R as a work environment. To this end, the course will give an overview of tools offered by R, e.g. handling of matrices and data-sets, graphical illustrations, statistical tests and analyses, and programming in R. The aim is that in the end of the course everyone has reached a basic acquaintance with R, and is able to continue working with it and search for help for more advanced R features. The course is highly recommended for all planning to take YEB's 'Data exploration, regression, GLM & GAM' in March. Basic use of R is not taught on that course and participants are expected to be familiar with R.

Research ethics (3 credits)

This introductory course provides young academics knowledge and skills for the responsible conduct of research. The course will also help the participants engage in analysis of social and ethical perspectives of research. This will equip participants with skills to manage their research agenda in the wider social context. The course is built using independent e-learning as well as collaborative learning workshops. The course content is based on the belief that a competent academic knows and complies with guidelines for responsible conduct of research. He/she can also discuss and justify ethical and social

questions arising from his/her research, and observe and identify ethical challenges in personal research agenda as well as in research as a social activity.

Conference presentation in English (2 credits)

This course focuses on how to confidently and effectively deliver a conference presentation in English, examining the organization, structure and language of presentations and the use of visual materials. Participants will plan, coordinate and stage a small conference in addition to preparing a conference abstract and delivering a presentation themselves. Other forms of conference presentation, including posters and workshops, will also be considered. Course material will be distributed during the course.

Data exploration, regression, GLM & GAM (2 credits)

An important tool used in statistics is linear regression. Various linear regression topics (interaction, model selection & validation, prediction) will be explained from a biological point of view. We show how GLM can be used to analyse count data, presence-absence data and proportional data. Sometimes, parametric models (linear regression, GLM) do not quite fit the data, and in such cases GAM (a smoothing technique) can be used.

Topics:

- Data exploration (dealing with outliers, transformations, collinearity)
- Regression (model selection, validation, interpretation)
- Generalised linear modelling for count data (Poisson and negative binomial) and binary data (binomial)
- Generalised additive modelling for continuous, count and binary data

What you need to know to be effective in writing and publishing your work (2 credits)

This course capitalizes on Dr. Hochberg's experience as Editor in Chief of the journal Ecology Letters for over a decade to provide PhD students with unique insights into the publishing world. Understanding the many facets of publishing will help their development within the scientific community, and provide the tools to communicate their science more effectively. In addition to the University of Helsinki, this course is regularly taught at the following universities: Bern, Göttingen, Groningen, Lausanne, Louvain, Montpellier, Neuchâtel, Santiago, Stockholm, Umeå, and Zurich.

2.3.2 DENVI seminar series

The purpose of the DENVI seminar series is to create a friendly academic environment in which PhD students can present their research proposals, advancements, field results and findings, and benefit from peer criticism, as well as learn from invited keynote speakers. The seminar offers an opportunity for students to improve their presentation skills, to get feedback from colleagues, and to share academic questions within an interdisciplinary framework to further strengthen the PhD community. Each seminar will consist of a keynote lecture given by a leading scholar in a particular field, followed by student presentations. The seminar is arranged twice in the spring term and twice in the autumn term, ca. three months apart.

DENVI seminar series is organized by DENVI students and the organisational responsibility will be circulated among the students. The first seminar is organised by PhD students Anna Chrysafi and Anna Salomaa. Students who would like to join the organising team of the next seminar should contact Anna Chrysafi, Anna Salomaa or Sirkku Juhola.

2.3.3 Multidisciplinary environmental teaching in DENVI seminars, 1 credit

Responsible unit is DENVI – Doctoral programme in interdisciplinary environmental sciences and HENVI Helsinki University Centre for Environment. DENVI arranges scientific seminars on multidisciplinary environmental research. The seminars function both as events presenting up-to-date environmental research and as an opportunity for doctoral students to present and discuss their research plans and preliminary results.

2.4 EVENTS AND INTERACTION

In addition to HENVI and DENVI teaching, HENVI Centre organizes several science events of which are open for public audience.

2.4.1 HENVI Science Day

HENVI Science Day is organised every spring and it has a topical environmental theme. In addition to underlining topical environmental themes, HENVI Science Day serves as a platform for environmental scientists to present their latest research findings and provides a discussion forum for researchers, policy makers and other interest groups. HENVI Science Days 2015 will be held on April 21st 2015 with the topic "Towards Circular Economy - Designing a closed food cycle". Please see the program in the event pages!

The previous themes of the Science Days have been:

- Past and Future challenges in the Baltic Sea (2014)
- Can forest management change climate? (2013)
- Rethinking urban sustainability – Ecosystem services as treasures for the future (2012)
- Interdisciplinarity in environmental research and teaching - Why does society need environmental research? (2011)
- Man-Made Substances and Environment - Multidisciplinary Research on Risks and Future Possibilities (2010).
- Water Use and Climate Change (2009)
- Interactions Between Land Use and Climate (2008)
- New Environmental Friendly Energy - Research Challenges (2007)
- Arctic in the Changing Climate - Past, Present and Future (2006)
- Managing the Environment - Managing the Society (2005)
- Interdisciplinarity in Environmental Research (2004)

2.4.2 Baltic Sea activities

University of Helsinki is the biggest and most multidisciplinary centre of Baltic Sea research and teaching. Nearly all Faculties offer Baltic Sea related research and teaching (Baltic Sea -related research at the university, in Finnish). HENVI aims at coordinating the Baltic Sea actions of the university. A scientific planning group has been established. The group consists of ten professors from various scientific backgrounds and HENVI coordinates this group. Baltic Sea is also one of the themes of the university's fundraising campaign.

Turku and Helsinki challenged University of Helsinki to take part into cities challenge campaign and university took the challenge in 2007. Challenge for the university means two things:

- Decrease the amount of scattered loading.
- Establish a new Baltic Sea -professorship and take Baltic Sea into account in research projects. University has operated according to the challenge and appointed Jussi Lankoski to a new Baltic Sea Professor.

University made a commitment for the Baltic Action Summit in year 2010 and promised to develop multidisciplinary Baltic Sea related research and teaching at the university.

2.4.3 Global Change

One of the greatest challenges of World Design Capital is to adapt global climate change. Science helps us to find solutions to local and global environmental problems. HENVI together with Finnish Museum of Natural History highlight the top- scientific research on the wide global and local environmental problems as well as the innovative solutions to solve them. The project themes are forests, climate change, Baltic Sea and urban ecosystem services.

The core idea in this project is the dialogue between the citizens and decision-makers through the new innovative methods by using environmental and bio -art as media in science communication. Enhancing the use of results of environmental research in societal discussion and decision making from our society and thus, can be considered as design for the future.

2.4.4 Art & Henvi brings scientists and artist to collaborate

Art&HENVI project showed that artists and scientists can work together to translate factual information into actual and emotional experiences to offer new ways to understand new realities. These experiences can create public awareness and transform it into a culture of responsibility to become a cultural asset which benefits the society at large.

The recognized benefits of interdisciplinary work led as well to an increasing development of collaborations between artists and scientists especially in the area of environmental research, biology and biotechnology. These collaborations are motivated by a mutual interest and concern towards the transformations of our everyday life and the environment we live in and depend on. Art and science are both practices based on intellectual creativity they shape our experience, perception and understanding of the world.

The Finnish Society of Bioart (Suomen Biotatteen seura ry) together with Helsinki University Centre For Environment HENVI created the project Art & HENVI to facilitate and interdisciplinary project between

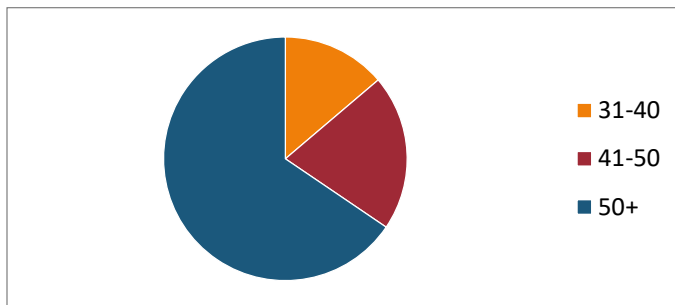
professional artists and scientists in three HENVI research projects (ENSURE, HENVI-Forest and MULTIDOM).

The result of the collaboration was an artwork which was first presented during the Helsinki University program for the World Design Capital Helsinki 2012 at the Think Corner.

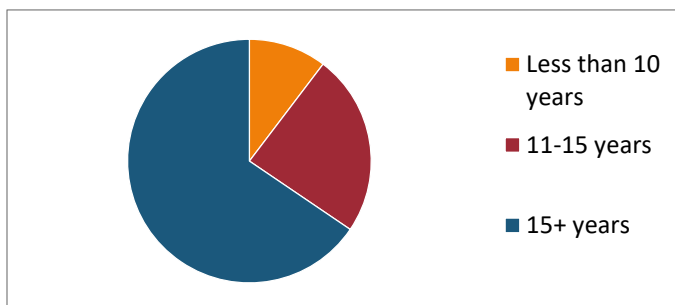
3 THE ROLE AND POSITION OF THE UNIVERSITY PROFESSORS

HENVI-centre provides an exemplary model how to incorporate the environmental education to work of all faculties and departments. However, we were also interested to find out how these environmental issues appear in different courses of department of teacher education, and what are lecturers' and professors' views about these issues? Below there is summary of the findings of the questionnaire.

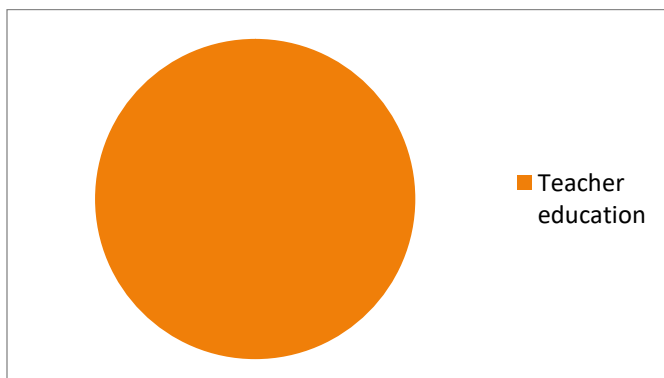
Question 3: Please, indicate the age group you belong to by selecting the appropriate answer

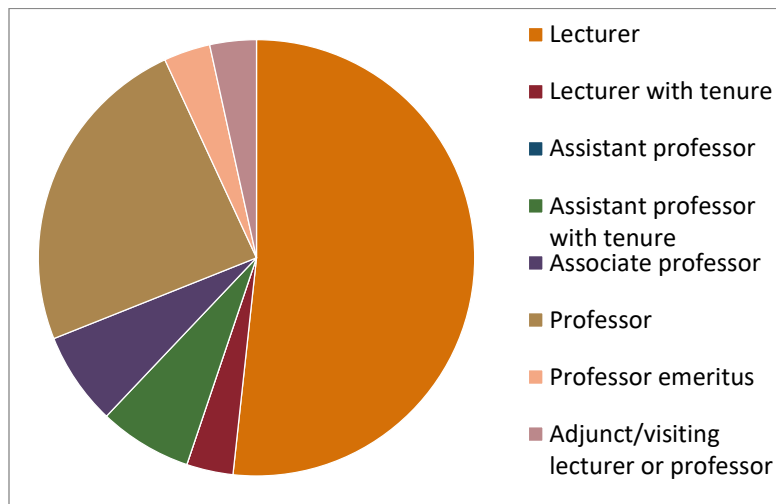


Question 4: How many years have you been teaching at the University? Please, select the appropriate answer.

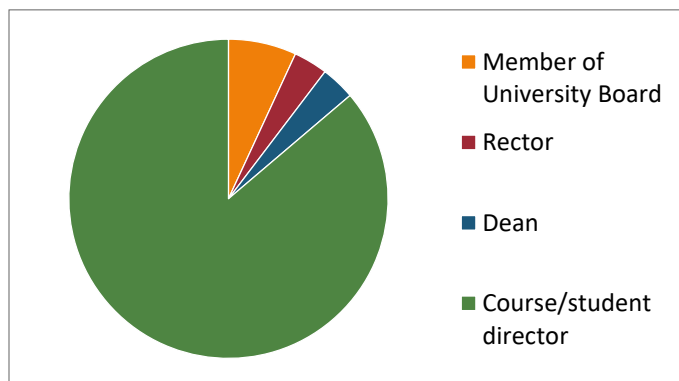


Question 5: Please, indicate the department of the University you are currently teaching in



Question 6: Please indicate which your current position is


In few cases it was unclear the position of the respondent. One respondent categorized herself as associate professor, but made a comment to free text field that her position is graduate student. An another case was similar and the respondent categorized himself/herself as assistant professor with tenure, but made comment to free text field that his/her position is university researcher. Therefore, there is a small error in the pie chart presented above.

Question 7: Please indicate your current position is


The respondents made following comments to their position in the university administration

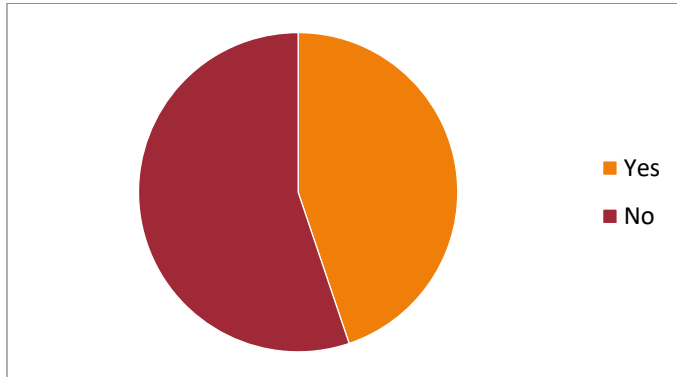
- Responsible of the discipline up to PhD-level
- responsible of music didactics
- No position
- vice director of class teacher education programme
- textile craft course director
- Professor in Early Childhood Education; leading this department

In few cases it was not clear to the reader what the respondent mentioned about his/her comments, such as:

- Science education course
- Minority studies of early years education

Also one respondent replied that her answer was wrong, but she can't remove it and another one commented that they don't have specific positions as indicated in the questionnaire.

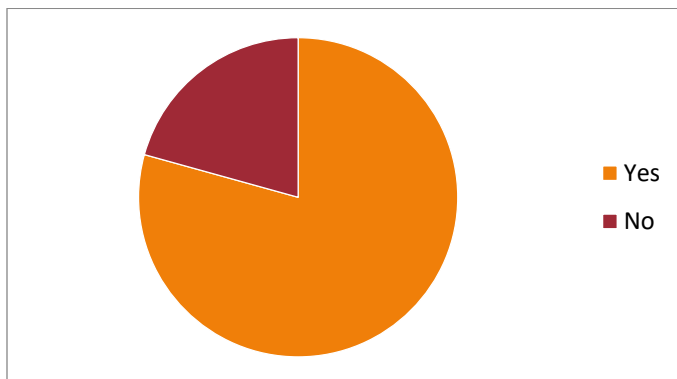
Question 8: Please indicate whether you are a member of University committee(s) that deal with academic / educational / research / student issues



Some respondents commented their role in the university administration in the following manner

- Member of research committee of department
- Member of the Committee of Degrees and Studies, Faculty of Behavioral Sciences
- I have served all levels up to the faculty dean.. and university Colloquium
- Board of doctoral school
- Faculty
- Student selection process
- Member of board of Jyväskylä University Science Museum
- University Colloquium
- a member of doctoral school
- Committees for developing research and for recruitment, Teams for curriculum development
- Member of the board of department

Question 9: Have you ever been involved in teaching an environmentally related topic?

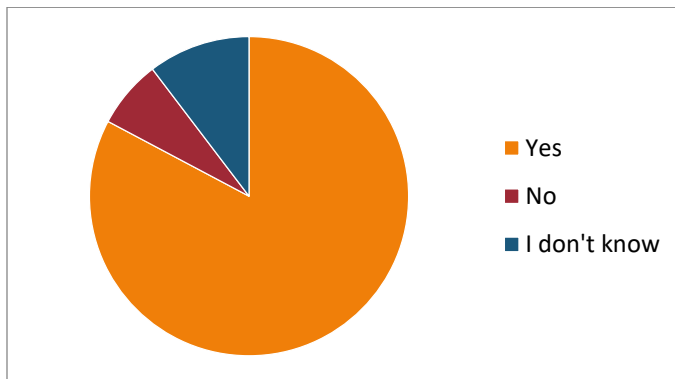


Few comments were added to this question if they had been involved in teaching an environmentally related topic:

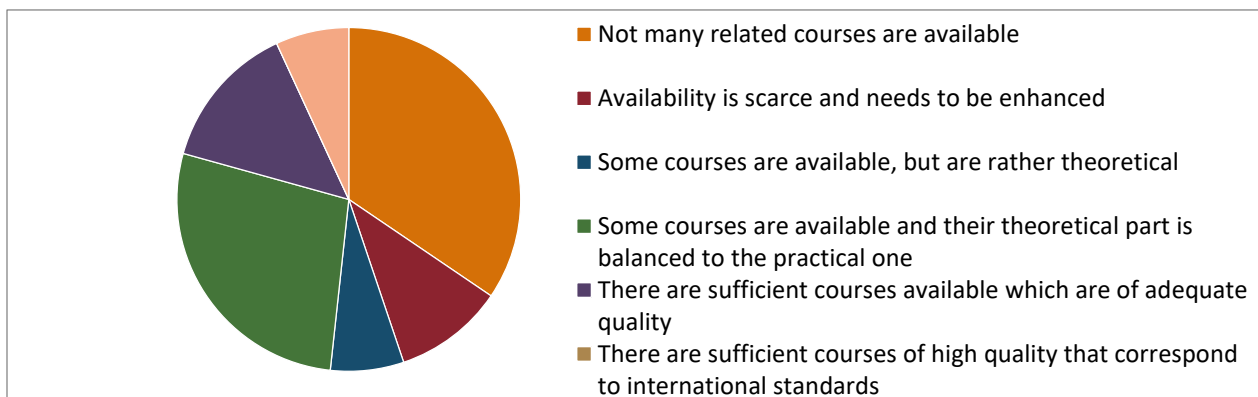
- Textile materials, consuming and sustainable development
- Environment & Ecology is VERY MUCH part of my teaching and research
- Science education

- Physical education
- e.g. energy production and consumption
- Health education, self-management of resources and basic principles of environment
- science education
- Nature studies for kindergarten teacher students. Leading planning of curricula.

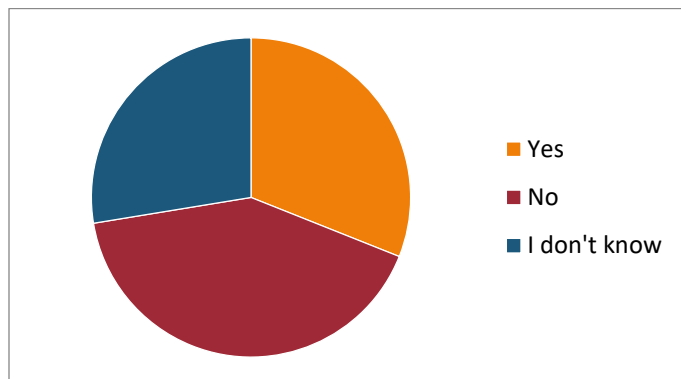
Question 10: Do you believe that the labor market is now becoming more sensitive in environmental issues?



Question 11: How do you rate the incorporation of environmental issues (as a horizontal discipline) in your courses?



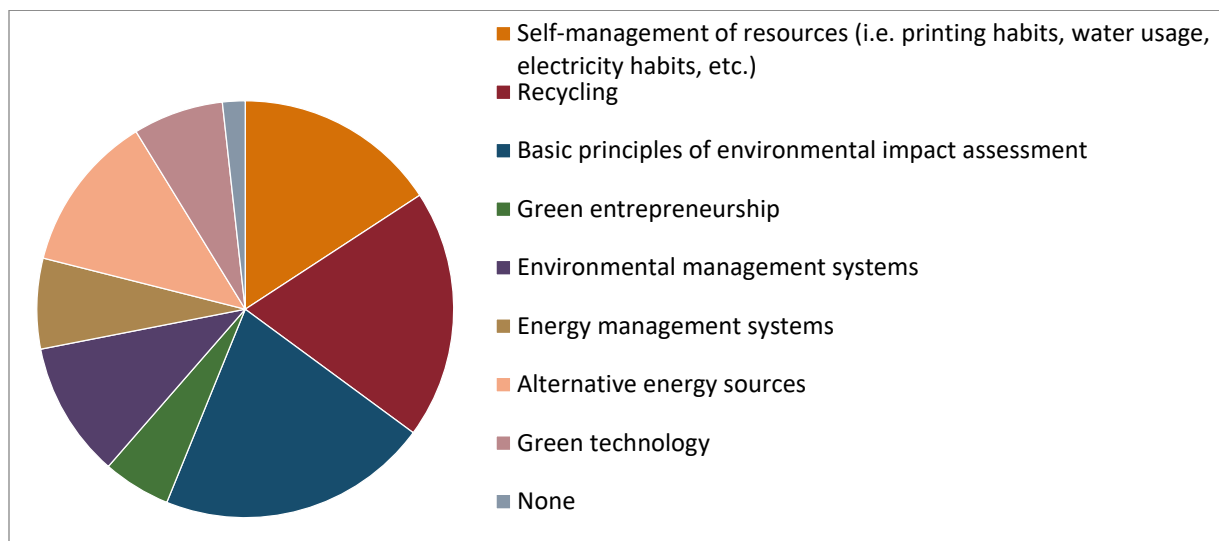
Question 12. Do you think that the incorporation of environmental topics would significantly enhance the employability of your students after graduation?



A few comments were made to this question

- Self-management of resources
- Human, cultural and consumer/consumption issues must be integrated
- recycling
- In every case in Finland kindergarten teachers are surely needed and they will get work places.

Question 13: Which are the topics you think it is essential to be incorporated in the University curricula



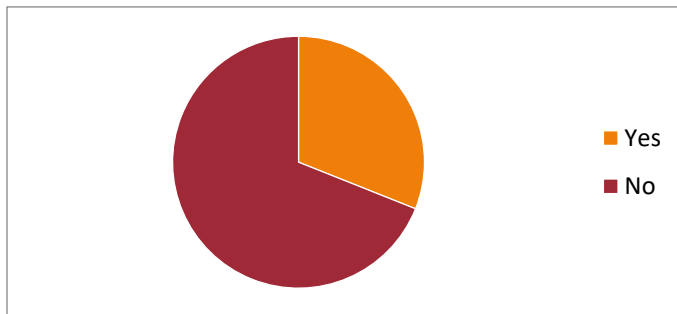
Question 14: You may use the space below to suggest more topics than the ones listed above.

The respondents made quite many suggestions of topics that are essential to be incorporated in the university curricula:

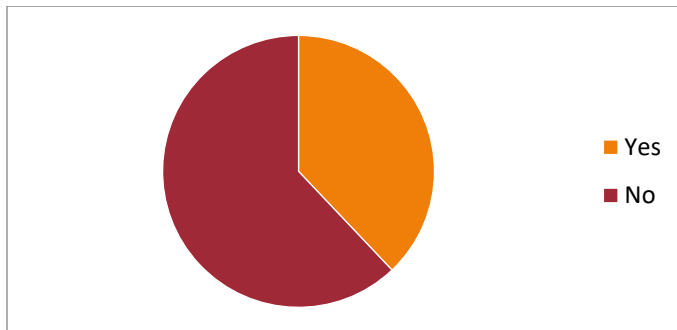
- green consumption
- Please visit the webpages as www.perlprojects.org www.ifhe.org
- Understand system nature of environmental issues. They are cultural, ecological, economical.... As well as understanding of behaviour change
- Bioenergy resources

- anthropological and ethical questions about humanness and relations between humans and non-humans (wider concepts of justice, democracy, maintenance and promotion of life etc.)
- This questionnaire is handling only natural science. Sustainable principles must be incorporated also into every discipline and into every subjects and must create new sustainable theories for children education and for teacher education, like I have created (Ulla Härkönen)
- This is depended of the main subject of the student. Environmental awareness and participation is most important for everybody.
- I would like to say that the important topics depend on the field of studies. All above mentioned are essential but everything depends on the field in which you are working.

Question 15: Would you be interested in participating in a blended course for where you will be teaching the topics mentioned above?



Question 16: Would you like to be informed about the upcoming project activities?



Clearly, less than half of the respondents were interested to know more about the project or the project results.

4 ENVIRONMENTAL TOPICS IN TEACHER EDUCATION

The statute for competence of teacher for schools is determined in the Finnish law. The basic degree for all teachers is Master level degree (300 ECTS) and it is an advanced degree equivalent to the Master's degree in the British and American university systems. The average time to complete the degree is five years. Besides this all teachers must have transacted teachers' pedagogical studies. The training of prospective teachers in Finland takes place at the universities (teachers for pre-primary, primary and secondary schools) and at the vocational teacher education colleges of polytechnics (teachers for vocational subjects). Specialization into teacher training programme requires passing of an aptitude test.

Teachers for primary level grades 1–6 (age 7–12) specialise themselves in education and transact as Masters in Education. The studies include subject studies in all disciplines in the comprehensive school curriculum altogether 60 ECTS, of which few credits are allocated to teaching chemistry at primary level. In addition to this they can specialise in one or two subjects by carrying out further studies at least 25 ECTS in these subjects. The proportion of preschool or class teachers who have specialised in mathematics or one of the natural sciences (in practice usually biology) was in University of Helsinki about 10% year 2006. However, only a small minority of the students will carry out 60 ECTS in mathematics or in science, which is the minimum amount of studies appreciated as minor level studies in particular discipline.

Teachers for lower secondary level grades 7–9 (age 13–15) and upper secondary levels (age 16–19) specialise in particular subject going to teach at school. The subject teachers have studied subjects they teach at the respective departments at the university. They have taken their master's degree in their major subject, studying this subject about 160 ECTS. In addition, they have carried out minor subject studies 60 ECTS for example in physics and teachers pedagogical studies 60 ECTS at the department of teacher education.

Class teachers take care of grades 1–6. They are responsible for the whole age group and they teach all the subjects and guide the whole personal development of the pupils. Class teachers are mainly female. Subject teachers teach in grades 7–9 and upper secondary level, and they usually teach one or two subjects. The teachers of mathematics, physics and chemistry form an exception so that they mainly teach three subjects (mathematics, physics and chemistry) and they often also take care of teaching of information technology as an optional subject. Especially during the seventh grade the same teacher teaches both physics and chemistry, since these subjects alternate during the school year. The proportion of male teachers in mathematics, physics and chemistry is about 30%. The average age of mathematics, physics and chemistry teachers is about 46 (according to the records of the association of mathematics, physics and chemistry teachers MAOL 2006).

The student teachers carry out teaching practise in particular teacher training schools, which, unique in Europe, belong to the faculties of behavioural sciences of Finnish universities. Due to their history the teacher training schools are also called normal schools, as at one time their primary duty was considered to be setting the norm, or giving the model, for good teaching. As the teacher training schools are administrative part of the faculties of education, matters concerning open vacancies are handled by the

administrative bodies of the universities. In all other respects these schools enjoy total independence. Their operations are governed by the relevant legislation on the teacher training schools and regulations issued directly by the Ministry of Education.

We targeted our analysis of curriculum class teacher education programme in the following five universities. These universities were selected based on their availability on that time and quantitatively the most of Finnish class teachers are transacted from these universities

- University of Eastern Finland
- University of Helsinki
- University of Jyväskylä
- University of Tampere
- University of Turku

Firstly, there is no one single common curriculum of teacher education to all universities in Finland. On the contrary, each university has legitimate privilege to define their own curriculum and study plans. In some universities curriculum is comprised of two documents: the one that sets the framework for teaching and learning and the other that sets the framework for study plan, ie. how and where the teaching is carried out in practice. In some other universities the curriculum is one single document accessible via internet. Nevertheless, none of these documents were referable for example to Finnish National Core Curriculum for Comprehensive School and therefore it is not fully accurate to regard these university level documents as Curricula. There university level documents remind on the one hand national curriculum, but on the other hand syllabus and study plans. From this point onwards we refer to these university level documents, one or many, as the curriculum of the particular institution even though we acknowledge the limitation and robustness of the decision of this kind.

We made preliminary analysis to these university curricula accessed in pdf form or in electronic form. The analysis showed that typically the environmental topics were present in the courses of didactics of natural sciences, such as, biology didactics course. In the University of Eastern Finland include sustainable development in nutrition and food systems in their curriculum of master of education degree programme and in the courses of subject specific didactics (typically biology and geography). In the University of Jyväskylä the principles of sustainable future are introduced in the course of craft education target for master of education degree programme. Curriculum of teacher education degree programme in Tampere University does not introduce sustainable future in any courses. In the University of Turku, the environmental education and principles of sustainable future are introduced in few courses of subject specific didactics.

In some cases that environmental issues were mentioned also in the general level descriptions of the department. For example, the teacher education curriculum of department of teacher education in the University of Helsinki sets the sustainable future as one of core views of all education in the department. Nevertheless, as conclusion we could find only few mentions of sustainable future in the department or faculty level curricula documents of these five Finnish universities. The topics are typically integrated to the courses or natural science didactics and more precisely to courses of didactic of environmental education, geography education, biology education, chemistry education and physics education. However, we acknowledge that analysing the written curriculum does not mean that the lecturers and professors do not introduce these issues in their courses, but what makes this alarming is that, clearly, environmental issues does not have similar emphasis on departments' curricula as for example multicultural issues or need for special education issues has.

ÉPOQUE: ENVIRONMENTAL PORTFOLIO FOR QUALITY IN UNIVERSITY EDUCATION

O1: ITALIAN REPORT

ENVIRONMENTAL PORTFOLIO: THE NEED FOR MODERNISED CURRICULA FOCUSING ON ENVIRONMENTAL ISSUES

PROJECT COORDINATOR

University of Ioannina (Greece)

PROJECT PARTNERS

Helsingin Yliopisto (Finland)

Hellenic Open University (Greece)

Università degli Studi di Napoli Federico II (Italy)

BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH(Austria)

Projects in Motion (Malta)

Title of the Project	ÉPOQUE: Environmental Portfolio for Quality in University Education
Project number	2014-1-EL01-KA200-001373
Intellectual Output	1: ENVIRONMENTAL PORTFOLIO: THE NEED FOR MODERNISED CURRICULA FOCUSING ON ENVIRONMENTAL ISSUES
Developed by	Università degli Studi di Napoli Federico II (Italy)
Date:	20-01-2014

LIST OF ABBREVIATIONS

UNINA - University of Naples Federico II, Italy

UNINA2 - Second University of Naples, Italy

UNIMIB - University of Milan Bicocca, Italy

CIREA - Italian Centre for Environmental Research and Education, University of Parma, Italy

EXECUTIVE SUMMARY

The aim of this report is to present the results of both a desk and field research conducted in Italian universities. The desk research investigated the actual presence of environment-related topics in the Italian Universities' syllabuses. The field research investigated Italian University Professors' perceptions about this same issue together with their views about future perspectives. The data sources for this report include the official statistics on Italian universities made available by the Ministry of Education, answers to a questionnaire developed at the ÉPOQUE Consortium level and interviews with some of the Professors and researchers included in the target group of the survey. The report ends with the outline of some general recommendations based on the data we collected which will inform the development of the further ÉPOQUE actions.

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1 INTRODUCTION

1.1 PROJECT OBJECTIVE

The objective of this analysis is to bring out the gaps in the contemporary University curricula in terms of the knowledge and skills that are fostered through them, while on the other hand highlight the importance for the inclusion of Environmental issues, across the different disciplines. In specific, the partners will aim at identifying the trends in the curricula of the participating countries and highlight the importance for including issues related to the environment, the sustainable usage of natural resources and especially how energy can be managed. In parallel, the partners will also identify the gaps in the curricula of adult education, as incorporating the aforementioned issues in adult education will not only enhance the skills and knowledge of adults, but it will also improve their position in the labour market.

1.2 TARGET GROUPS

This analysis targets Professors in Italian universities and researchers whose interests are focussed on environment-related topics.

1.3 SCOPE OF THIS DOCUMENT

The recommendations of the study will provide the basis for the ÉPOQUE partners to develop the courses described in the project Intellectual Output 2, based on the actual needs of the target groups they have identified.

1.4 METHODOLOGICAL FRAMEWORK

The sample we chose for the field research includes 10 university professors working at the University of Naples Federico II (UNINA) in different departments of the scientific and technologic area, 6 professors working at the second university of

Naples (UNINA2) who are involved in the activities of the bachelor degree course in environmental sciences, 2 professors working at the university of Milano Bicocca (UNIMIB) (both involved in the teaching activities of the training courses devoted to the initial formation of primary school teachers), the Scientific Coordinator of the Italian Centre for Environmental Research and Education (CIREA, based at the University of Parma <http://www2.bioscienze.unipr.it/cirea>) and 1 professor in science education from Turkey who is working as a visiting researcher at UNINA. We also had short interviews with some of the people involved in this small survey in order to deepen a bit the information gathered with the questionnaires and to collect useful information for the desk research. In one case, i.e. for Antonella Bachiorri (scientific coordinator of CIREA), we had a more detailed conversation which was very useful also to orient our reflections on the present situation and possible developments of environmental curricula in Italian universities.

While there are lots of environmental sciences degree programs available on the national territory, many universities does not offer specific degree courses but a wide spread of environment-oriented curricula within degree courses that are included in the science and technology area. This is the case for our university and the 10 people in the sample we selected at UNINA are, in this sense, representative of the Italian situation. We also chose these 10 people in order to have a local sample which is as mixed as possible in terms of age ranges, teaching experience and research interests and we chose both people who have been involved in teaching environmental-related subjects and people who have been not.

The other big group in our sample is made of people based at UNINA2 and who are all involved in the teaching activities of the local environmental sciences degree course. This covers the other typology of Italian universities in terms of environmental-related curriculum offer.

We decided to include two people working at UNIMIB, which is of course not statistically relevant as a representative of northern Italy but still introduce some more variety in the sample. The people chosen at UNIMIB are one senior researcher with long-term experience in science teacher training and one researcher who is specifically interested in environmental sustainability.

Finally we decided to administer the questionnaire to a visiting researcher from the University of Marmara in Turkey in order to enrich the sample with a point a view coming from a very different cultural context.

For the desk research we used official data from the Ministry of education and research together with the hints coming from the interviewees.

2 ENVIRONMENTAL STUDIES: AN INVESTIGATION IN THE CURRICULA OF THE UNIVERSITIES

According to the data made available by the Italian Ministry of Education and Research (which are a bit out-of-date but still give a representative picture of the national situation because no dramatic changes occurred during the last years) around 10000 students on the whole national territory are involved in bachelor/master degree programs focused on environment related issues.

For what concerns bachelor degree programs, environment related curricula are offered by more than 20 universities that are well diffused on the national territory. Most of these programs have a general approach to environmental sciences, while there are few of them which are more specifically oriented to topics such as biotechnologies, technologies for the environment, preservation and recovery of natural environments, natural risk management. The typical bachelor degree program in environmental sciences includes basic disciplinary courses (mathematics, physics, chemistry, biology) together with more specific courses with topics ranging from earth science, to ecology, to environmental technologies and engineering, to environmental jurisprudence.

For a more detailed description of the these bachelor degree programs we present below the environmental sciences standard curriculum offered by the university of Bologna, which is a good representation of those offered by other Italian universities:

Environmental science @ University of Bologna Alma Mater

Year 1

Animal biology; Vegetal biology; Environmental science informatics; Mathematics 1; Physics; Geology and Lithology; Environmental microbiology; Chemistry.

Year 2

Organic chemistry; Ecology; Mathematics 2; Seismology and inner-earth physics; Functional and molecular biology; Physiology; Biochemistry; Analytical chemistry; Physics of energy production

Year 3

Physical chemistry; Geochemistry; Structure and dynamics of atmosphere and oceans; Environment-friendly development; Eco-compatibility assessment; Alteration and conservation of ecosystems; Geochemical thermodynamics; Environmental jurisprudence.

Free-choice courses (two to be included in the students' curriculum)

Data analysis and numerical modelling; Geomatics; Environmental chemistry; Biological conservation; Renewable energy; Geo-risks; Environmental pollution and depuration technologies; Environmental physical chemistry.

For what concerns master degree programs there is again a wide offer of environmental engineering curricula that are present in almost all the main Italian universities. Again we use the detailed description of one of these programs (the one at the University of Rome Sapienza) to give a significant representation of all of them:

Environmental engineering @ University of Rome Sapienza

The general aim of the program is to offer students a professional training (focused on engineering) oriented towards the acquisition of competences in: pollution prevention and management, territorial planning and soil conservation, prevention and management of anthropic activities which could potentially threaten ecosystems, eco-compatible management of resources, natural risk management.

The program is aimed at students with a solid background knowledge of natural sciences and mathematics and is divided into three sub-curricula: Environment preservation, Sustainable management of soil and resources, Soil preservation.

The curriculum in Environmental Preservation aims to provide adequate skills to: protect the biosphere, evaluating and preventing the environmental impact of human activities with appropriate interventions, prepare and control measures to remedy the effects of potentially damaging activities, rationalize the use of resources and improve the recovery and recycling of resources used in civil and industrial activities.

The curriculum in Sustainable management of soil and resources is designed to provide the skills necessary to: designing actions for environmental redevelopment and bio-energetic reconversion of existing settlements; programming the infrastructural, settlement and building activities according to criteria of environmental, social and economic sustainability; assessing the impact on natural resources and the global climate of the plans and programs of action on the soil, at different scales and in different sectors.

The curriculum in Soil preservation aims to providing adequate skills to: describe engineering problems for the defense of the soil with particular regard to those pertaining to hydraulic and geotechnical set up and conduct investigations and experiments to analyze and manage and interpret their data, with particular regard to the problems mentioned above; understand the impact of engineering solutions aimed at soil conservation in the social and physical environment and use appropriate tools and methods to control the aforementioned impact.

Some universities also offer master degree programs that are a bit different from the one we described because of a special focus on economic or jurisprudence aspects, but the global structure of these programs follows the same lines we just described. No master degrees programs focused on environmental sciences intended in a more general perspective are at present available in Italian universities.

The bachelor and master degree programs we described are oriented to train professionals who are supposed to get a job in the field of public and private environmental services, but - as most of the people we interviewed underlined - their actual job opportunities are often shifted towards a variety of different working contexts. This is of course due to the general bad trend in the Italian labour market (the last official estimation of unemployment for people under the age of 24 is getting close to 50%, substantially regardless of education background), but is also linked to the lack of a widespread public culture of environmental and sustainable development issues and therefore to a lack of demand for environment-related jobs. In Public Bodies (such as local political, administrative, educational, sanitary institutions) there are of course departments whose activities are focused on the environment but still there is a lack of public commitment towards the implementation of structural programs devoted to citizen-oriented environmental education, environmental impact assessment, environmental risk management, energy management, etc. Many non-structural initiatives and projects are available but they are often due to the presence in key positions of people who have special sensibility towards environmental issues and develop links with citizen associations and movements. During the 90s the ministry of the environment and education together fielded a number of initiatives specifically dedicated to the issue, but have not been followed-up in subsequent decades. More recently, in 2009, the two ministries have delivered a common document containing guidelines for environmental education but its impact on the Italian school system have not been evaluated yet. Something similar could be said about university research on environmental issues, which counts a number of groups spread around the national territory but is lacking coordination and common programming at the national level.

The structure of the degree programs we presented is somewhat in line with this lack of attention towards environmental issues, which produces a lack of a proper environment-oriented culture. While these university programs pretend to be based on a multidisciplinary approach, they actually fail in developing environmental science as an independent discipline and they construct competencies that are the result of a sum rather than a mix of traditional disciplinary contents. A couple of decades ago environmental curricula were substantially absent in the educational offer of Italian universities. This means that much has been done already. But looking at the example of bachelor degree program we presented above it is clear that most of the courses included are traditional disciplinary courses or what we can call (according to the words used by Antonella Bachiorri in her interview) “green washed” traditional disciplinary courses. About these latter courses it often happens that they are quite similar to courses aimed at traditional disciplines degree courses and what is changed is simply some reference to environmental issues in their contents.

In order to start a process of transformation of the environmental culture at all levels it is necessary to change and in some sense reverse this perspective. Of course such a process involves a number of different social and cultural contexts rather than the

academic ones alone. But if we focus the attention on what could be done in the university context, “We cannot limit our actions to bring some environmental-related issues into the traditional disciplinary contexts.” - Bachiorri commented - “Of course this does not mean that blending traditional scientific disciplines with environmental topics is useless. Italian universities already do this and I don’t think this is wrong. But at the same time I think that a shift towards an *environmental education* perspective is needed. This means introducing a brand new discipline, with its own contents and methodologies which of course feed on a number of competencies coming from other disciplines. This is the reverse perspective we are talking about”. The introduction of environmental education courses within the degree programs has been successfully experimented in some Italian universities where researchers interested in the field are present. Monica Marinoni from UNIMIB told us of her positive perception of the environmental education courses she is involved in within the degree programs aimed at the initial training of primary school teachers. In her opinion, special attention should be devoted at offering future teachers the opportunity to develop their sensibility towards environmental issues. In fact, constructing a generation of primary school teachers with a solid background in environmental education can give a crucial boost to the process of enhancement of a widespread modern culture of environment and ecology. Among the interviewees, Maria Rosaria Iesce, who is Director of the chemical sciences degree course at UNINA, gave us a point of view that complements those of Bachiorri (focused on the wide cultural perspective of environmental education) and Marinoni (focused on environmental education within teacher training), focusing on what a university course needs in order to train scientists with an environmental background. Referring to the situation at UNINA (which is not different from those of other Italian universities) she commented that a lot of environment-oriented courses are available, but students are not sufficiently guided in choosing them. This is because there is no environment-related specific curriculum and there is lack of attention by the university central institutions in giving guidelines oriented towards this direction. The initiative, Iesce commented, is left to each degree course and this makes it difficult to bring structural changes that are needed and that would certainly encounter a positive response from the potential audience of students who are interested in undertaking an environment-oriented professional career.

The environmental education perspective Antonella Bachiorri refers to is not a generic tendency to develop educational programs aimed at enhancing citizens’ sensibility towards environmental issues but is a more general and well established intervention paradigm which is a consolidated reference framework at the international level. (<http://www.environmental-education.org>).

Of course environmental education is a complex research field and there are many different approaches to it, but still they all share a common perspective that stems from their common background which we could identify in the debate and conclusions of the Rio Earth Conference held in 1992. In this perspective environmental issues are brought into a wide scenario that involves social, economic and cultural issues and are

linked to a general idea of social equity. From an educational point of view, moving to this perspective then means the implementation of programs that are intrinsically interdisciplinary and are not based on a *didactics of the environment*. People involved in environmental education programs should be engaged in developing awareness of the huge complexity of environmental issues and link the knowledge they are developing to skills that make them able to make decisions that are informed and responsible from a socio-economical point of view.

Coming back to the actual situation in Italian universities, much has been done during the last decades, as we already underlined, in terms of introducing elements relating to environmental issues in the university didactics of scientific disciplines. But very little has been done (if anything) in order to introduce environmental science as an independent discipline in high-level university and post-university courses. In some cases, the presence in singled-out universities of research groups that are active in the field has gave birth to promising experimentations (e.g. this is the case of the university of Parma, where environmental education courses have been made available thanks to the presence of CIREA). Some (second level) master courses especially focused on environmental sciences were also available until some years ago but have now been closed. This again means there is no systemic boost going in the direction of creating an Italian Research School in environmental education.

3 THE ROLE AND POSITION OF THE UNIVERSITY PROFESSORS

The general profile information of the professors included in the Italian sample we chose for the field research is summarized below.

The age range is quite uniformly distributed in the three slots chosen for the questionnaire (6 people in the age range 30-40, 6 in the range 41-50 and 8 in the age range 50+). The same is true for teaching experience of the professors, with 7 of them having taught for less of 10 years, 5 in the range between 10 and 15 years and 8 with long-term teaching experience. Most of the people involved in this small survey have a background in scientific subjects and work in natural sciences and engineering departments, but there is a good distribution among the different disciplines (with 6 professors working in Physics departments, 5 in Biology/Chemistry departments, 4 in Environmental/Life Science to list the main occurrences). For what concerns the actual rank of the professors involved, 7 of them are assistant professors, 7 are associate professors, 3 are full professors, while the remaining two are an assistant professor with tenure and a university technician who has a key role in a university center focused environmental issues. 9 people out of 20 in our sample have been involved in teaching environment-related topics.

Although very small we think our sample is still to a good extent representative of the university professors who are actually involved in teaching environment-related topics and of those who could/should get involved in these teaching activities.

For what concerns the responses we get about the sample perception on the actual situation we try to outline what we think are the main emerging marks.

About the perception of the sensitiveness of the labour market towards environmental issues (question 10), a large majority of our sample (15 out of 20) gave an affirmative answer. There is no evident correlation between the non-affirmative answers to this question and the profiles of the respondents.

About question 11, the answers clearly show that the incorporation of environmental issues in the Italian university curricula is perceived as scarce or inadequate as the options 1 to 3 collected 15 total answers out of 20 (8 respondents choosing options 1 and 2, and 7 choosing option 3). Two strongly positive answers to this question (option 6: sufficient courses of high quality) came from professors that do have an experience in teaching environmental topics. However, selecting the answers to question 11 given by all the professors who have an experience in teaching environment related topic we found no evident bias towards strongly positive perceptions, while there is clear bias towards non positive perceptions in the answers of those professors who have not taught specific courses. Referring to comments we collected during the

interviews, a positive-biased perception by those who have been actually involved in teaching environmental issues could also be linked with a positive perception of their students' reaction to the courses, but we have not sufficient evidence to argue about this possible hint for the analysis.

There is no clear mark to outline about question 12 (Do you think that the incorporation of environmental topics would significantly enhance the employability of your students after graduation?) with an almost equal distribution in the choice of option 1 (yes) and option 2 (I don't know). Also we didn't notice any relevant correlation crossing the answers to this question with other answers.

The more chosen options of answers to question 13 (Which are the topics you think it is essential to be incorporated in the University curricula?) were recycling (7 choices), self-management of resources and alternative energy sources (6 choices), environmental impact assessment and energy management systems (5 choices). What seems relevant is however the complete lack of choices for option 4 (Green entrepreneurship) and the scarce liking for environmental management systems (3 choices) and green technologies (2 choices) which seems to underline a perceived lack of relevance towards those subjects which are in strict or broad sense connected to the development of entrepreneurial activities. This mark could be connected to a casual bias in our sample towards a more scientific research oriented perception of the role of university courses or could also be linked to a poor perception of the entrepreneurial opportunities that the Italian socio-cultural context offers (especially when talking about environmental related issues). These remarks are of course only hints for a possible further analysis to be performed on a much more significant sample.

The few suggestions we received about further topics to be incorporated in the university curricula are mostly connected to the introduction of a wider (and not strictly discipline-oriented) point of view on environmental issues. The reference to the theme of "global change" particularly goes in this direction as it necessarily brings into disciplines a transversal approach aimed at investigating the complexity of the global system. The reference to "biogeochemical cycles" also imply a strong interdisciplinary approach, while "biology of conservation" is a topic that links biology with ethical and political issues and opens a reflection about the need for policies that are oriented by research results. Other suggestions go in this same direction and more generally towards the need to bring into university courses a wider cultural perspective about what it means to focus our attention on environmental issues ("environmental education", "sustainable development"; "environmental ethics"). The reference to "domotics" seems very interesting because it goes in the direction of using an interdisciplinary and culturally open approach, looking at advanced automation technology with a specific focus on sustainability.

4 CONCLUSIONS AND RECOMMENDATIONS

The main conclusion we would draw is connected the introduction in the university system of elements that could ignite the process of change in perspective about environmental issues that we outlined in the desk research section.

Introducing elements of environmental education in the available university courses or specific courses devoted to environmental education could be a good way to bring some change in the perceptions of all students who are building a professional profile focused on environmental issues in our universities.

Such a process could however difficult to implement for a number of reasons. First of all there are few people with specific skills in this field, which is a bit unorthodox. More in general because there is a lack of consideration of what environmental education means: we all have an idea of education and sensitivity to environmental issues; what lacks is an overall vision of what it means to educate people to live in the environment, which include reference to social, cultural, economic issues.

Elsewhere in Europe, environmental education is becoming part of widespread culture and is part of the school curricula from the earliest grades of education. This is not the case for Italy especially because of a lack of structural initiatives by the institutions. In order to improve the situation there should be a strategic interest by the institutions in developing a widespread culture of environmental issues.

This change of perspective cannot pass by a "green washing" of the existing, but should be based on interventions that are in line with internationally established principles that underlie environmental education. It would be important to start planning spaces for post-graduate training that go in this direction. An audience of students interested in the path exists and has currently no outlet.

It would be important to revisit the subject content of traditional scientific disciplines in the specific perspective of environmental education, but this revision must be deep and cannot just mean adding the word "environment" to anything.

Environmental education can get a series of key ideas from the traditional scientific disciplines (the limits imposed by physics or biology to the way in which a system can interact with another one or, more generally, the idea of interaction looked at from the point of view of complex systems). Different disciplines should be contaminated with each other in this sense. This also means changing the general idea of what science is and is meant for, going in the direction of including the expectations that come from citizens and moving towards what is coded as citizen science.

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ÉPOQUE: ENVIRONMENTAL PORTFOLIO FOR QUALITY IN UNIVERSITY EDUCATION

01:

ENVIRONMENTAL PORTFOLIO: THE NEED FOR MODERNISED CURRICULA FOCUSING ON ENVIRONMENTAL ISSUES

MALTA NATIONAL REPORT

PROJECT COORDINATOR

University of Ioannina (Greece)

PROJECT PARTNERS

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LIST OF ABBREVIATIONS

ETC - *Employment & Training Corporation*

ICCSD at UoM - *Institute for Climate Change & Sustainable Development, University of Malta*

ISE at UoM - *Institute for Sustainable Energy, University of Malta*

MCAST - *Malta College of Arts, Science & Technology*

MQF - *Malta Qualifications Framework*

NGO - *Non-Governmental Organisation(s)*

UoM - *University of Malta*

EXECUTIVE SUMMARY

This report presents the findings of the desk research and the results of the adult educators' questionnaire with respect to the availability of environmentally-related technical and educational courses in Malta. The target group for the Malta Report for Output 1 of the project EPOQUE is the public sector educators which are providing educational courses to adults who are seeking employment or who are aiming to improve their position within the labour market.

Desk Research - findings and conclusions

The population of educators/trainers that provide educational courses with relevance to environmental topics within technology or education in Malta are mainly concentrated within 4 organisations:

- Malta College of Arts, Science & Technology (MCAST)¹
- Employment & Training Corporation (ETC)²
- Institute for Sustainable Energy, University of Malta (ISE at UoM)³
- Institute for Climate Change & Sustainable Development, University of Malta (ICCSd at UoM)⁴

These organisations do not solely provide courses to adult learners, but are also focused on full-time courses provided to mainstream students. The desk research has identified local courses available to adult learners in the form of part-time courses and evening classes.

The desk research has shown that there are many possibilities available for furthering one's education and professional capabilities. The major organisations providing such educational courses are easily accessible to adults and offer the possibility for adults to further their knowledge in a wide range of environmental topics.

While these main organisations considered in the O1 Malta desk research are publicly managed organisations, adult education opportunities are also available from other organisations like specialised training centres and environmental NGOs which cover topics like ISO certification, energy management/auditing, all the way to beekeeping or composting.

Adult Educators' Questionnaire - findings and conclusions

When executing the process of distributing the questionnaires to the adult educators' databank for the purpose of O1 data collection, care was taken to source adult educators from all the main educational organisations, as well as other educators from smaller organisations such as professionals that provide one-off training courses to adults as a side-line from their normal line of work. We also solicited responses from Non-Governmental Organisations (NGOs) which also provide numerous and recurrent training courses for adult education.

The adult educators' questionnaire was filled in by 20 adult educators in Malta with the predominant portion of respondents having 5 to 10 years' experience as adult educators and 95% of them possessing a Bachelor's or Master's Degree. It was observed that while five out of the twenty courses currently being delivered by the questionnaire respondents' deal with alternative energy systems, other aspects of environmental studies are also covered.

¹ <http://www.mcast.edu.mt>

² <http://www.etc.gov.mt>

³ <http://www.um.edu.mt/iet>

⁴ <http://www.um.edu.mt/isd>

Although the population size of the questionnaire responses is not large enough to extract binding results, some important conclusions may be extracted:

- the adult educators are in agreement and of the opinion that environmental education will assist in significantly enhancing the skills of adults within the labour force and of those looking for employment.
- the adult educators feel that the variation and selection of topics with environmental content is limited and that this needs to be improved.
- the four most rated environmentally related academic topics that are thought to be best suited to increase adult employability and also which the adult educators felt that they would be able to include in their course curriculum are:
 - alternative energy sources
 - energy management systems
 - basic principles of environmental assessment
 - self-management of resources

Overall Conclusions

Although the desk research showed that a varied list of course opportunities is available, the result obtained from the questionnaire responses shows that the general perception of local adult educators is that some courses are available, but topics are limited. This therefore implies that the availability and variability of the courses on offer by local educational institutions and organisations needs to be improved in order to ensure adequate opportunities for adults to further their professional capabilities in the environmental area.

The correlation of the courses identified through the desk research with the list of topics presented in the adult educators' questionnaire is shown in the following table.

List of Topics Identified via Questionnaire	Lower-level courses available in Malta
Self-management of resources (i.e. printing habits, water usage, electricity habits, etc)	No courses identified
Recycling	No courses identified
Basic principles of environmental assessment	<ul style="list-style-type: none"> ▪ Higher Diploma in Sustainable Land and Real Estate Management (UoM)
Green entrepreneurship	<ul style="list-style-type: none"> ▪ Diploma in Manufacturing Excellence (MCAST) ▪ Organic Farming - Introduction (MCAST)
Environmental management systems	<ul style="list-style-type: none"> ▪ MCAST-BTEC Higher National Diploma in Construction and the Built Environment (Building Services Engineering) (MCAST) ▪ Higher Diploma in Environmental Conservation (MCAST)
Energy management systems	<ul style="list-style-type: none"> ▪ Advanced Diploma in Water Technology and Operations (MCAST)
Alternative energy sources	<ul style="list-style-type: none"> ▪ Renewable Energy Systems & PV Installation Single Phase (MCAST) ▪ Renewable Energy Systems & PV Installation Three

	<p>Phase(MCAST)</p> <ul style="list-style-type: none"> ▪ Heat Pumps Installation (MCAST) ▪ Solar Thermal Installations (MCAST) ▪ Vocation Education and Training Award in PV System Installer's Assistant (ETC) ▪ Vocational Education and Training Award for Solar Thermal System Installers (ETC)
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This correlation shows that a substantial and adequate course list is available in the subject area of Alternative Energy Sources. This corresponds well with the outputs of the adult educators' questionnaire that rated this subject area as the most important for adult professional formation in Malta.

However, the variation of courses available for the other environmentally-related topics listed in the questionnaire is lacking and needs to be improved.

Since there is general agreement that environmental education will assist in significantly enhancing the skills of adults within the labour force or those looking for employment, it is fundamentally necessary that importance is given to all environmentally-related topics with a variety of courses made available to cover each of the topics.

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1 INTRODUCTION

1.1 TARGET GROUPS FOR MALTA REPORT

The target group for the Malta Report for Output 1 of the project EPOQUE are the public sector educators which are providing educational courses to adults who are seeking employment or who are aiming to improve their position within the labour market.

1.2 METHODOLOGICAL FRAMEWORK

The population of educators/trainers that provide educational courses with relevance to environmental topics within technology or education in Malta are mainly concentrated within 4 organisations:

- Malta College of Arts, Science & Technology (MCAST)⁵
- Employment & Training Corporation (ETC)⁶
- Institute for Sustainable Energy, University of Malta (ISE at UoM)⁷
- Institute for Climate Change & Sustainable Development, University of Malta (ICCSd at UoM)⁸

These organisations do not solely provide courses to adult learners, but are also focused on full-time courses provided to mainstream students. Chapter 2 in this report focuses on the part-time courses on offer, in particular those that are available as evening classes and which are provided by these organisations locally.

When executing the process of distributing the questionnaires to the adult educators' databank for the purpose of O1 data collection care was taken to source adult educators from all the above organisations, as well as other educators from smaller organisations such as professionals that provide one-off training courses to adults as a side-line from their normal line of work. We also solicited responses from Non-Governmental Organisations (NGOs) which also provide numerous and recurrent training courses for adult education.

⁵ <http://www.mcast.edu.mt>

⁶ <http://www.etc.gov.mt>

⁷ <http://www.um.edu.mt/iet>

⁸ <http://www.um.edu.mt/isd>

2 ENVIRONMENTAL TOPICS IN ADULT EDUCATION

The inclusion of environmental studies within the curricula catering for adult education may be a means to significantly improve the professional profile of adults within the labour market. This section aims to identify the extent to which such studies are included within adult education curricula in Malta.

The educational entities considered in this report are those providing adult education courses in the field of environmental studies in Malta, namely the:

- Malta College of Arts, Science & Technology (MCAST)
- Employment & Training Corporation (ETC)
- Institute for Sustainable Energy, University of Malta (ISE at UoM)
- Institute for Climate Change & Sustainable Development, University of Malta (ICCSd at UoM)

These entities are all publicly funded educational institutions that offer education services to adult learners, amongst others.

2.1 MALTA COLLEGE OF ARTS, SCIENCE & TECHNOLOGY (MCAST)

The MCAST is composed of 10 Institutes based in Malta, as well as the MCAST Campus serving Malta's sister island, Gozo. The MCAST's mission is to provide accessible vocational and professional education or vocational training which caters for the needs of the individual and the economy. The college provides a total of 185 full-time courses as well as 306 part-time courses which are easily accessible to adult learners.

The desk research related to this report has gone through the part-time courses on offer in order to identify the extent to which environmental studies are included within their course curricula. Desk research has identified the following Institutes which were found to be offering adult education courses related to environmental studies.

INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERING

The mission of the Institute of Electrical and Electronics Engineering⁹ is to be one of the main contributors in the electrical and electronics industry, and provide good quality education while satisfying market pressures.

Total number of courses: 13

Number of courses including environmental content: 3

1. Diploma in Manufacturing Excellence; Lev 5 ECVET

MCAST have designed a tailor-made 'Diploma in Manufacturing Excellence' catering for the current and foreseeable trends in the local manufacturing industry. This diploma is targeted to employees in the industry and aimed at validating informal and non-formal learning based on learning outcomes via a hybrid of class work and hands-on mentored training.

⁹ <http://shortcourses.mcast.edu.mt/Institutes/InstituteInformation.aspx?id=F12FC5B01069CF840BDD9977AFAF9AF1>

Some of the modules from this Diploma include: Energy and Water Management; Introduction to Lean Manufacturing; etc. This is a 360 hour guided learning course delivered over 2 years, leading to a Level 5 diploma.

2. Renewable Energy Systems & PV Installation Single Phase; Lev 4 ECVET

This course complies with the requirements of GN 404 of 2013 - 'Scheme for the Registration of Training Courses Leading to the Certification of Renewable Energy Systems Installers and Providers of Energy Services'.

The course provides an introduction to renewable energy systems by exploring the most common solutions employed in Malta (Thermal Solar, Photovoltaic Systems and Micro-Wind Turbines). It covers the relevant legislation concerning renewable energy sources and also focuses particularly on Photovoltaic Systems.

At the end of the unit candidates will have sufficient knowledge and practical experience to install PV systems. This is a 60 hour guided learning course. Students need to invest further hours which will include private study and home assignments.

3. Renewable Energy Systems & PV Installation Three Phase: Lev. 4

This course complies with the requirements of GN 404 of 2013 - 'Scheme for the Registration of Training Courses leading to the certification of Renewable Energy Systems Installers and Providers of Energy Services'. The course covers the three-phase Solar PV systems including the following: Construction and operation of a three phase generator; Observing the behaviour of three phase supply on three phase loads; Discussing the advantages of operating at a low power factor; operation of stand-alone and grid-connected inverters; special requirements for three-phase inverters; inverter safety features (stand-alone, island and grid-connected); Awareness on importance of mismatch losses due to use of different modules of varying outputs or make.

At the end of the unit, candidates will have sufficient knowledge and practical experience to install three phases PV systems. This is a 10 hour guided learning course. Students need to invest further hours which will include private study and home assignments.

INSTITUTE OF BUILDING & CONSTRUCTION ENGINEERING

The Institute of Building and Construction Engineering¹⁰ caters for career courses leading to a variety of occupations in the Construction Industry - from design to building.

Total number of courses: 58

Number of courses having environmental content: 3

1. Heat Pumps Installation; Lev 4 ECVET

The intention of the course is to provide a certification scheme for heat pump installers, in accordance with directive 2009/28/EC on the promotion of the use of energy and renewable sources. The aim of the course is to equip learners with the necessary underpinning theoretical knowledge and practical competencies associated with the effective installation of heat pump systems. This is a 40 hours guided learning course.

¹⁰ <http://shortcourses.mcast.edu.mt/Institutes/InstituteInformation.aspx?id=9FFBB9C00945FE358DBF47AAC944771E>

2. MCAST-BTEC Higher National Diploma in Construction and the Built Environment (Building Services Engineering) Lev 5 ECTS

The course covers the key knowledge and practical technician-level skills required in the built environment sector. This programme prepares the learners for a technical career, for example as a building services technician, in the different fields of services namely heating, natural and forced ventilation, air conditioning, plumbing, firefighting and the management control systems to make buildings comfortable and sustainable in operation.

This is a part time (evening course) spread over a period of a maximum of 5 years and consists of both mandatory and optional specialized units that are relevant to the needs of industry. The specialized units include: Energy Utilisation and Efficiency for Building Services Engineering Project Design.

3. Solar Thermal Installations

This course complies with the requirements of GN 404 of 2013 - 'Scheme for the Registration of Training Courses Leading to the Certification of Renewable Energy Systems Installers and Providers of Energy Services'. The course provides a certification scheme for solar thermal installers, in accordance with directive 2009/28/EC on the promotion of the use of energy and renewable sources. The aim of the course is to equip learners with the necessary theoretical knowledge and practical competencies associated with the effective installation of solar thermal systems.

The course leads to an installer certification in solar thermal technologies and includes both theoretical and practical aspects. The programme provides the learners with the knowledge and skills necessary to determine the appropriate orientation, tilt and area for solar thermal installations. Additionally, learners will be equipped with information on solar collector types and components. A core element of the course is the provision of practical training to install effectively solar thermal systems. This is a 50 hour guided learning course.

INSTITUTE OF APPLIED SCIENCE

Applied science relates to the application of scientific knowledge to practical challenges and jobs. The courses on offer within the Institute of Applied Science¹¹ prepare the learner for technological careers within the health, pharmaceutical, environment or general engineering sectors.

Total number of courses: 3

Number of courses having environmental content: 2

1. MCAST Advanced Diploma in Water Technology and Operations; Lev 4 ECTS

The Advanced Diploma in Water Technology and Operations is a part-time course leading learners to become specialists in the water sector. This qualification is aimed to those interested in engaging in the water and related industries to further their knowledge, skills and competences to be able to operate in this much sought after industry.

The learners acquire specialist knowledge on the latest technologies and operations in the water industry and practice techniques which are essential in this sector. This qualification gives a holistic approach to learners since they also develop their communication techniques; and notions of the financial and legal frameworks related to the water industry.

¹¹ <http://shortcourses.mcast.edu.mt/Institutes/InstituteInformation.aspx?id=14EF5F9C6C92A97EB7F1FED0D785E181>

This is a 1,000 hour guided learning course covered in 3 years.

2. MCAST Higher Diploma in Environmental Conservation; Lev 5 ECTS

This course aims at equipping learners with a broad, interdisciplinary background aiming at developing their understanding of environmental and resource problems, as well as what is needed to resolve them. The programme is designed to ensure that learners acquire broad-based, integrated knowledge of how local and global ecological systems work, as well as an understanding of the interdependency between people and the environment.

Learners also discover how political, institutional, and economic systems relate to environmental issues, and learn ways to sustainably manage human activities within the constraints of local and global ecological systems. Learners will acquire a set of basic skills and problem solving tools that enable them to tackle complex environmental and sustainability problems.

Learners will have gained work-based practical experience that will allow them to integrate and apply their accumulated knowledge and skills in solving environmental challenges of national importance. This programme forms a main component leading to the MCAST BSc (Hons) in Environmental Engineering or for employment in a technical or managerial post that demands an in-depth understanding of complex environmental sustainability and conservation issues. This is a 960 hour guided learning course covered in 3 years.

INSTITUTE OF AGRIBUSINESS

The Institute of Agribusiness¹² provides a range of vocational courses and apprenticeship programmes to respond to the needs of the Rural Development Plan and the National Development Plan and to cater for the needs of the employers. The Institute aims to develop and provide a range of courses that will lead to defined career opportunities within the Agribusiness sector.

Total number of courses: 20

Number of courses including environmental content: 1

1. Organic Farming - Introduction; Level 2

This course will give applicants a general introduction to organic farming in order to encourage the conversion from conventional to organic farming through a holistic approach towards the production of food and cattle without compromising the future generation. Organic farming is sustainable and it promotes the welfare of animals. The principles of care, fairness, health and ecology are enhanced while the methods and practices applied leads to the production of food without any residues of synthetic preservatives, against genetically modified organisms and rearing of animals without antibiotics or growth hormones.

This is a 25 hrs of guided learning course tailor-made to the requirements of the Mediterranean region.

¹² <http://shortcourses.mcast.edu.mt/Institutes/InstituteInformation.aspx?id=26011C98649DB4C47846DE76C9F9BCDD>

Conclusion regarding environmental content within adult education courses offered at MCAST

Although the total number of courses with environmental content (9) is only 3% of the total (326) courses, one must also appreciate that MCAST offers a variety of courses spanning various educational sectors including the sectors of community services, maritime, business studies, etc. Therefore it is not expected that environmental studies content appears in all courses offered. When considering only those Institutes detailed in this section of the report, the number of courses on offer totals to 94 which brings the percentage of courses having environmental studies content up to 10%.

2.2 EMPLOYMENT & TRAINING CORPORATION (ETC)

The ETC is a government agency operating with the purpose of enhancing employability by recommending policies and implementing initiatives aimed at empowering, assisting and training jobseekers to facilitate their entry or re-entry into the active employment market, promoting workforce development through skills and competency development, and by assisting employers in their recruitment and training needs.

There are 15 categories of adult courses on offer through ETC:

- Employability Skills Courses
- Language and Numeracy Skills Courses
- Clerical Courses
- Accounting Courses
- Trade Courses
- Welding Courses
- Technical Courses
- Renewable Energy Courses
- Care Worker Courses
- Business Skills Courses
- Trainer Training Courses
- Health, Safety & Security Courses
- Hospitality and Customer Services Courses
- ICT Courses
- Other Courses

Within the Renewable Energy category, one finds 2 environmentally- related courses on offer:

1. Vocation Education and Training Award in PV System Installer's Assistant

This is an 80 hour course leading to an MQF Level 3 qualification that certifies a PV System Installer Assistant to be able to collaborate and assist a qualified installer in the setting up of PV installations

2. Vocational Education and Training Award for Solar Thermal System Installers

This is an 80 hour course teaching the techniques and methodologies for Solar Thermal System installation, monitoring and model selection to the learner.

Conclusion regarding environmental content within adult education courses offered at ETC

The only 2 courses on offer through the ETC having environmental content are solely limited to solar energy topics. No other environmental studies aspects are delivered within courses delivered by the ETC.

2.3 INSTITUTE FOR SUSTAINABLE ENERGY, UNIVERSITY OF MALTA (ISE at UoM)

The aims of the Institute are to assist in the development of national energy plans through studies in the use of new and renewable energy sources and methods of energy conservation. It is also intended that the Institute should organise and participate in teaching programmes and research projects in the field of energy technology. Other objectives include the dissemination of appropriate methods and techniques relevant to the Institute's areas of interest and to design equipment adapted to local conditions.

Out of the three study-units offered by ISE, the two study-units with environmental content are:

1. ISE 4016: Project in Sustainable Energy (Undergraduate)¹³

This is a minimum 4 years study-unit in which students are assigned a research topic in energy, sustainable energy, renewable energy or a related topic. Students conduct research work that may include building up and testing of systems, comparative or simulation studies as well as environmental and economic evaluations linked to the project.

2. ISE 5030: Project in Sustainable Energy (Postgraduate)¹⁴

This is a Postgraduate Modular Diploma or Degree Course based on defining a project within a field of energy, sustainable energy, renewable sources of energy or related topics, preparing a proposal, setting an appropriate methodology, targets and deliverables. The implementation of the whole study-unit must be completed within the time frame of 1 semester.

Conclusion regarding environmental content within adult education courses offered at ISE

The options available for education via this University of Malta Institute are vast and not limited to a particular environmental topic. Therefore, one may here find the opportunity to expand ones knowledge and competence in any environmentally related area.

These study-units are available both to undergraduate and postgraduate levels, thus making them easily accessible to those who would like to get qualified in such environmental related topics. However they require full-time commitment and are therefore not easily suited to those already in the workforce. However, those adults who are un-employed are better positioned to read for such qualifications.

¹³ <http://www.um.edu.mt/ise/studyunit/ise4016>

¹⁴ <http://www.um.edu.mt/ise/studyunit/ise5030>

2.4 INSTITUTE FOR CLIMATE CHANGE & SUSTAINABLE DEVELOPMENT, UNIVERSITY OF MALTA (ICCSd AT UoM)

The ICCSD was set up to promote social sustainability and conduct interdisciplinary research in areas related to sustainable development and climate change, including mitigation and adaptation. It focuses on the use of telemetry, IT tools, intelligent systems and modelling for monitoring, research, decision support and strategic planning and aims to transfer knowledge and raise awareness of initiatives on sustainable development and climate change with enterprise and organisations through, for example, cleaner technologies. The main aim of the Institute is to create initiatives and conduct research that enhances Malta's quality of life.

The Institute offers four courses of which two have direct environmental studies content:

1. Higher Diploma in Sustainable Land and Real Estate Management (undergraduate)¹⁵

This is a 3-year part-time evening higher diploma course. The interdisciplinary study programme bringing together the main aspects related to land and estate management is designed in such a manner as to effectively develop skills and knowledge required by land managers to understand the complexities of rural and urban management and development. The study programme includes a number of study units aimed at the teaching of basic concepts of economics, law, geography, environment, finance, planning, management, architecture, marketing, ICT tools and statistics.

This study programme is intended for mid-career professionals already working in land management or real estate. It enhances knowledge about property management, valuation as well as the economic, environmental, social and legal aspects of land and real estate management. This study programme is also intended to offer interested candidates an opportunity to specialise in this very important area of study for Malta. Public sector, construction companies, planning agencies and consultants, and real estate companies should encourage their employees to widen their knowledge of this subject area.

2. Master of Science by Research (Sustainable Development)¹⁶

This Master degree level course can be executed over 3 semesters on full-time and 5 semesters on part-time basis. The course is intended for graduates from various subject areas and is open to open to applicants in possession of a first cycle degree in a discipline related to Sustainable Development or in any other area of study which the Board considers as appropriate, obtained in the ten years previous to registration for the Course.

Candidates following this programme of study have varied career opportunities due to the interdisciplinary nature of the research undertaken and the skills learned in the course of the studies. Candidates can also engage in a research career by following on with further studies at doctoral level.

Conclusion regarding environmental content within adult education courses offered at ICCSD

The courses offered at the ICCSD offer the highest qualification Master degree level available to environmental studies through the University of Malta. This course can be applied to study and research a wide range of environmentally related topics therefore allowing the adult student, the possibility of specialising in any area. Both courses are available on part-time basis as evening courses and are therefore within the reach of adult learners both employed and un-employed.

¹⁵ <http://www.um.edu.mt/iccsd/overview/UHDSLEPTE-2012-3-O>

¹⁶ <http://www.um.edu.mt/iccsd/overview/PMSCSSDPER0-2014-5-O>

3 THE ROLE AND POSITION OF ADULT EDUCATION TRAINERS/TEACHERS

The adult educators' questionnaire was filled in by 20 adult educators in Malta. The distribution of the age groups of the respondents, their years of professional experience, their highest level of education obtained and their years of experience as an adult educator are shown in Charts 1 to Chart 4 respectively.

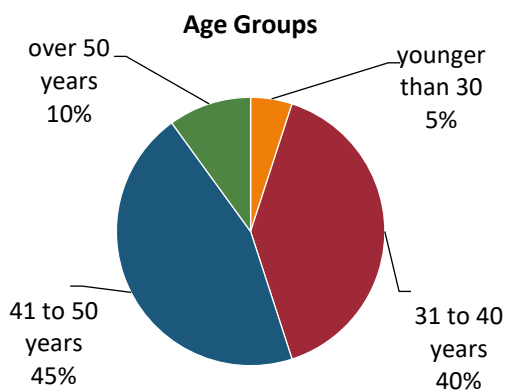


Chart 1 - Age Group Distribution of Questionnaire Respondents

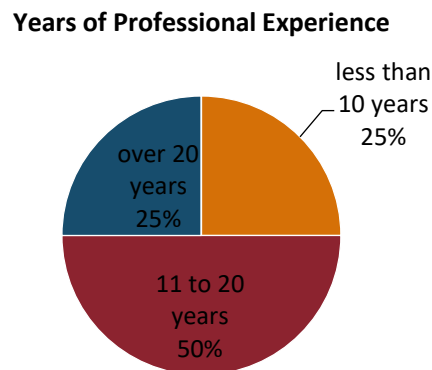


Chart 2 - Years of professional experience of the questionnaire respondents

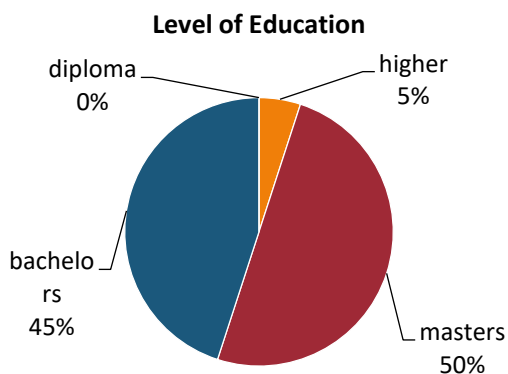


Chart 3 - Highest level of education of the questionnaire respondents

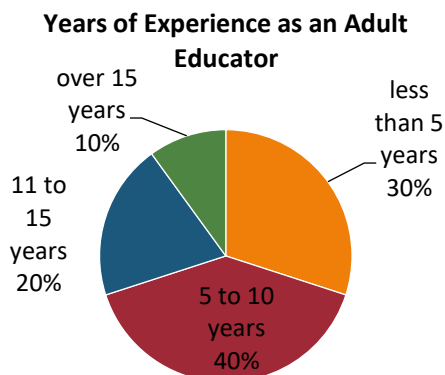


Chart 4 - Number of years of experience as an adult educator

It can be noted that the predominant portion of the questionnaire respondents have 5 to 10 years' experience as adult educators and 95% of them have a Bachelor's or Master's Degree.

The training topics currently being delivered by the adult educators that have responded to the questionnaire are:

- Energy Saving Initiatives in the Domestic Sector
- Quality Management, Business Excellence, ISO9001, Quality Tools & Techniques
- Project Management, Control Systems, Energy Efficiency
- Education for Sustainable Development
- Solar Installer Courses
- Renewable energy, energy efficiency, and resource efficiency
- Quality, safety and environment
- Rural sciences like horticulture and gardening
- basic apiculture
- environmental management
- mathematical or computer related
- Technical, Troubleshooting techniques, practical aspects of solar installations
- energy efficiency in the workplace or domestic sector
- engineering
- building and construction
- Energy efficiency relevant to the Mediterranean region
- law and environment
- Environmental management system audits
- alternative energy systems
- solar installations

While five out of the twenty courses being delivered by the questionnaire respondents deal with alternative energy systems, there is also a varied topic list that covers other aspects of environmental studies. In response to the question: “Do you believe that the labour market is now becoming more sensitive in environmental issues?” the absolute majority of 19 out of the 20 participants replied “Yes”.

Chart 5 shows the perception of the questionnaire respondents with regards to availability of environmental educational courses in Malta. The major portion of the respondents is of the opinion that some courses are available but variation and selection of topics is limited. Therefore, while most of the respondents believe that environmental education will assist in significantly enhancing the skills of adults within the labour force or those looking for employment, the availability of such environmental education courses is not adequate.

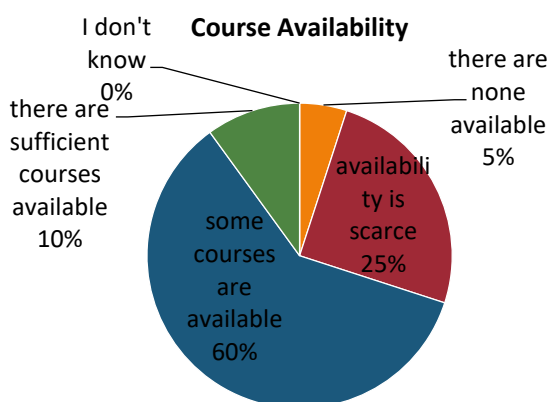


Chart 5 - Availability of environmental education courses

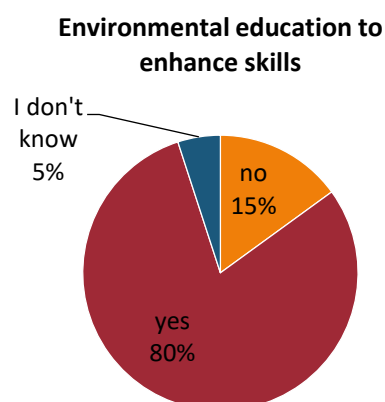


Chart 6 - Does environmental education improve employability skills

All of the respondents active in the environmental education sector believe that they would be able to incorporate environmental education topics within their delivered courses.

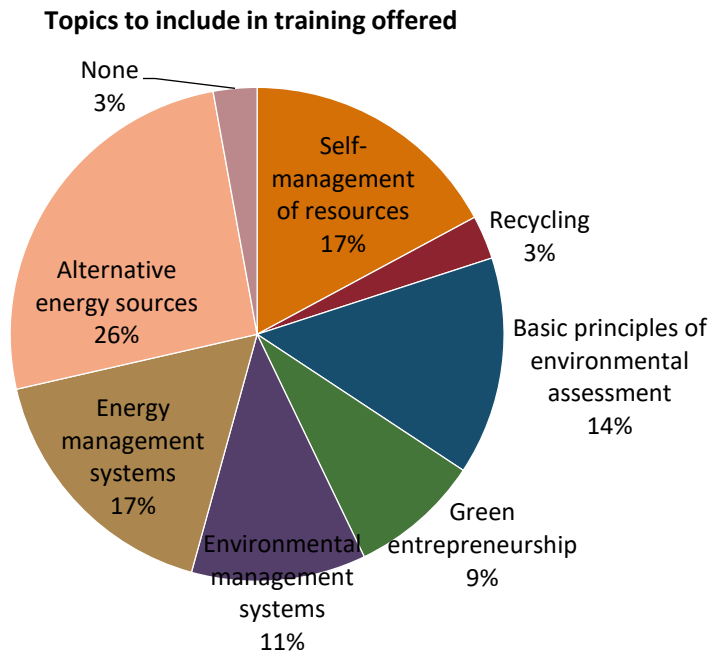


Chart 7 - Topics most comfortable to include in training courses

Chart 7 shows the responses of the questionnaire participants when they were asked to indicate which topics they would feel most comfortable to include in their delivered training programs. Each participant was asked to choose two options from an available list. The 5% “None” in the Chart represents the response of one participant that is not able to include environmental related topics within the training courses delivered the reason being that the participant is active in environmental law and therefore not conversant in the subjects indicated in the questionnaire. Apart from this participant’s response the response distribution of the rest of the adult educators indicates an all-round possibility of the inclusion of all topics within the courses they deliver with the major preference lying within the Alternative energy sources, Self-management of resources and Energy management systems topics.

Chart 8 shows the responses of the questionnaire participants when asked to give their opinion about which environmental education topics would serve to better increase the employability skills of the trainees/learners. The questionnaire responses for this question too show predominance in the Alternative energy sources and Energy management systems topics followed closely by Environmental management systems.

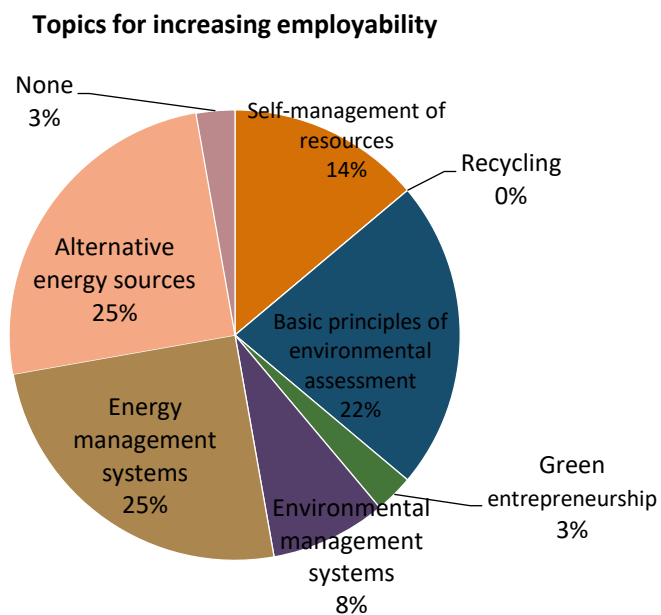


Chart 8 - Topics that would increase adult employability

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS REGARDING THE AVAILABILITY OF ENVIRONMENTAL TOPICS IN ADULT EDUCATION IN MALTA

The results of the desk research investigating the availability of environmental topics within the courses offered to adult learners in Malta has shown that there are many possibilities available for furthering one's education and professional capabilities. The major organisations providing such educational courses are easily accessible to adults and offer the possibility for adults to further their knowledge in a wide range of environmental topics.

It is also worth pointing out that as part of its strategy of widening public awareness as well as contributing to general cultural education, the University of Malta has identified a number of lectures offered by various Faculties / Institutes / Centres which may be attended by members of the public. This selection of lectures also includes environmental aspects of technology and education courses that are offered within the University. This scheme is targeted towards adults who have an interest in following particular lectures with the aim of widening their general and cultural knowledge. Attendance to the lectures is free of charge and is not graded by examination or assessment. Therefore, no certification is obtained. The sole aim of this scheme is to offer the adults the possibility to widen their knowledge and maybe encourage them to take up the formal education course at a later opportunity.

While the main organisations considered in the O1 Malta desk research are publicly managed organisations, adult education opportunities are also available from other organisations like specialised training centres and environmental NGOs which cover topics like ISO certification, energy management/auditing, all the way to beekeeping or composting.

The Maltese Government also provides financial incentives for adults who are seeking to improve their professional capabilities through the “Get Qualified” initiative, which is a tax credit grant system run by Malta Enterprise¹⁷ which supports the personal development of individuals for the achievement of qualifications and certifications required by industry.

Similarly, Government has recently launched the revamped Training Aid Framework¹⁸ wherein €2.5M has been allocated to promote the training of persons actively participating in the Maltese labour market, with a view to increasing productivity and enhancing adaptability. Training activities are financed (85% of the eligible cost) from the European Social Fund under the Operational Programme II (2007-13). The scheme is in line with Commission Regulation (EC) 651/2014 of the 17th June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty.

¹⁷ <http://www.maltaenterprise.com/en/support/get-qualified>

¹⁸ <http://etc.gov.mt/Category/5/72/Forms.aspx?1=1#taf2>

4.2 CONCLUSIONS EXTRACTED FROM THE QUESTIONNAIRE RESPONSES

Although the population size of the questionnaire responses is not large enough to extract binding results, some important conclusions may be extracted:

- the adult educators are in agreement and of the opinion that environmental education will assist in significantly enhancing the skills of adults within the labour force and of those looking for employment.
- the adult educators feel that the variation and selection of topics with environmental content is limited and that this needs to be improved.
- the four most rated environmentally related academic topics that are thought to be best suited to increase adult employability and also which the adult educators felt that they would be able to include in their course curriculum are:
 - alternative energy sources
 - energy management systems
 - basic principles of environmental assessment
 - self-management of resources

4.3 OVERALL CONCLUSIONS & RECOMMENDATIONS

Although the desk research showed that a varied list of course opportunities is available, the result obtained from the questionnaire responses shows that the general perception of local adult educators is that some courses are available, but topics are limited. This therefore implies that the availability and variability of the courses on offer by local educational institutions and organisations needs to be improved in order to ensure adequate opportunities for adults to further their professional capabilities in the environmental area.

When analysing the course curricula of the available courses in more detail one notices that while the higher level of courses (post-graduate and degree levels) are open to any environmentally-related topic that the adult learner would like to learn about, the lower level of courses (diploma and certificate level) are more specific in nature with regards to the environmentally-related topic they deal with and do not cover the whole range of topics.

The full list of topics covered by the available lower-level courses as obtained through the desk research is:

- Energy Management Systems
- Lean Manufacturing
- Water Management Systems
- Solar Energy & Photovoltaic Installations
- Heat Pump Installations
- Environmental Conservation Techniques
- Land and Estate Management

The correlation of the lower level courses with the list of topics presented in the adult educators' questionnaire is shown in the following table.

List of Topics Identified via Questionnaire	Lower-level courses available in Malta
Self-management of resources (i.e. printing habits, water usage, electricity habits, etc)	No courses identified
Recycling	No courses identified
Basic principles of environmental assessment	<ul style="list-style-type: none"> Higher Diploma in Sustainable Land and Real Estate Management (UoM)
Green entrepreneurship	<ul style="list-style-type: none"> Diploma in Manufacturing Excellence (MCAST) Organic Farming - Introduction (MCAST)
Environmental management systems	<ul style="list-style-type: none"> MCAST-BTEC Higher National Diploma in Construction and the Built Environment (Building Services Engineering) (MCAST) Higher Diploma in Environmental Conservation (MCAST)
Energy management systems	<ul style="list-style-type: none"> Advanced Diploma in Water Technology and Operations (MCAST)
Alternative energy sources	<ul style="list-style-type: none"> Renewable Energy Systems & PV Installation Single Phase (MCAST) Renewable Energy Systems & PV Installation Three Phase (MCAST) Heat Pumps Installation (MCAST) Solar Thermal Installations (MCAST) Vocation Education and Training Award in PV System Installer's Assistant (ETC) Vocational Education and Training Award for Solar Thermal System Installers (ETC)

This correlation shows that a substantial and adequate course list is available in the subject area of Alternative Energy Sources. This corresponds well with the outputs of the adult educators' questionnaire that rated this subject area as the most important for adult professional formation in Malta.

However, the variation of courses available for the other environmentally-related topics listed in the questionnaire is lacking and needs to be improved.

Since there is general agreement that environmental education will assist in significantly enhancing the skills of adults within the labour force or those looking for employment, it is fundamentally necessary that importance is given to all environmentally-related topics with a variety of courses made available to cover each of the topics.

APPENDIX A - MALTA QUESTIONNAIRE FOR ADULT EDUCATORS

Introduction

The **Environmental PORTfolio for Quality in University Education (ÉPOQUE)** is a project which is funded by the *European Commission*, under the **Erasmus+** programme, Key Action 2: Cooperation for Innovation and the Exchange of Good Practices.

The **objective** of the ÉPOQUE project is to **promote a smart specialisation of prospective teachers, scientists and engineers** through an **environmental portfolio** which can be fully integrated to the university syllabuses, as well as the **adult education courses** provided and which aim at **increasing the employability skills** of the participants. It creates a new generation of **green professionals** in the context of higher education modernisation agenda connected to SMEs and enterprises.

The project started in **September 2014** and its duration is **2 years** (until August 2016). The consortium consists of **six partners**, which are:

- ☐ University of Ioannina (Greece)-Project coordinator
- ☐ Helsingin Yliopisto (Finland)
- ☐ Hellenic Open University (Greece)
- ☐ Università degli Studi di Napoli Federico II (Italy)
- ☐ BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH(Austria)
- ☐ Projects in Motion (Malta)

The direct target group of the project are University Students and **Adult Learners**, while the indirect one comprises of University Professors and **Adult Education Trainers**. The already established networks of the partners will be used in order to disseminate information on the project at regional, national and European level, building thus a solid basis for the sustainability of the project.

As a first step to the development of the aforementioned tools, the partners will conduct a survey which aims at *identifying the position of the adult education teachers and trainers* in terms *incorporating environmental topics* in the courses they provide, as a means to increase the the qualifications and employability potential of their student groups, to match the *needs of the labour market*.

The ÉPOQUE partnership would like to invite you to participate at this survey, considering that your professional opinion, being an adult education professional is essential for the accurate analysis of the current situation, which will lead to the development of effective and targeted course units, ready to be added in any adult education curriculum.

Thank you in advance for your collaboration

1. Please provide your name (optional).
Use this space to give us your name if you wish to

2. Which country are you from? Please, select the appropriate answer.
 - ☐ Austria
 - ☐ Malta
 - ☐ Other: Please, specify here

3. Please, indicate the age group you belong to by selecting the appropriate answer.
 - ☐ Younger than 30
 - ☐ 31-40
 - ☐ 41-50
 - ☐ 50+

4. How many years of overall professional experience do you possess? Please, select the appropriate answer.
 - ☐ Less than 10 years of overall professional experience
 - ☐ 11-20 years of professional experience
 - ☐ 20+ years of professional experience

5. Please, write the type of organisation are you currently involved in:
Use this space to write the type of organisation

6. What is your highest level of education you have accomplished so far? Please, select the appropriate answer.
 - ☐ Higher
 - ☐ Master's
 - ☐ Bachelors
 - ☐ Diploma

7. Please indicate which your current position is.
Use this space to indicate your position

8. How long have you been involved as an adult education trainer/ teacher? Please, select the appropriate answer.
 - ☐ Less than 5 years
 - ☐ 5-10 years
 - ☐ 11-15 years
 - ☐ Over 15 years

9. Which is the most predominant target group of your trainings?
 - ☐ Low skilled candidates;

- ☐ Candidates with some basic skills
- ☐ Candidates with vocational qualifications, without certificate
- ☐ Candidates with certified vocational qualifications
- ☐ Candidates with a diploma

10. What is the main topic of your trainings?

Use this space for the main topic of your trainings

11. Have you ever been involved in the training of an environmentally related topic? If yes, please, specify.

- ☐ Yes: Please, specify here
- ☐ No

12. Do you believe that the labour market is now becoming more sensitive in environmental issues?

- ☐ Yes
- ☐ No
- ☐ I don't know

13. How do you rate the availability of adult learning environmental related courses in general?

- ☐ There are none available
- ☐ Availability is scarce and needs to be enhanced
- ☐ Some courses are available but selection and variation of topics is limited
- ☐ There are sufficient courses available
- ☐ I don't know

14. Do you think that the incorporation of environmental topics would significantly enhance the skills of adults to integrate or improve their position in the labour market?

- ☐ Yes
- ☐ No
- ☐ I don't know

15. Do you believe you would be in the position to include in your training environmental topics, such as usage of resources, environmental sensitivity, energy consumption, etc.?

- ☐ Yes
- ☐ No, because: Choose an item.

16. Which is the topic you would feel most comfortable with to include in your training? You may choose up to two replies.

- ☐ Self-management of resources (i.e. printing habits, water usage, electricity habits, etc.)
- ☐ Recycling
- ☐ Basic principles of environmental assessment
- ☐ Green entrepreneurship
- ☐ Environmental management systems

- ☐ Energy management systems
- ☐ Alternative energy sources
- ☐ None

17. Which topic do you believe would contribute the most to increasing the employability skills of your trainees/ learners? You may select up to two options. Please, elaborate on the reason of your selection

- ☒ Self-management of resources (i.e. printing habits, water usage, electricity habits, etc.)
- ☐ Recycling
- ☐ Basic principles of environmental assessment
- ☐ Green entrepreneurship
- ☐ Environmental management systems
- ☐ Energy management systems
- ☐ Alternative energy sources
- ☐ Other: Please, specify here

18. Please, suggest another topic, other than the ones listed above?

Use this space to suggest another topic

19. Would you be interested in participating in a blended course for adult education trainers/ teachers on the topics mentioned above?

- ☐ Yes
- ☐ No

20. Would you like to be informed about the upcoming project activities?

- ☐ Yes
- ☐ No

If you replied yes to any or both questions 19 and 20, please fill in your email below.

Use this space to write your email, if you wish to

Thank you very much for your participation