



Evaluation of the Energy Efficiency of the Building Sector in Cyprus

By

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Dissertation

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Sotiris Zigkas

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Abstract

The purpose of this study was to review the energy efficiency of the building sector in Cyprus. The dissertation focused on reviewing and ascertaining the opinions of the professionals on the field to establish whether the Cyprus government has set satisfactory regulations and measures.

The work commenced with an in-depth review of the energy sources that Cyprus is producing and importing and the nature of the energy is using. The attention then focused on analyzing the energy market from the initial stage of the energy efficiency development and looked at the market actor's roles and responsibilities and the targets of the government.

The research then focused on the recent energy efficiency regulations and measures that have been introduced for the building sector in 2004 and the examination continued on the degree where the government regulations and measures were investigated.

The research enabled the author to establish themes and formulate questions which were then posed to a sample of construction professionals in the form of semi structures interviews and questionnaires.

The main findings of the research conclude that in overall Cyprus has set satisfactory energy efficiency regulations and measures. However, the author believes that the government should take more actions regarding the information of the public about the energy efficiency and its benefits.

The research also highlights that the professionals on the field (architects, civil engineers and Mechanical Engineers) are very interested in implementing the Energy Performance Certificate for buildings and they are keen to be part of improving energy efficiency

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Abbreviations

EAC:	The Electricity Authority of Cyprus
AEC:	The Applied Energy Center
CIE:	The Cyprus Institute of Energy
CERA:	The Cyprus Energy Regulatory Authority
MCIT:	Ministry of Commerce Industry and Tourism
RES:	Renewable Energy Sources
EU	European Union
Toe	Tonnes oil Equivalent

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Chapter 1

Introduction

1. Introduction

The last 25 years there has been an increasing interest in the conservation of fuel and energy worldwide. The major reasons are the limited supply of the earth's total reserves of convenient fossil fuels and the increased costs for energy supply.

Apart of the energy consumption costs of each country, the direct costs, the emissions of greenhouse gas can be devastating. Carbon dioxide is a greenhouse gas which is released in the atmosphere when fossil fuels such as oil, gas, coal are burnt and it is the major cause of the climate change. If the whole world does not contribute on reducing their emissions soon or later the global warming will have tremendous effects globally.

The main sectors which are responsible for energy consumption and carbon dioxide emissions worldwide are transport, industry and service sectors. The building sector is responsible for a relative large percentage of carbon dioxide emissions.

According to the *National energy efficiency action plan, 2007*, Cyprus built environment was responsible for 23% carbon dioxide emissions and 47% energy consumption.

According to some national and international studies an average EU householder could save between €200 and €1000 per year, depending on their energy consumption, by making their homes more energy efficient.

It is believed that this will be achieved by implementing efficient measures within the built environment.

Cyprus prior to its induction to EU in 2004 did not have a comprehensive energy saving policy and there were no building regulations laying out minimum energy efficiency requirements.

From 2004 there have been implemented efficient measures, regulations and policies for the energy efficiency of the building sector.

According to the efficient indicators of the IEE program at 2005 (*Energy Efficient indicators-NMC*) it has been concluded that in Cyprus there is a substantial potential for the building sector, '*the priorities are the buildings and the transport sector followed by the industry*' (*Theodoros, Z., 2007*).

The research will assess the current regulations regarding the energy efficiency. It will identify and analyse the energy sources which Cyprus is producing and importing and the nature of the energy it is using. It will analyse the market and the market factors regarding energy efficiency and the government targets. Finally, it will assess and determine whether construction organizations and individuals are satisfied with the government regulations and measures.

1.1 Research Aim

The aim of this dissertation is to review the energy efficiency of the building sector, and to establish whether the Cyprus government has set satisfactory regulations and measures.

1.2 Research Objectives

In order to satisfy the aims of this dissertation the following objectives will be met:

- 1. To provide a general overview of the energy sources that Cyprus is producing and importing.**

Objective one will be achieved by analyzing secondary data (both primary and secondary literature sources) produced by other authors. A detailed literature

review will be carried out and this objective will be split down into the subject area of literature review 'Background of Energy Efficiency'.

- 2. To find what government has done up to date, including a brief market analysis of the past. Verify the market actors of energy sector and examine their plans for the future.**

Objective two will also be achieved by analyzing secondary data (both primary and secondary literature sources) produced by other authors. A detailed literature review will be carried out and will be split down again into the subject area of literature review 'Background of Energy Efficiency'.

- 3. To find how Cyprus is controlling the energy use through government regulations, policies, measures etc.**

Objective three will be also achieved by analyzing secondary data (only primary literature sources). A detailed literature review will be carried out and will be split down into the subject area of literature review 'Energy Efficiency Regulations and Measures'.

- 4. To investigate if construction companies and individuals are satisfied with the government measures and regulations and assess how they consider energy efficiency in their projects.**

The Objective of this section will be achieved by analyzing primary data. The gathering of primary data will be achieved by conducting a descriptive case study which will include semi-structured interviews and questionnaires.

1.3

Dissertation Structure

This Dissertation is structured as follows:

Chapter 1

This chapter introduces the background of the research and identifies the aims and objectives of the research.

Chapter 2

This chapter describes the research methods and techniques that will be used in undertaking the research along with the justification for their selection.

Chapter 3

This chapter provides a review of all past literature on energy efficiency in Cyprus.

Chapter 4

This chapter provides a review of all previous literature on energy efficiency measures and regulations.

Chapter 5

This chapter analyses and summarizes the results of the data collected through the questionnaires and interviews.

Chapter 6

This chapter brings the research to a conclusion, whilst addressing the research objectives and provides recommendations for further research.

Chapter 2

Methodology

2.0 Research Methodology

2.1 Methodology

The objectives outlined previously will help the author to achieve his aim. The author split down the research into subject areas in order to provide a greater depth of understanding.

As the objectives have been aimed into specific subject areas different research techniques will be required.

The next sections will identify the methodology that will be used for the research. The author will analyse the research strategies and the approaches to data collection and ultimately will select the appropriate techniques.

2.1.1 Research Design

There are various approaches of designing a research. There are two types of research strategies, the quantitative and qualitative research and there are two approaches of data collection the 'fieldwork' and the 'desk study'. The design of the research and the selection of the appropriate approaches and strategies will be discussed below.

2.1.2 Research Strategy

This chapter will commence by exploring the two theories of the research strategy, the quantitative and qualitative analysis.

Quantitative research

Quantitative research is objective in nature. It is defined as an inquiry into a social or human problem, based on testing a hypothesis or a theory composed of variables,

measured with numbers, in order to determine whether the hypothesis or the theory are correct. It is based on hard, reliable and tangible information. Quantitative data is therefore, not abstract, it is hard and reliable; they are measurements of tangible, countable, sensible features of the world *Naoum (2007)*.

Quantitative data is appropriate when you want to find facts about a question or when you want to collect evidence and study the relationship between these facts in order to test a theory, *Creswell (1994) and Bouma and Atkinson (1995) cited in Naoum (2007)* have defined quantitative research as a testing of a theory or hypothesis.

Qualitative research

'Qualitative research is objective in nature. It emphasizes meanings, experiences, descriptions and so on..' *Naoum (2007)*. There are two types of qualitative research, the 'exploratory' approach which is used when you are unfamiliar with the topic and the 'attitudinal' approach which is used to subjectively evaluate the opinion or the perception of a person towards a particular object *Naoum (2007)*.

2.1.3 Strategy Selection for the Research

The objective of this dissertation is to review the energy efficiency of the building sector, and determine the targets of the government. It will analyze the regulations and measures and will seek to establish if the government has set satisfactory and effective measures. To conclude with, the dissertation will explore if interviewees are familiar with the government regulations and if as professionals on the field are satisfied with these measures.

This study has a requirement of both quantitative and qualitative research in order to fulfill the aims and objectives of the dissertation.

Quantitative strategy has been selected as the objective of the research *'is to test or verify a theory rather than to develop it'* (*Naoum, 2007*). Using this method the interview

questions are designed in a structured way in order to obtain simple and straight forward data that can be quantified.

Qualitative study in the form of exploratory research has been selected since the author *'has limited amount of knowledge about the topic'* (Naoum, 2007). Here the interview technique with open-ended questions is the most appropriate since the objective of the author is to obtain detailed information and provide more range of experiences and opinions.

2.2 Approaches to Data Collection

After the selection of the appropriate strategies for the research the next step is to select the appropriate methods and approaches of data collection with regard to the type of the research.

There are two methods of data collection

1. Fieldwork Research [primary data collection].
2. Desk Study [secondary data collection].

These are the two approaches of data collection that will be used for the research

2.2.1 Fieldwork Research [Primary Data Collection]

Fieldwork research involves the collection of primary data. It is called 'primary' because data it's acquired first hand. Primary data is up to date since it is extracted direct from the target audience. However, it's a costly and time consuming approach as involves the collection of raw data which needs to be analyzed and presented.

There are two approaches of data collection:

1. The Survey Approach.
2. The Case Study Approach.

The survey approach has two types of surveys. *'The descriptive survey deals with counting the numbers of respondents with certain opinions/attitudes towards a specific object' (Naoum, 2007).* On the other hand, *'the analytical survey aims to establish relationship and association between the attributes/objects of your questionnaire to explain why a particular phenomenon is taking place... and the cause and effect relationship' (Naoum, 2007).*

The case study approach allows the researcher to carry out the study in-depth analysis. Case studies are focused on one aspect of a problem within the study, *it provides 'an in-depth analysis of a specific problem' (Naoum, 2007).*

There are three types of case study designs; the descriptive case study, the analytical case study and the explanatory case study (Naoum, 2007). The descriptive case study is similar to the descriptive survey, but it is used only in detailed cases. The analytical case study means that you have to identify an element that causes, affects or has an influence on another element (Bouma and Atkinson, 1995 cited in Naoum 2007).

The explanatory case study occurs when the researcher collects facts and studies the relationship between facts. *'it explains causality and tries to show linkages among the objects of the study. It asks why things happen the way they do. It also suggests that a single cause can have a specific effect' (Naoum 2003).*

For the purpose of the research and achieving the objective number four, a descriptive case study will be used in the form of an interview technique. Since the approach of the data collection has been chosen the next step is to decide the selection of the appropriate interview techniques.

There are three main types of interviews available. The Unstructured Interview, the Semi Structured Interview and the Structured Interview (Naoum 2007). It was decided that the most appropriate type of interview for the purpose of this research is the Semi Structured Interview.

This form of interview has been deemed as the most appropriate one, since the interviewer uses both 'open' and 'closed-ended' questions and it allows a great freedom

to consider various areas of research, *'this is more formal than the unstructured interview in that there are a number of specific topics around which to build the interview. Your task is to discover as much as possible about the specific issues related to your subject area'* (Naoum 2007).

Data Collection Method

It was decided for the purpose of this research that a descriptive case study in the form of semi-structured interviews would be most appropriate, as these techniques would provide opinions and perspectives of professionals on the field and will give the flexibility to the author to test the hypothesis.

By using this approach the author will be able to obtain facts and data for the research from various angles. It was decided due to the nature of the research that questionnaires would also be appropriate, since the author will be able to quantify the results in a more appropriate manner and at the same time, by utilizing the data obtained from the semi-structured interview he will be able to obtain detailed data in order to achieve his aim and objectives. The interviews and questionnaires were held using the same interviewees.

Sample

The author decided that it was necessary to obtain a broad range of views, so he has chosen to interview the following professionals:

- Three Architects
- Three Civil Engineers
- Three Mechanical Engineers

Questionnaire Sampling

Questionnaire Section 1 – Company Details

The Purpose of the questions 1- 4 is to establish the role, the position and the nature of the activities which the professionals are involved in, so as to assess if the respondents have the knowledge and expertise to respond to the interviews.

Questionnaire Section 2 – Energy Efficiency

The purpose of the questions 1 – 5 is to identify if individuals are aware of energy efficiency and if they are considering energy efficiency in their projects, as they were supposed to do. It also intended to test the overall perception of the professionals regarding the energy efficiency regulation and measures.

Questionnaire Section 3 – Assessment of Energy Efficiency Regulations and Measures

The purpose of the questions 1 – 3 is to test the suitability and effectiveness of the government regulations and measures under the perspective of the professionals on the field.

Interview Sampling

The questions asked within the interviews for all the interviewees were as follows:

1. Are your clients aware of the energy efficiency?
2. Do you advise your clients to use of energy efficient materials technologies and methods?
3. Have all your clients considered energy efficiency for their projects before the implementation of the E.P.C
4. Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?
5. What is your opinion regarding regulations, policies and measures of energy efficiency?

The transcripts of the interviews are included in appendix A.

2.2.2 Desk Study [Secondary Data Collection]

The data collection using the desk study approach is called secondary data because the data is obtained from other sources. The advantages of using secondary data are related to time and cost. *'In general, it is much less expensive to use secondary data than it is to conduct a primary investigation. (Naoum, 2007).*

In order for the author to meet its first, second and third objective a literature review will be carried out through the Desk study data collection approach. Desk study includes both primary and secondary literature sources.

Literature review is an essential stage in a research process because it provides the author with in-depth knowledge of the research area. *'it attempts to integrate what others have done and said, to criticize scholar works done previously, to link between related topic areas, and/or to identify the central issues in the study'*(Naoum, 2007).

The literature review was carried out through the appraisal of both of primary and secondary literature sources.

Primary Literature Sources

Primary literature according (Naoum, 2007) is the most accurate source of information as it publishes original research. Primary literature sources include Academic research journals, refereed conferences, dissertation/theses, reports/occasional papers and government publications

They author has used many sources of primary data but the most important primary sources that have been used are the following:

➤ **Research Journals**

1. Florides, G.A. Tassou, S.A. Kalogirou, S.A. Wrobel, L.C. (2001)
Evolution of domestic dwellings in Cyprus and energy analysis.
Renewable Energy 23-2, p.219-234

2. Kalogirou, S.A. Florides, G. Tassou, S. (2002) Energy analysis of buildings employing thermal mass in Cyprus. *Renewable Energy* 27-3, p.353-368
3. Coroneos, C., Fokaidis, P., et Mousiopoulos, N., (2003). Cyprus Energy System and The Use of Renewable Energy Sources. *Cyprus Energy System*. 1894-1900.

➤ **Reports/Occasional papers**

1. Applied Energy Center (2000) Cyprus Solar Thermal Market and Technology Assessment. Cyprus: Republic of Cyprus
2. Cyprus Institute of Energy (2007) Energy Efficiency Policies and Measures 2007. Cyprus
3. Cyprus Institute of Energy (2004) Renewable energy Policy review Cyprus. Cyprus: Republic of Cyprus

➤ **Government Publications**

1. Ministry of Commerce and Industry (2007) National Energy Efficiency Action Plan. Cyprus: Republic of Cyprus
2. Ministry of Commerce and Industry (2009) Support Scheme for energy Conservation and the promotion of Renewable Energy Sources for individuals and Organizations. Cyprus: Republic of Cyprus
3. Ministry of Commerce and Industry (2007) Energy Performance of Buildings. Cyprus: Republic of Cyprus
4. Ministry of Commerce and Industry (2007) Energy Efficiency in Cyprus. Cyprus: Republic of Cyprus

Secondary Literature Sources

Secondary literature sources will also be used in the literature review. Secondary sources include textbooks, trade journals, newspapers, magazines, websites and on-line databases.

The author has been using many sources of secondary data but the most important primary sources that have been used are the following:

➤ On-line Databases

1. Odysee database
2. Mure database
3. Intelligent Energy Europe
4. Statistical Services of the Republic of Cyprus
5. Ministry of Commerce Industry and Tourism
6. International Energy Agency
7. Cyprus Institute of Energy

➤ Websites

1. Support scheme for energy conservation and the promotion (2008) [*Homepage*] [Online], [Accessed 21st July 2012] <[http://www.mcit.gov.cy/mcit/mcit.nsf/All/BC386C0E0EFB879CC2256FC600311F46/\\$file/sxedio_EN_V30f+_draft.pdf?OpenElement](http://www.mcit.gov.cy/mcit/mcit.nsf/All/BC386C0E0EFB879CC2256FC600311F46/$file/sxedio_EN_V30f+_draft.pdf?OpenElement)>
2. Cyprus Energy Efficiency Action Plan (2007) [*Homepage*] [Online], [Accessed 21st July 2012] <http://ec.europa.eu/energy/demand/legislation/doc/necap/cyprus_en.pdf>
3. Energy Production from Renewables by 2020. (2008) [*Homepage*] [Online], [Accessed 22nd July 2012] <[http://www.mcit.gov.cy/mcit/mcit.nsf/All/03EC49A5EFA11F1CC22575230030FFB7/\\$file/presentation_DEMSEE2008_RES%20in%20Cyprus_22.09.08.pdf?OpenElement](http://www.mcit.gov.cy/mcit/mcit.nsf/All/03EC49A5EFA11F1CC22575230030FFB7/$file/presentation_DEMSEE2008_RES%20in%20Cyprus_22.09.08.pdf?OpenElement)>
4. Renewable Energy Sources, The Case of Cyprus (2007) [*Homepage*] [Online], [Accessed 22nd July 2012] <[http://www.mcit.gov.cy/mcit/mcit.nsf/All/3DF307F4679AB188C22575230030D806/\\$file/presentation_WREC2008_Renewable%20Energy%20Sources%20in%20Cyprus.pdf?OpenElement](http://www.mcit.gov.cy/mcit/mcit.nsf/All/3DF307F4679AB188C22575230030D806/$file/presentation_WREC2008_Renewable%20Energy%20Sources%20in%20Cyprus.pdf?OpenElement)>

➤ **Textbooks**

1. Commission of the European Communities. (2005) Doing More with Less: Green Paper on Energy Efficiency. Brussels

The objectives outlined previously will help the author to split down the research into subject areas in order to provide in greater depth an understanding of each area which will help the author to achieve his aim.

Objectives one and two have been split down in a subject area of literature review, '*The Background to Energy Efficiency*'. In order to achieve these two objectives the author has used both primary and secondary literature review.

Objective three has been split into a different subject area of literature review, '*Recent Energy Regulations and Measures*'. In order to achieve this objective the author has used both primary and secondary literature review.

The objective four as has been discussed above and will be carried out by Fieldwork research.

Chapter 3

Results Section

3.0 Data Analysis

3.1 Scope of Chapter

This chapter analyses the data obtained through interviews and questionnaires. The data obtained from the questionnaires will be analysed on a question by question basis. The data (qualitative) obtained from the semi-structured interviews are included in the «comments» section of each question in the form of quotations.

The method which has been used for analysing the data is based on descriptive analysis method. It includes charts, graphs and tables.

For each question a data summary table or graph or chart has been produced. A synopsis (comments) of each question follows in the form of analysis including individual quotations obtained from the interviews. The analysis has been carried according to the following sections:

- **Section 1** – Company Background
- **Section 2** – Energy Efficiency
- **Section 3** – Assessment of Regulations and Measures

3.2 Analysis of the Results

3.2.1 Section 1 – Company Background

Questions 1 & 2

This question is concerning the position and the profession of the respondents.

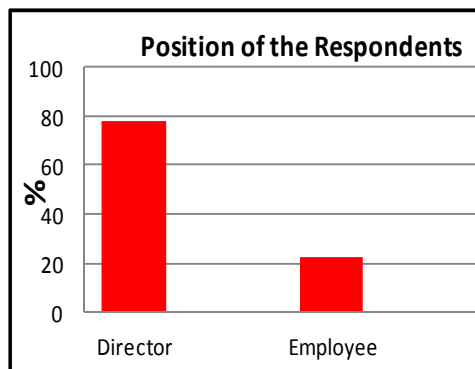


Figure 1

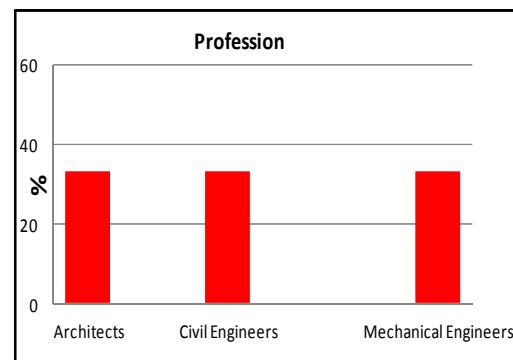


Figure 2

Comments:

The purpose of this question was to establish the role of the respondents, as to assess if the respondents have the knowledge and expertise to respond to the interviews. The analysis concludes that the respondents have the appropriate knowledge and would be able to answer the following questions with a high degree of certainty, since they are the experts on the building sector.

Question 3 & 4

These questions are about the current company's workload and the classification of the company's activities.

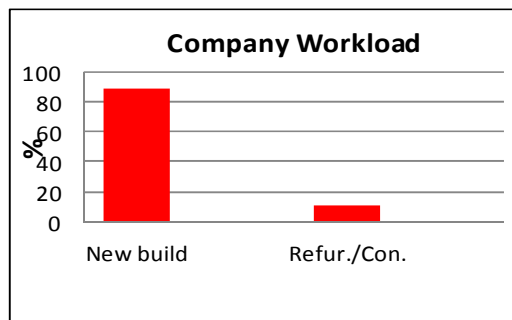


Figure 3

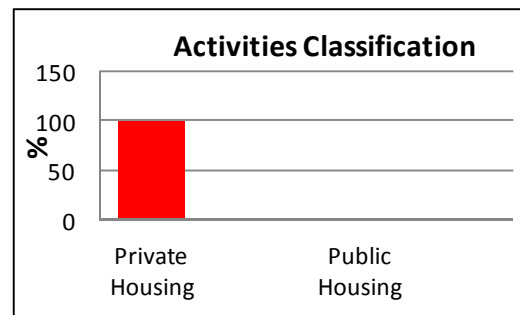


Figure 4

Comments:

The purpose of these questions was to establish the activities of the respondents and their companies in order to evaluate if the respondents belong to the right field for the purpose of this research.

The analysis showed that all the respondents work only in the private housing sector. Regarding the workload of their companies it has been determined that 88.88% of the respondents concentrate on new build projects.

The analysis concludes that the respondents are in the position to respond to the interview with a high degree of certainty.

3.2.2

Section 2 – Assessment of Energy Efficiency

Question 1: Are your clients aware of energy efficiency?

Table 5.1

Interviewees	%
Interviewee Nr 1	50
Interviewee Nr 2	70
Interviewee Nr 3	40
Interviewee Nr 4	80
Interviewee Nr 5	10
Interviewee Nr 6	50
Interviewee Nr 7	80
Interviewee Nr 8	70
Interviewee Nr 9	40
Average	54

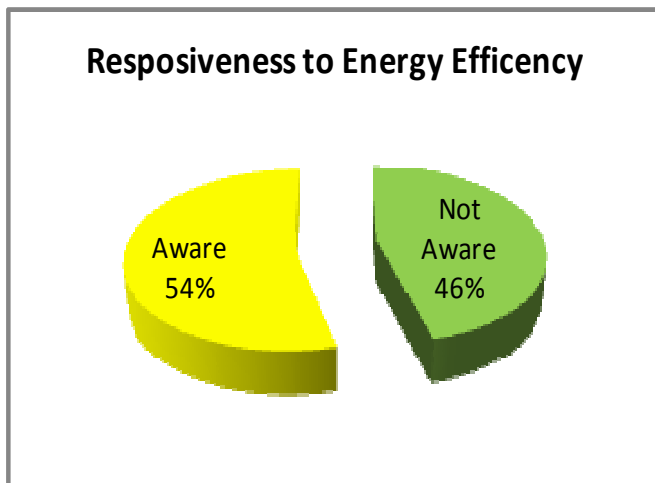


Figure 5

Comments:

The above chart indicates that the greatest percentage of the respondents stated that their clients are aware of the energy efficiency.

When the interviewees were asked for their clients are aware of energy efficiency they responded as follows:

“Before the introduction of the new methods and technologies none was asking me about how can make their houses more energy efficient. Year by year this number has increased and especially now where in order to grant a building permit you need the Energy Performance Certificate.”

(Interviewee Nr 2)

“An average of 40% of my clients are aware of the energy efficiency benefits, however, the remaining 60% are not aware of the energy efficiency because usually they don’t know the benefits and the new efficient technologies.”

(Interviewee Nr 3)

“Most of my clients are not aware of the energy efficiency and deficiency.”

(Interviewee Nr 8)

Question 2: Do you advise your clients for the use of energy efficient material and methods?

Table 5.2

Do you advise your clients for the use of energy efficient material and methods?	Number of Interviewees	%
Yes	9	100
No	0	0
Total	9	100

Comments:

The above table shows that 100% of the respondents advice their clients for the use of energy efficiency materials and methods.

When the interviewees were asked if they advice their clients for the use of energy efficient materials and methods they responded as follows:

“I always advice my clients about energy efficiency materials and technologies and their advantages”

(Interviewee Nr 2)

“As an architect is my duty to inform my clients about energy efficiency, I always suggest them to make their properties energy efficient...”

(Interviewee Nr 3)

“Yes I advice them and I recommend them the best technologies for energy efficiency in order to construct an energy efficient building that it would save them energy and money”

(Interviewee Nr 5)

Question 3: Have all your clients considered energy efficiency on their projects before the implementation of the E.P.C?

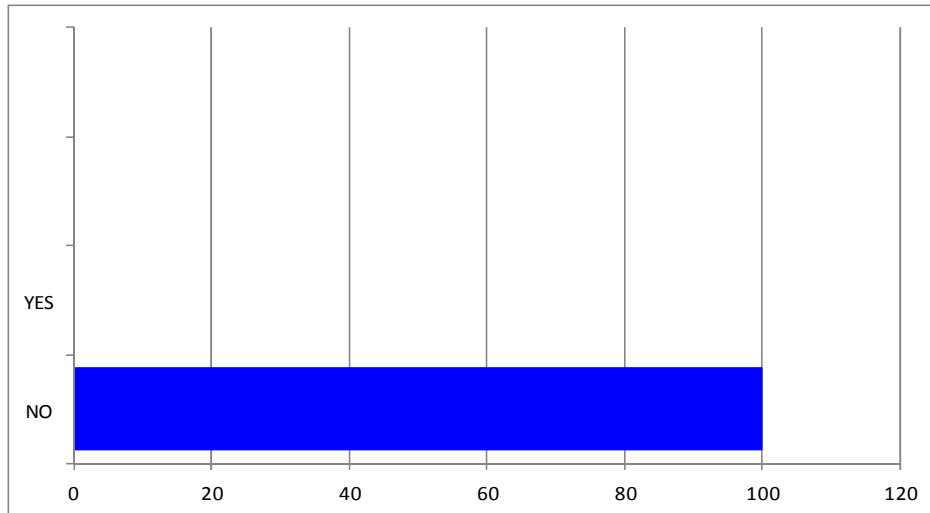


Figure 6

Comments:

The above chart indicates that 100% of the respondents said that their clients have not considered all the energy efficiency fundamentals [technologies, materials e.t.c] at their projects.

When the interviewees were asked if they have considered energy efficiency to their clients projects before the implementation of E.P.C they responded as follows:

*“As an architect I have considered to all my projects the design fundamentals...
Regarding the thermal insulations I can’t say that all my clients have used the proper thermal insulations.”*

(Interviewee Nr 2)

*“The most of the people in Cyprus before the implementation of the E.P.C they didn’t
knew what energy efficiency meant”*

(Interviewee Nr 6)

Question 4: Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because on the increase costs?

Table 5.3

Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because on the increase costs?	Number of Interviewees	%
Yes	6	66.67
No	3	33.33
Total	9	100.00

Comments:

The 66.67% of the respondents have said that the reason that their clients have not properly considered energy efficiency on their buildings was because of the increase costs.

Question 5: Does the Town Planning and Housing department have any requirements regarding energy efficiency for approving the construction licence?

Table 5.4

Does the Town Planning and Housing Department have any requirements regarding energy efficiency for approving the construction licence?	Number of Interviewees	%
Yes	9	100
No	0	0
Total	9	100

Comments:

The above table shows that all the respondents have stated clearly that the Town Planning and Housing Department in order to give a planning permission requires specific provisions regarding energy efficiency.

3.2.3 Section 3 – Assessment of Energy Efficiency regulations & Measures

Question 8: Do you believe that the energy efficiency measures and regulations are effective?

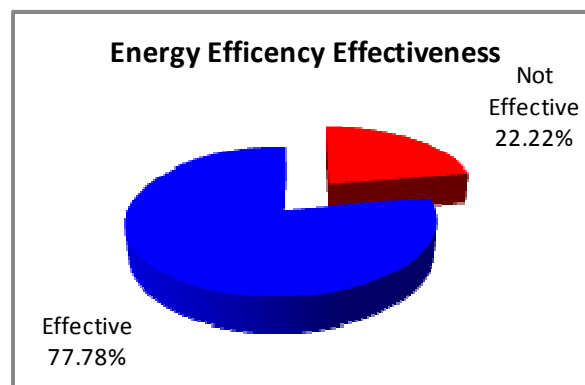


Figure 7

Comments:

The above chart indicates that the vast majority of the respondents 22.22% believe that the energy efficiency measures and regulation are not effective.

When the interviewees were asked on what they believe regarding the government measures and regulations they responded as follows:

“The existing regulations and measures for the moment are satisfactory however, the government needs to regulate the E.P.C because its compulsory only for new properties and for the properties that are sold or rented.”

(Interviewee Nr 2)

“I believe that the government must more actions in order to inform the public because most of the people are not aware of the energy deficiency and all the weight has been imposed to us”

(Interviewee Nr 7)

Question 9: What energy efficiency regulations and measures you find effective?

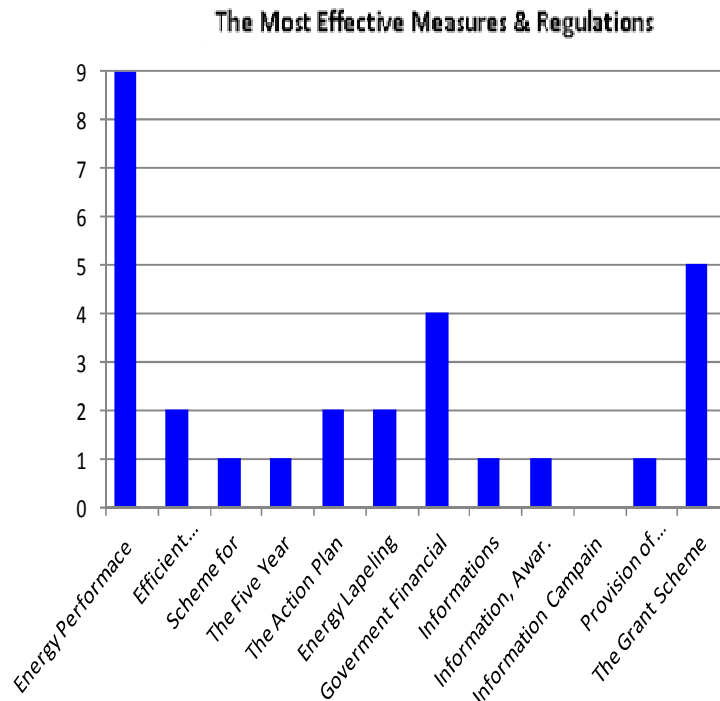


Figure8

Comments:

The above chart indicates that the most effective measures are the following:

100%: Energy Performance Certificate

56%: The grant scheme

45%: Government Financial support schemes for investments in RES/RUS/EE

22%:

- Efficient requirements for hot water boilers, refrigerators, lighting ballast.
- The Action Plan for Green Public Procurement
- Energy labelling and relevant information of household appliances

Question 10: Do you find the Energy Performance Certificate functional?

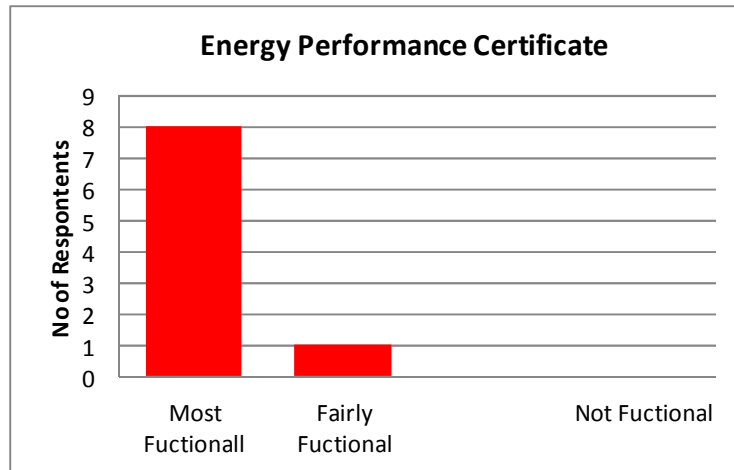


Figure 9

Comments:

This chart indicates that the vast majority of the respondents 88.88% believe that the E.P.C is Functional.

When the interviewees were asked to give their opinion regarding the E.P.C, they responded as follows:

“I can say that the implementation of the E.P.C is very significant because the certificate gives useful information considering the cumulative energy performance of the building.”

(Interviewee Nr 1)

“The E.P.C must be enforced not only for the new and sold or rented properties but for all the existing properties”

(Interviewee Nr 5)

“I believe that the E.P.C is an effective measure that will revolutionize the market.”

(Interviewee Nr 9)

Chapter 4

Discussion Section

4.0 The Background to Energy Efficiency

4.1 Introduction

Cyprus is the third largest island in the Mediterranean Sea; it is located at the East Mediterranean basin, 75 km south of Turkey, 105 km west of Syria, 380 km north of Egypt. It has a Mediterranean climate, hot dry summer from June to September (26-33 C) and rainy mild, wet winters from November to March (8-14 C). The total area of Cyprus covers is 9,251 sq kilometers and the population at the end of 2006 has been estimated at 867,000, the population density is 88.4 persons per sq kilometer.

Cyprus is a well-known regionally holiday resort, a services center (mainly banking and shipping) and a telecommunication node.

Table 3.1

Socio-Economic Information 2006	
Per Capita Income	\$26,652
Inflation	2.3%
Number of Persons per room	1.31
Share of Urban Population	70,1%
Households	319,000
Per Capita Consumption of Electricity (kWh)	4,990
Energy Intensity (toe)	223
CO2 per Capita (Kg)	10,397

Source: Statistical service of the Republic of Cyprus,(www.mof.gov.cy)

Following the submission of an application in July 1990 to become a full member of EU the European Council of Copenhagen welcomed Cyprus as a new member of EU in May 2004 and it has officially entered the euro zone in 1st January 2008.

The last decade Cyprus has enjoyed a constant period of growth with an increased GDP almost by 36% between 1995 – 2004. It has seen an increase in all the sectors except agriculture. The value added in industry was increased by 15% and at the service sector by 44%, being the largest sector in terms of value added. The main reasons of this constant growth were mainly driven by the tourism industry and the rapid growth of the construction industry. Overall Cyprus is a dominating services economy with strong macroeconomic indicators.

Cyprus has a small and isolated energy system without interconnections to other international energy networks. It is completely dependent on energy imports because it doesn't have any indigenous energy sources except from the small solar energy contribution.

4.2

Energy Production & Consumption

A research carried out by *The Ministry of Commerce, Industry and Tourism on 17 November 2007*, namely *“the National Energy Efficiency Action Plan,”* for the year 2006 showed that 89.9% of the total primary energy consumption is oil, and the renewable energy resources (RES) account for 10.1%, 4.7% of the solar energy and the remaining 5.4 % account for solid fuels.

Further, the research showed that Cyprus is completely dependent on importing fuels. In 2006 the energy import cost was equal with the 89% of the country’s totals exports. As a final point, the energy imports cost for 2006 was 580 million representing 18% of the total import costs.

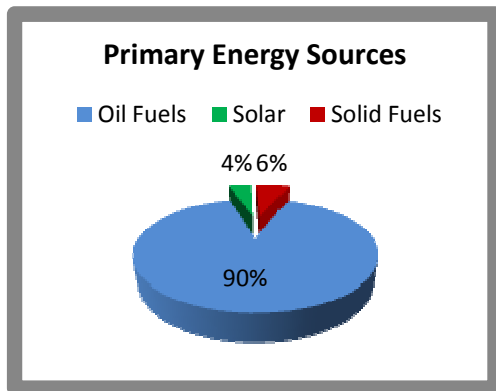


Chart 3.1

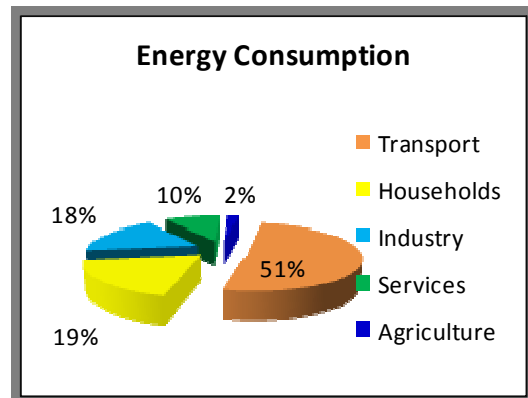


Chart 3.2

Source: Republic of Cyprus 2007, National Energy Efficiency action Plan.

According to the RICS, energy consumption of the built environment is understood to include households, industry and services sector energy uses (*RICS 2007, Climate Bill*). The built environment is responsible for the 47%, with the household to hold 19%, the industry 18%, the largest consumer being the cement industry with 50%, followed by the food and beverage industries with 23%.

The services sector was responsible for 10% for the total energy consumed by hotels, restaurants and shops accumulating to 65%.

The transport sector has the largest stake of the total energy consumption with 51%, in this sector, the road transportation is the largest energy consumer with 35% and the civil Aviation with 16%. The agriculture sector was responsible for the 2% of the total energy consumption.

The research has also showed that Cyprus has high increase rates of energy consumption with 7% annual increase of electricity consumption and 3.5 % of the final consumption for the period between 1996-2006.

Finally, according to the research as to the CO₂-emissions the most intensive sector was transport, which generated 32 % of the total transmissions, the households with 23%, the industry 19%, the Services 23% and the agriculture with 2%.

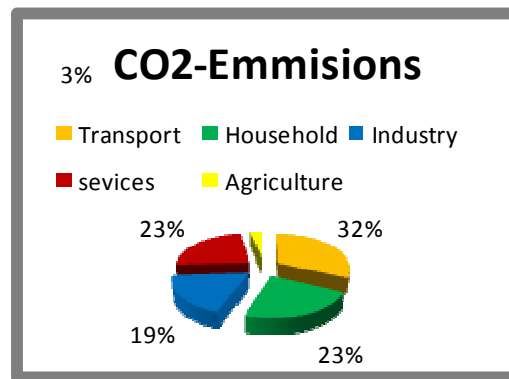


Chart 3.3

As it has been discussed above, Cyprus has an isolated energy system without any interconnection with other international networks and despite the fact that recently has been discovered indigenous energy sources, have been discovered, at the moment it is almost entirely dependent on imported fuels. The energy sources that Cyprus is producing at the moment are the following:

Solar Energy: Cyprus has unlimited solar potential, which means daily sunshine from 9,8 to 14,5 hours and is the Europe leader in solar water heating with 90% of households and 50% of hotels having installed solar water heaters. At the moment solar energy contribute on is 4,7% of the total primary energy sources.

It is worth mentioning that according to the EU study 'Sun in Action' Cyprus has ranked as the first country in Europe having the highest installed solar collector per capita with approximately 1 m² of installed solar collector per person. Cyprus has also being declared by IEA (international energy agency) and WREN (world renewable energy centre) for 2006 – 2008 as the winner 'world renewable energy congress trophy'.

Wind Energy: The contribution of wind energy is limited due to the low wind velocities, having some areas with wind velocity of 5-6m/sec and only some other areas with 7 m/sec. The exploitable wind potential has been calculated to be 150-250 MW.

The Biomass Energy: The contribution of Biomass exploitation accounts for 5.4% of the total primary sources and includes the exploitation of agriculture residues, energy crops and biogas. In simple terms the biomass is provided by an exploitation of agricultural residues, energy crops, waste disposal plants, exploitation of landfill gas from the waste disposal plants, burning of solid wastes and biofuels.

The Hydro Energy: It is very limited due to the water shortage.

4.3

Market Analysis & Major Market Actors

4.3.1

Market Analysis

Cyprus has a small and isolated energy system without interconnections with other internationally energy networks (gas, electricity, oil). At the moment, it is completely depended on energy imports.

Cyprus, prior to its induction to EU in May 2004 did not have a comprehensive energy saving policy with national legislation '*since the accession there was no national energy efficiency policy*' (*Cyprus Institute of energy 2007, Energy Efficiency Policies and Measures 2007*).

According to the *National Energy Efficiency Action Plan (Republic of Cyprus 2007)* the first renewable energy and energy conversation action plan was created in 1985 and then revised in 1998. This plan introduced the first grant scheme and was fundamental for founding the Cyprus Institute of Energy (CIE) and Applied Energy Centre (AEC) in 2000. The AEC has introduced the first interconnection wind and photovoltaic installations in the national grid and has formed the first agreement for buying electricity from Renewable energy Sources.

In 2002 an Action Plan was created that would be valid until 2010 for the promotion of renewable energy sources and for the conversation of energy. Cyprus has ratified UNFCCC in 1997 and approved the Kyoto protocol in 1999, which has no emissions limitation commitments (*Cyprus Institute of energy 2007, Energy Efficiency Policies and Measures 2007*). It has also created and approved many other policies and plans, which are out of the scope of the report and would not be mentioned.

According to a research report '*Cyprus Institute of energy 2007, Energy Efficiency Policies and Measures 2007*', from 1994 to 2004 Cyprus has increased its primary energy consumption by 22% and the final energy consumption by 29%. This grow was caused by a major increase of electricity consumption by 71%. However, the same time Cyprus has managed to improve the energy efficiency of the industry, households/Services and transport sectors.

In the industrial sector energy efficiency was improved by 26%. The improvement is mainly attributed to the cement industry, which consumes more than 50% of the industry energy sector.

The efficiency of the households/tertiary sector was increased by 3%. The reason for this slight improvement was mainly caused by the fact that there was no national energy efficiency policy or obligatory building regulations. The increase was caused by the use of CFL lamps and solar water heaters.

Between 1995-2004 the transport sector has seen a 7% improvement. The main reasons were the introduction of new and more efficient cars, and the change of taxation of diesel/gasoline fuels, which has caused the withdrawal of large energy capacity diesel cars and the introduction of with the light trucks.

4.3.2 Market Factors – Scope and Role

The following are governmental and non-governmental organizations; they are the market actors regarding the energy market. Each organization has been analysed regarding its functions and their role according energy efficiency.

The Ministry of Commerce and Industry which has the responsibility for monitoring and coordinating the availability of energy and energy supply, monitoring and formatting the European Policy for energy issues. It is also responsible for assisting the preparation of Laws, regulations etc and their promotion and preparing, as well as for implementing programs for energy conservation and promotion of renewable energy sources (RES).

The Electricity Authority of Cyprus (EAC) was established in 1952, under the ‘Electricity Development Law’ as an independent semi-government organization which functions are the generation, transmission and distribution of electricity in Cyprus. EAC is governed by a board of managerial members, which are appointed by the council of Ministers. Via the ministry of commerce and industry the government controls EAC in order to meet the continuously increasing demand of electricity at competitive prices. It is also committed to its mission to provide services of high standards to its customers, the efficient use of electricity and the protection of the environment.

The Applied Energy Center (AEC) was established in 2000 by the ministry of commerce and industry. Its objectives are the development and promotion of renewable energy resources; it is also responsible for monitoring the proper use of energy via its testing laboratory, it’s assisting manufacturers to improve energy efficiency by testing and certification reports (free of charge), as part of its contribution to the industry.

The Cyprus Institute of Energy (CIE) was established by the minister of industry and tourism in 2000 as a non-governmental organization, as part of the provision of The Societies and Institution Law 1972 (57/1972). The aims of CIE are the promotion of energy conversation; the encouragement of renewable energy sources, the use, the secure the energy supply and the protection of the environment. In implementing its aims CIE supports the Grand Scheme, the Five Year Action Plan for Savings, the Action Plan for Green Public Procurement and the Labeling of Conformity (CE). Further, is involved in international programs, it co-operates with similar international organizations and provides technical aid and information to the field.

4.4 National Targets of Energy Efficiency

Since 2004, after its induction to the European Union, Cyprus has made significant changes to energy efficiency systems. In 2008 has established a reliable and a long term framework to improve the energy efficiency.

Studies and energy inspections had showed that there is a substantial potential for energy saving in the building and transport sector, *'The priorities are buildings and the transport sector followed by the industry'* **National Energy Efficiency Action Plan (Republic of Cyprus 2007)**. Therefore, the Ministry commerce industry and Tourism has given priority to buildings and the transport sector and has provided substantial measures in order to meet its objectives.

The targets of the government are:

- As to Renewable Energy Sources, to increase the proportion of electricity produced from renewable energy sources from 5 % to 9% by 2010 and 20% by 2020.
- To reduce the energy consumption to 2% by 2010 and 7% by 2015.

4.5 Energy Regulations and Measures

The aim of this chapter is to achieve the objective three. It will examine how the Cyprus government controls energy efficiency by regulations and measures. Objective three will be achieved by analyzing secondary data (both primary and secondary literature sources).

Among the priorities of the Cyprus government, is the building sector, since it has substantial potential: *'The building sector of Cyprus has been estimated to have a minimum of 30% energy savings potential, since no building codes or thermal standards applied before'* (**Cyprus Institute of energy 2007, Energy Efficiency Policies and Measures**). The only technology which was established in households was the use of solar water heaters (more than 90% is installed to households and more than 50% to hotels).

Prior to its induction in EU in May 2004, Cyprus did not have a comprehensive energy saving policy. The recent building regulations/measures/policies that have been implemented are mainly after 2004 and as described by the republic of Cyprus, *'are the most efficient measures that ever have been set'* (**Republic of Cyprus 2007, National Energy Efficiency Action Plan**).

In order to evaluate the energy efficiency of the building sector to establish whether the measures that the government has set are effective all the energy efficiency regulations and measures will be analyzed and will be evaluated in connection with the case study, [chapter 5] so as to identify and classify their strength and their purpose.

The following regulations and measures have been made according the Mure Database Ministry of Commerce Industry and Tourism and the report of **Cyprus Institute of energy 2007, Energy Efficiency Policies and Measures 2007**:

4.5.1

Public Sector

The five year plan for energy savings was introduced by the ministry of commerce and industry at 2005, as part of the decision NO.62.738. The plan provides the amount of 900,000 euro annually for energy savings investments in existing and old public buildings that lack energy efficiency. After a series of energy inspection of public buildings it has been concluded that there is energy saving potential of more than 25%, by applying simple measures such as efficient lighting, boiler insulation, fitting of thermostats etc.

The Action Plan for Green Public Procurement was again introduced by the ministry of commerce and industry in 2007 as part of the decision NO.65191. It covers the public sector buildings, such as public administration, health, local government etc. This plan provides energy efficient equipment with the energy label CE, electrical and electronic appliances with CE label, the use of fluorescent lamps, light sensors, efficient machines with low emissions and the use of solar heating. It also involved energy studies concerning renovation and construction of public buildings.

4.5.2

Residential Sector

Energy Performance Certificate; The implementation of E.P.C become mandatory for the residential buildings on the 1st of January 2010 and for the commercial, buildings, educational buildings, office buildings and all other buildings on the 1st of September 2010, by publishing the Ministerial Order for the Minimum Energy Performance Requirements of 2009.

The main purpose of the E.P.C is to give useful information considering the cumulative energy performance of the building. The buildings are rated, based on calculated consumption [asset rating] of primary energy per year [kWh/m²/year] for typical use of the building according to the building type. The energy label classifies the buildings on an energy efficiency scale ranging from A [high energy efficiency] to G [poor

efficiency]. The E.P.C also provides information about the estimated CO₂ emissions resulting from the calculated energy consumption and the calculated energy that comes from renewable sources.

Energy labeling and relevant information of household appliances (*Label of Conformity (CE)*) this measure has been made compulsory by relative directives of EU which were implemented in 2004, covering the domestic appliances such as washing machines, domestic lamps, air conditioners, ovens etc. all displayed appliances must carry an energy label and must be classified in classes from A to G, according to their energy consumption, A is the most energy efficient and G the least.

Governmental financial support schemes for investments in RES/RUS/EE, were created via Law 33(I)/2003 for the promotion of RES, energy conservation and the creation of special fund, for financing these investments. They provide for grants for investments in energy efficient building renovation, for the purchase of more efficient boilers and investment in RES. They also provide information and education by energy agencies and energy suppliers.

Efficient requirements for hot water boilers, refrigerators, lighting ballasts, were created in accordance with regulations 621/2007, 630/2007 with regard to eco design requirements for hot water boilers, refrigerators and ballasts. They stipulate regulations for heating systems and hot water systems and minimum efficiency standards for boilers. Further, all tertiary and residential buildings must be inspected regularly as determined in the relevant decree issued by the Minister of Commerce, Industry and Tourism and the same applies as to maintenance boilers, heating insulations, air conditioning and other cooling systems in order to be effective and have output greater than 12 kW.

Scheme for subsidizing CFL lamps, It is a five year action plan that started, in 2007 under ministerial decision. It involves the distribution of 2 million of fluorescent lamps to the tertiary and residential sector for free.

Information awareness policies for energy savings, This plan was issued in 2004 and has as its purpose to provide education training and workshops by ETEK (Cyprus professional engineers Chamber) to educate engineers in energy efficiency building design, integration of RES in buildings and energy saving opportunities in industry.

4.5.3 Services Sector

Tertiary sector has many regulations and measures that also cover the public and residential sectors; these measures are the '*Governmental financial support schemes for investments in RES/RUS/EE*', '*The Action plan for green public procurement*' which has been discussed above.

Eco design requirements for energy using products (hot water boilers, refrigerators, ballasts), were created in December of 2007 in accordance with regulations 615/2007, 621/2007, 630/2007 with regard to eco design requirements for hot water boilers, refrigerators and ballasts. They have implemented measures and regulations for building equipment, it setting energy efficiency requirements for hot water boilers, household refrigerators and ballasts for fluorescent lighting. The target groups are building professionals and associations, energy managers and trade associations.

4.5.4 Industrial sector

Governmental grants/subsidies scheme for the promotion and encouragement of RES, energy saving and the creation of a special fund for financing or subsidizing of these investments, was created in 2004 via Law 33(I)/2003 and has as its aim to provide financial motivation for the materialization of investments in the field of energy conservation, promotion of RES investments and promotion of regional development. In overall the scheme provides for grants for the purchase of equipment, material and systems for the reduction of energy consumption and losses such as installation of solar thermal systems for sanitary water, installation of space cooling systems, solar thermal

systems for swimming pools etc. This scheme, as it has been mentioned it refers to all the market sectors but due to the scope of the report the remaining sectors will not be mentioned.

Information Campaign for Energy Efficiency, RES, RUE, was issued in 2006 aiming to promote the above grant scheme and to provide a continuous informational, educational and training campaign by energy agents, energy suppliers and ETEK, covering all the sector of the industry and the target audience is the building professionals and employers, energy managers, large enterprises etc.

4.5.5 General measures for all the sectors

The Grand Scheme is an annual financial support for investment for energy efficiency in existing buildings. The scheme is separated in two categories; category A applies to individuals and organizations that they do not exercise economic activity and category B has to do with natural legal and public sector bodies that exercise economic activity.

4.6 Innovative Energy Efficiency Measures

4.6.1 The Grant Scheme

In order for Cyprus meet the requirements of EU for energy efficiency the Law N33 (1)/2003 was created, according to this law a grant scheme was introduced for energy conservation, for RES and cogeneration of electricity, heating and cooling. This scheme is are separated into two categories, category A applies to individuals and organizations that they do not exercise economic activity and category B to natural legal and public sector bodies that exercise economic activity.

The following regulations and measures have been made according the *Ministry of Commerce and Industry 2009) Support Scheme for energy Conservation and the promotion of Renewable Energy Sources for individuals and Organizations* the *Cyprus Institute of energy 2007, Energy Efficiency Policies and Measures* and the *National Energy Efficiency Action Plan, Republic of Cyprus 2007*

Category A

Table 4.1

Scheme for individuals and organizations that are not exercise economic activity			
Table 4.1			
A/A	Type of Investment	Subsidy/Eligibly	Price/kWh subsidy
FA	Energy Conservation		
FA1	For energy conservation in 'non-profitable organizations' ¹	The available sponsorship is 30% of eligible costs and the maximum amount is €85,000	N/A
FA2	For new investments for thermal insulations in households in non-mountainous areas. For households above 600m from the seal level.	The financial support is 30% of the eligible costs and the maximum amount is €1,750 There is 100% for the first €1,400 and 30% for the remaining eligible costs; the maximum financial support is €2,600 per unit.	N/A
FA3	For heat pumps with ground heat exchanger for space heating cooling for households and non profitable organizations.	There is a provision 55% of the eligible costs and the maximum sponsorship is €20,000	N/A
FB	Renewable Energy Sources (RES)		
FB1	Wind Systems for Electricity production		
FB1.1	Small systems with generating capacity up to 30 kWh for non-profitable organizations.	The financial support is 55% of the eligible costs and the maximum sponsorship is €120,000	5,40 c/kWh

¹ **Non-Profitable organizations:** Municipalities, communities, churches, monasteries, societies and state agencies to the point they do not exercise economic activity.

Table 4.1

Table 4.1			
A/A	Type of Investment	Subsidy/Eligibly	Price/kWh subsidy
FB1	Renewable Energy Sources (RES)		
FB1.2	Wind Systems for Electricity production		
	Wind mills for pumping system for non-profitable organizations	The financial support is 55% of the eligible costs and the maximum sponsorship is €25,630	N/A
FB2	Solar Systems		
FB2.1	Central active solar water heating systems for non-profitable organizations (installation/replacement)	There is a provision 45% of the eligible costs and the maximum sponsorship is €26,000	N/A
FB2.2	For heating and cooling of space for non-profitable organizations (installation/replacement)	The available sponsorship is 55% of eligible costs and the maximum amount is €120,000	N/A
FB2.3	Domestic solar systems for new private residences (only for new installations)	Provision of €171 for thermo symphonic solar systems without circulator and cold water pump €342 for the whole solar system (including circulator and cold water pump)	N/A
FB2.4	Domestic solar systems of replacement of solar heating panels	The financial support is 20% of the replacement costs and the maximum sponsorship is 171 for thermo symphonic solar systems without circulator and cold water pump and €342 for the whole solar system (including circulator and cold water pump)	N/A
FB2.5	Solar water heating system for swimming pools for non-profitable organizations (installation/replacement)	The available sponsorship is 45% of eligible costs and the maximum amount is €25,630	N/A
FB3	Biomass Utilization		
FB3.1	Central systems for the production of heating/cooling	There is a provision 55% of the eligible costs and the maximum sponsorship is €19,000	N/A

Table 4.1

Table 4.1			
A/A	Type of Investment	Subsidy/Eligibly	Price/kWh subsidy
FB4	Photovoltaic Systems PV		
FB4.1	Small photovoltaic systems of up to 20 KW, connected to the network for non-profitable organizations	<i>Option 1:</i> The financial support is 55% of the eligible costs and the maximum sponsorship is €64,927 and subsidization of energy produced <i>Option 2:</i> there is no financial support but the subsidization is more than the option 1	20,50 cents/kWh 38,03 cents/kWh
FB4.2	Small photovoltaic systems of up to 20 KW, not connected to the network (stand alone) for non-profitable organizations	The available sponsorship is 55% of eligible costs and the maximum amount is €64,927	N/A

Category B

Table 4.2

For natural legal and public sector bodies that exercise economic activity			
Table 4.2			
A/A	Type of Investment	Subsidy/Eligibly	Price/kWh subsidy
NA1	Energy Conservation		
NA1.1	Energy conservation for existing enterprises, purchase and installation of: Materials and equipment for the reduction of energy consumption and losses.	The financial support is 30% of the eligible costs and the maximum sponsorship is €164,927	N/A
NA1.2	Equipment for generation, transmission, distribution and utilization of energy		

Table 4.2

Table 4.2			
A/A	Type of Investment	Subsidy/Eligibly	Price/kWh subsidy
NB1	Wind Systems for electricity consumption		
NB1.1	Small systems with generating capacity up to 30 kWh for organizations that exercise economic activity	The available sponsorship is 40% of eligible costs and the maximum amount is €40,000	5.40 cent/kWh
NB1.2	Wind mills for pumping water	There is a provision 40% of the eligible costs and the maximum sponsorship is €16,400	N/A
NB2	Solar Systems		
NB2,1	Central active solar water heating systems	The financial support is 30% of the eligible costs and the maximum sponsorship is €16,400	N/A
NB2,2	Solar system for space heating and cooling	The available sponsorship is 40% of eligible costs and the maximum amount is €84,300	N/A
NB2,3	Domestic Solar systems	Provision of €171 for thermo symphonic solar systems without circulator and cold water pump €342 for the whole solar system (including circulator and cold water pump)	N/A
NB2,3	Solar water heating system for swimming pools for non-profitable organizations (installation/replacement)	The available sponsorship is 30% of eligible costs and the maximum amount is €16,400	N/A
NB3	Photovoltaic systems		
NB3,1	Small PV systems with generating capacity up to 20KW, connected with the network	<i>Option 1:</i> The financial support is 40% of the eligible costs and the maximum sponsorship is €46,400 and subsidization of energy produced <i>Option 2:</i> there is no financial support but the subsidization is more than the option 1	12 cents/kWh 19.6 cents/kWh
NB3,2	Small PV systems with generating capacity up to 20KW, (stand alone)	There is a provision 40% of the eligible costs and the maximum sponsorship is €46,400	N/A

4.6.2 Evaluation of the Grant Scheme

Case studies of energy saving projects

This section aims to examine the effectiveness of the grant scheme. The following are the results as extracted from applied case studies of the ministry of commerce industry and Tourism

[http://www.mcit.gov.cy/mcit/mcit.nsf/All/3DF307F4679AB188C22575230030D806/\\$file/presentation_WREC2008_Renewable%20Energy%20Sources%20in%20Cyprus.pdf?OpenElement:](http://www.mcit.gov.cy/mcit/mcit.nsf/All/3DF307F4679AB188C22575230030D806/$file/presentation_WREC2008_Renewable%20Energy%20Sources%20in%20Cyprus.pdf?OpenElement)

Table 4.3

Project	Technology	Saving %	Payback Period With Grant (No grant)	Total Grant (Total Investment) €
Hotel	Energy IT System	15	2 (5,2)	40,000 (133,333)
Hotel	Electricity Conservation	11,5	2,3(3,3)	15936 (53121)
Hotel	Electricity Conservation	15,5	1,9(2,7)	35913 (119,710)
Hotel	Electricity Conservation	10,5	2,7(3,8)	8895 (29650)
Construction Company	Central Solar System	63	4,3(6,2)	12,166 (40,556)
Hotel	Central Solar System	32	6(8,14)	11,205 (37,350)
Enterprise	Power and Electricity Conservation	11	2(3)	29,700 (99,000)
Industry	Electricity Conservation with Heat Recovery	16 electricity 25 heat	6,5(9,2)	61,545 (205,000)
Industry	Electricity Conservation	15	0,9(1,3)	14,995 (49,983)

Source: The Ministry of Commerce, Industry and Tourism

As it can be seen from the above case studies the technologies that have been applied to the projects had resulted in significant energy savings. The energy savings and the payback period depend on the type of the project and the type of the technology.

The outcome of these case studies is mainly that if the grant scheme is applied properly by organizations and individuals the gain energy saving will be substantial.

The following section will evaluate the grant scheme by the intensity of the applications of individuals and organizations. The evaluation has been made in accordance with **Ministry of Commerce and Industry 2007, Evaluation of the Grant scheme**, concerning the applications that have been submitted in the years 2004 and 2005.

Comparison of 2004 and 2005

Table 4.4

Energy conservation for business	2004	2005
Number of applications	47	58
Approved sponsorship capital	€284,911	€57,213
Number of applications that have been paid	26	N/A
Total amount that has been provided	€152,790	N/A

Table 4.5

Building thermal insulations	2004	2005
Number of applications	119	674
Approved sponsorship capital	€81,666	€ 113,333
Number of applications that have been paid	93	64
Total amount that has been provided	€86,666	€ 67,166

Table 4.6

Central solar water heating systems	2004	2005
Number of applications	27	48
Approved sponsorship capital	€175,590	€60,608
Number of applications that have been paid	5	1
Total amount that has been provided	€37,523	€12,150

Table 4.7

Solar systems of heating and frigidity of space	2004	2005
Number of applications	30	23
Approved sponsorship capital	€ 146,756	€29,733
Number of applications that have been paid	3	N/A
Total amount that has been provided	€19,628	N/A

Table 4.8

Solar thermal water heating for households	2004	2005
Number of applications	440	1,644
Approved sponsorship capital	€482,765	€376,201
Number of applications that have been paid	158	100
Total amount that has been provided	€77,771	€32,913

Table 4.9

Solar thermal water heating for swimming pools	2004	2005
Number of applications	12	11
Approved sponsorship capital	€38,766	€13,535
Number of applications that have been paid	2	2
Total amount that has been provided	€5,851	€4,166

Table 4.10

Photovoltaic systems	2004	2005
Number of applications	161	141
Approved sponsorship capital	€1,230,253	€170,913
Number of applications that have been paid	21	N/A
Total amount that has been provided	€232,895	N/A

Table 4.11

Total	2004	2005
Number of applications	836	2599
Approved sponsorship capital	€2,440,707	€821,536
Number of applications that have been paid	308	167
Total amount that has been provided	€613,124	€116,935

Summary

According to the *Evaluation of the Grant Scheme, Ministry of Commerce and Industry 2007* the numbers of the applications of 2005 compared to 2004 have been increased from 836 to 2599. The capital that has been approved for the grant scheme was €2,440,707 for 2004 and €821,536 for 2005. In 2004, the applications that have been approved and paid for were 308 whereas in 2005 were 167. The total amount that has been provided in 2004 was €613,124 and for 2005 was €116,935.

As, it can be seen from the above data analysis the grant scheme was more active in 2004 than 2005. In 2004 36.8% of the applications were approved and in 2005 6.4%. The approved capital in 2004 was €2,440,707 and the total amount that was provided was 25.1%. For 2005, the amount of capital that has been approved for the scheme was €821,536, and 14.5% has been provided.

From the above analysis many questions have arisen like, the reasons for the application rejections, the deference between 2004 and 2005 as to the approved capital, the reasons why the government have not provided all the approved capital etc.

These questions will be further investigated by the case study through the primary data in the next chapter.

4.3

Critical Appraisal of the Chapter

This chapter set out to establish the energy sources that Cyprus is producing and importing. A further objective of this chapter was to provide a brief market analysis including the market factors and their responsibilities. The last objective of this chapter was to establish the government targets.

The first part of the chapter looked at energy production and showed that Cyprus is completely depended on energy imports for the moment 89.9 % of the total primary energy consumption is oil, and the renewable energy resources (RES) account for 10.1%. The energy consumption analysis has shown that the transport sector has the largest stake of the total energy consumption with 51%, the built environment was responsible for the 47% with the household to hold 19%, the industry 18% and the agriculture sector being responsible for the 2%.

The CO₂-emissions analysis showed that the most intensive sector was the transport which generated 32% of the total transmissions, the households 23%, the industry 19%, the Services 23% and the agriculture 2%.

The chapter then went to look at the energy market, to provide a brief analysis of the past including the major market factors. The analysis showed that prior its induction in EU in May 2004, Cyprus did not have a comprehensive energy saving policy. Further, the figures showed that from 1994 – 2004, Cyprus has improved its energy efficiency, in the industrial sector energy efficiency was improved by 26%, the efficiency of the households/Services sector was increased by 3% and the transport sector has seen a 7% improvement. The analysis also showed that the main reason of these slight increases in the industry, households and Services sector was mainly due to the fact that there was no national energy efficiency policy or obligatory building regulations.

The third part of the chapter looked at the energy efficiency targets of the government and has find out that the government targets for Renewable Energy Sources are to increase the proportion of electricity produced from renewable energy sources from 5 % to 9% by 2010 and 20% by 2020. Finally, it has set as a further target to reduce the energy consumption to 2% by 2010 and 7% by 2015.

Further, this chapter looked at the regulations and measures of the energy efficiency of the building sector. The first part of the chapter has analysed and described the measures and regulations of the residential, Services, industry and public sector. It looked at the types of the regulations and showed that prior to its induction in EU in May 2004 Cyprus did not have a comprehensive energy saving policy. It also showed that Cyprus has recently implemented mandatory regulations covering the heat insulation of buildings, minimum efficiency standards etc.

The final part of this chapter looked at the innovative energy efficiency measures; it has analyzed, described and evaluated the grant scheme. The figures showed that the grant scheme was more active in 2004 than 2005, in 2004 36.8% of the applications were approved and in 2005 only 6.4%. The approved capital in 2004 was €2,440,707 and the total amount that was provided was 25.1%, In 2005 the amount of capital that has been approved for the scheme was €821,536, whereas 14.5% has been provided.

The following chapter is the data analysis that includes the data obtained from the semi-structured interviews and questionnaires of six professionals in the field (three architects and three civil engineers) and seeks to identify if construction companies and individuals are considering energy efficiency to their projects as they were supposed. It also intended to test the overall perception of the professionals regarding the energy efficiency and to test the suitability and effectiveness of the government regulations and measures.

Chapter 6

Conclusions

6.0

Conclusions

6.1

Introduction

The conclusion is drawn to determine whether the aim and the individual objectives of the research have been achieved and what they conclude.

The author will demonstrate how each objective has been achieved and what each objective concludes:

6.2

Research Aim

The aim of this dissertation is to review the energy efficiency of the building sector, and establish whether the Cyprus government has set satisfactory regulations and measures.

6.3

Research Objectives Appraisal

6.3.1

Objective 1

To provide a general overview of the energy sources that Cyprus is producing and importing.

The research revealed that Cyprus is completely dependent on energy imports because it does not have any indigenous energy sources for the moment and 89.9 % of the total primary energy consumption is oil, and the renewable energy resources (RES) account for 10.1%. The energy consumption analysis has shown that the transport sector has the largest stake of the total energy consumption with 51%, the built environment was responsible for the 47% with the household to hold 19%, the industry 18% and the agriculture sector responsible for 2%. The CO₂-emissions analysis showed that the most intensive sector was transport, which generated 32 % of the total transmissions, the households 23%, the industry 19%, the Services 23% and the agriculture 2%.

6.3.2

Objective 2

To find out what government has done up date, including a brief market analysis of the past and what are the market factors regarding energy efficiency and finally, to examine their plans for the future.

The research revealed that Cyprus has ratified UNFCCC on 1997 and approved the Kyoto protocol on 1999 but has no emissions limitation commitments. Further the figures showed that from 1994-2004 Cyprus has improved its energy efficiency, in the industrial sector energy efficiency was improved by 26%, the efficiency of the households/tertiary sector was increased by 3%. The transport sector has seen a 7% improvement.

The analysis also showed that the main reasons of these slight increases in industry, households and tertiary sector was mainly caused by the fact that was no national energy efficiency policy or obligatory building regulations. Finally, the government targets for Renewable Energy Sources are to increase the proportion of electricity produced from renewable energy sources from 5 % to 9% by 2010 and 20% by 2020. Finally it has set as a further target to reduce the energy consumption 2% by 2010 and 7% by 2015.

6.3.3

Objective 3

To find out how Cyprus is controlling the energy use by government regulations, policies, measures etc.

The research revealed that Cyprus, prior to its induction in EU in May 2004, did not have a comprehensive energy saving policy. It also showed that Cyprus has recently [January 2010] implemented mandatory regulations, the Energy Performance Certificate.

Moreover, under this objective the innovative energy efficiency measures have also been analyzed and evaluated and the figures showed that the grant scheme was more active in 2004 than 2005. In 2004 36.8% of the applications were approved and in 2005 only 6.4%. The approved capital in 2004 was €2,440,707 and the total amount that was provided was 25.1%. In 2005 the amount of capital that has been approved for the scheme was €821,536, whereas 14.5% has been provided.

6.3.4

Objective 4

To investigate if construction companies and individuals are satisfied with the government measures and regulations and assess how they consider energy efficiency to their projects.

Objective four has been achieved by analyzing primary data. The gathering of primary data has been achieved by conducting a descriptive case study which included semi-structured interviews and questionnaires. These interviews revealed that a large percentage [46%] of the respondents have said that their clients are not aware of energy efficiency. However, the analysis revealed that all the respondents have advice their clients to consider energy efficiency in their projects.

Further, the analysis showed that the most of the respondents have considered energy efficiency on the design stage.

The analysis further revealed that the most of respondents [66.67%] believe that the reason of not considering the appropriate energy efficient technologies is because of the increased costs.

Moreover, the analysis revealed that the vast majority [77.78%] of the respondents believe that the energy efficiency measures are effective.

Finally, the majority of the respondents believe that the Energy Performance is an effective and practical measure.

6.4

Research Limitation

Time

The inadequate amount of time did not allow the author to conduct a larger survey and to include other parties in the construction industry such as contractors and individuals.

Quality of Data

The quality of data that is included in the research is not up to date and it is not complete and accurate because Cyprus does not have accurate, analytical and comprehensive data issued from the government authorities.

Small Sample

The total number of interviews that have been carried out was limited and therefore, placed restrictions on the data analysis.

Word Limit

The research has exceeded the word limit; the reasons were mainly because the nature of the research required more topics to be covered in the literature review.

6.5

Recommendations

The author believes that the government should take more actions regarding the information of the public about the energy efficiency and its benefits.

The analysis of the literature review and in data has revealed that the grant scheme has substantial potential, but it requires substantial improvements with regard to the time restrictions and the available amount of the funding.

In the light of the discussion above the research has successfully achieved its aim and objectives. The research also highlights that the professional on the field (architects, civil engineers and Mechanical Engineers) are very interested in implementing the energy performance certificate for buildings and they are keen to be part of improving energy efficiency

6.6

Further Research

Further research could be undertaken for the implementation of the energy performance certificate and its impacts regarding the energy savings that will occur in order to improve the energy efficiency in Cyprus.

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Appendixes

Appendixes

Appendix A – Sample of Semi-Structured Interviews &
Interviews Questionnaire

Appendix B – Respondents' Completed Semi-Structured interviews and
Completed Questionnaires

Appendixes

Transcripts of Interviews

Interview Nr 1 – Semi Structured Interview with Questionnaire

Interview Nr 2 – Semi Structured Interview with Questionnaire

Interview Nr 3 – Semi Structured Interview with Questionnaire

Interview Nr 4 – Semi Structured Interview with Questionnaire

Interview Nr 5 – Semi Structured Interview with Questionnaire

Interview Nr 6 – Semi Structured Interview with Questionnaire

Interview Nr 7 – Semi Structured Interview with Questionnaire

Interview Nr 8 – Semi Structured Interview with Questionnaire

Interview Nr 9 – Semi Structured Interview with Questionnaire

Appendix A

Sample of Interview Questionnaire

SAMPLE

Interview Questionnaire

WORKING TITLE:

Evaluation of the Energy Efficiency of the Building Sector in Cyprus

RESEARCH AIM:

To review the energy efficiency of the building sector, and determine whether the Cyprus government has set satisfactory regulations and measures.

Section 1 – Company Details

1. What is best described your position in the company?

Director
Employee

2. What is yours company's approximate turnover?

<£0.5M
£0.5M - £2M
£2.1M - £5M
>£5M

3. Spitting your company's current workload, what is the percentage in each category?

New Building
Refurbishment/
Conversion

	Please provide % for each option

4. Which of the following classifications describe your company's main activities?

Public Housing
Private housing

Interview Questionnaire

Section 2 – Energy Efficiency

1. Are your clients aware of the energy efficiency?

Please provide % for each option		No
		Yes

2. Do you advise your clients for the use of energy efficient materials technologies and methods?

Yes		No	
-----	--	----	--

3. Have all your clients considered energy efficiency on their projects before the implementation of the EPC?

Yes		No	
-----	--	----	--

4. Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because of the increase costs?

Yes		No	
-----	--	----	--

5. Does the town planning and housing department have any requirements regarding energy efficiency for approving the construction licence.

Yes		No	
-----	--	----	--

Section 3 – Assessment of Energy Efficiency Regulations and Measures

1. Do you believe that energy efficient measures and regulations are effective?

Yes

No

2. What energy efficiency regulations or measures you find effective?

1	Most effective
2	Fairly effective
3	Not effective at all

Energy Performance Certificate

Efficient requirements for hot water boilers, refrigerators, lighting ballasts

Scheme for subsidizing CFL lamps

The five year plan for energy savings

The Action Plan for Green Public Procurement

Energy labeling and relevant information of household appliances

Governmental financial support schemes for investments in RES/RUS/EE

Information's awareness policies for energy savings

Information, awareness, training for energy efficiency and RES technologies

Information Campaign for Energy Efficiency, RES, RUE

Provision of information to and awareness rising among civil servants to promote energy efficiency measures and behavior in the workplace

The Grant Scheme

3. Do you find the E.P.C functional?

Most functional

Fairly functional

Not functional

SAMPLE

Minutes from Meeting with Interviewee Nr

Present:
Interviewee Nr
Sotiris Zingas – Student – Neapolis University

- Q1 Are your clients aware of the energy efficiency?**
- Q2 Do you advice your clients for the use of energy efficient materials technologies and methods?**
- Q3 Have all your clients considered energy efficiency on their projects before the implementation of the E.P.C?**
- Q4 Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?**
- Q5 What is your opinion regarding the regulations, policies and measures of energy efficiency?**

Appendix B

Respondents' Completed Questionnaires

Interviewee No. 01

Interview Questionnaire

WORKING TITLE:

Evaluation of the Energy Efficiency of the Building Sector in Cyprus

RESEARCH AIM:

To review the energy efficiency of the building sector, and determine whether the Cyprus government has set satisfactory regulations and measures.

Architects

Section 1 – Company Details

1. What is best described your position in the company?

Director

Employee

☒
☐

2. What is yours company's approximate turnover?

<£0.5M

£0.5M - £2M

£2.1M - £5M

>£5M

☐
☒
☐
☐

3. Spitting your company's current workload, what is the percentage in each category?

New Building

Refurbishment/
Conversion

80	Please provide % for each option
20	

4. Which of the following classifications describe your company's main activities?

Public Housing

Private housing

☐
☒

Interview Questionnaire

ANDREAS KONTIOTIS
ARCHITECT

Section 2 – Energy Efficiency

1. Are your clients aware of the energy efficiency?

Please provide % for each option	50	No
	50	Yes

2. Do you advise your clients for the use of energy efficient materials technologies and methods?

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

3. Have all your clients considered energy efficiency on their projects before the implementation of the EPC?

Yes	☐	No	☒
-----	--------------------------	----	-------------------------------------

4. Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because of the increase costs?

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

5. Does the town planning and housing department have any requirements regarding energy efficiency for approving the construction licence.

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

Section 3 – Assessment of Energy Efficiency Regulations and Measures

1. Do you believe that energy efficient measures and regulations are effective?

Yes

No
✓

2. What energy efficiency regulations or measures you find effective?

1	Most effective
2	Fairly effective
3	Not effective at all

Energy Performance Certificate

Efficient requirements for hot water boilers, refrigerators, lighting ballasts

Scheme for subsidizing CFL lamps

The five year plan for energy savings

The Action Plan for Green Public Procurement

Energy labeling and relevant information of household appliances

Governmental financial support schemes for investments in RES/RUS/EE

Information's awareness policies for energy savings

Information, awareness, training for energy efficiency and RES technologies

Information Campaign for Energy Efficiency, RES, RUE

Provision of information to and awareness rising among civil servants to promote energy efficiency measures and behavior in the workplace

The Grant Scheme

1
2
2
2
2
3
1
1
2
2
2
1

ANDREAS KRITIOTIS
ARCHITECT

3. Do you find the E.P.C functional?

Most functional

Fairly functional

Not functional

✓

ANDREAS KYTIOTIS
ARCHITECT

Minutes from Meeting with Interviewee Nr 1

Present:

Interviewee Nr 1

Sotiris Zingas – Student – Neapolis University

Q1 Are your clients aware of the energy efficiency?

The last few years I have seen an increase in the number of my clients that are knowledgeable about energy efficiency however, this amount is still not enough, from the official date of the introduction of energy performance certificate I can say that an average of 50% are well-informed and are asking me to apply these technologies, the remaining 50% or they don't know or maybe they don't want to pay extra money.

Q2 Do you advice your clients for the use of energy efficient materials technologies and methods?

I always advice my clients to use these technologies as they would be able to save energy and money.

Q3 Have all your clients considered energy efficiency on their projects before the implementation of the E.PC?

Initially, I have considered to all my projects the design fundamentals. The amount of the clients that have considered the proper application of thermal insulations are around to 60%, the remaining amount have not considered proper thermal insulations not because I have not recommended to them but because they were trying to minimize their costs.

ANDREAS KOTIO
ARCHITECT

Q4 Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?

I can say that the implementation of the E.P.C is very significant because the certificate gives useful information considering the cumulative energy performance of the building.

Q5 What is your opinion regarding the regulations, policies and measures of energy efficiency?

From all the measures that the government imposed I believe the most effective measure is the E.P.C.

I believe that in order to reduce the energy consumption to the maximum in the building sector the government must enforce the certificate as well as for the existing buildings that are nor sold or rented.

ANDREAS KRIOTIS
ARCHITECT

Interviewee No. 02

Interview Questionnaire

WORKING TITLE:

Evaluation of the Energy Efficiency of the Building Sector in Cyprus

RESEARCH AIM:

To review the energy efficiency of the building sector, and determine whether the Cyprus government has set satisfactory regulations and measures.

Architects

Section 1 – Company Details

1. What is best described your position in the company?

Director

Employee

✓

2. What is your company's approximate turnover?

<£0.5M

£0.5M - £2M

£2.1M - £5M

>£5M

✓

3. Splitting your company's current workload, what is the percentage in each category?

New Building

Refurbishment/
Conversion

100	Please provide % for each option
0	

4. Which of the following classifications describe your company's main activities?

Public Housing

Private housing

✓

ΑΓΑΘΗ ΚΑΕΛΑΝΘΡΩΠΙΝΗ ΕΛΛΑΔΑ
ΑΡΧΙΤΕΚΤΟΝΙΚΗ

Interview Questionnaire

Section 2 – Energy Efficiency

1. Are your clients aware of the energy efficiency?

Please provide % for each option	30	No
	70	Yes

2. Do you advise your clients for the use of energy efficient materials technologies and methods?

Yes	☒	No	☐
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3. Have all your clients considered energy efficiency on their projects before the implementation of the EPC?

Yes	☐	No	☒
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4. Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because of the increase costs?

Yes	☐	No	☒
-----	--------------------------	----	-------------------------------------

5. Does the town planning and housing department have any requirements regarding energy efficiency for approving the construction licence.

Yes	☒	No	☐
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ΑΤΑΝΗ ΚΑΕΛΑΝΟΥ
ΑΡΧΙΤΕΚΤΟΝΟΣ

1. Do you believe that energy efficient measures and regulations are effective?

Yes
✓

No

2. What energy efficiency regulations or measures you find effective?

1	Most effective
2	Fairly effective
3	Not effective at all

Energy Performance Certificate

Efficient requirements for hot water boilers, refrigerators, lighting ballasts

Scheme for subsidizing CFL lamps

The five year plan for energy savings

The Action Plan for Green Public Procurement

Energy labeling and relevant information of household appliances

Governmental financial support schemes for investments in RES/RUS/EE

Information's awareness policies for energy savings

Information, awareness, training for energy efficiency and RES technologies

Information Campaign for Energy Efficiency, RES, RUE

Provision of information to and awareness rising among civil servants to promote energy efficiency measures and behavior in the workplace

The Grant Scheme

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ΑΓΑΘΗ ΚΛΕΑΝΘΟΥ ΜΠΕΛΛΟΥ
ΑΡΧΙΤΕΚΤΟΝΑΣ

3. Do you find the E.P.C functional?

Most functional

Fairly functional

Not functional

☒
☐
☐

ΑΓΑΘΗ ΚΛΕΑΝΘΟΥ ΜΠΕΛΛΟΥ
ΑΡΧΙΤΕΚΤΩΝ



Architects

Minutes from Meeting with Interviewee Nr 2

Present:

Interviewee Nr 2

Sotiris Zingas – Student – Neapolis University

Q1 Are your clients aware of the energy efficiency?

Before, the introduction of the new methods and technologies (2004) none was asking me about how can make their houses more energy efficient.

Year by year this number has increased and especially now where in order to grant a building permit you need the Energy Performance Certificate

Q2 Do you advice your clients for the use of energy efficient materials technologies and methods?

I always advice my clients about the energy efficient materials and technologies and their advantages. Many of my clients are trying to minimize their costs as much as they can and many times I am finding difficulties to convince them to use these technologies. However, the most of my clients are open to my advices and are interesting explaining them these technologies.

ΑΓΑΘΗ ΚΑΕΑΝΘΩΠΙΣ
ΑΡΧΙΤΕΚΤΟΝΕΣ

Q3 Have all your clients considered energy efficiency on their projects before the implementation of the E.P.C?

As an architect I have considered to all my projects the design fundamentals for energy efficiency.

Regarding the thermal insulations I can't say that all my clients have used the proper thermal insulations. An average of those clients is 40%.

Q4 Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?

The E.P.C is the most effective measure which has been implemented because reduces the energy consumption

Q5 What is your opinion regarding the regulations, policies and measures of energy efficiency?

The existing regulations and measures for the moment are satisfactory however, the government needs to regulate the E.P.C because it's compulsory only for new properties and for the properties that are sold or rented.

ATAOH KAEANOY
APXITEKTOS


Interviewee No. 03

Interview Questionnaire

WORKING TITLE:

Evaluation of the Energy Efficiency of the Building Sector in Cyprus

RESEARCH AIM:

To review the energy efficiency of the building sector, and determine whether the Cyprus government has set satisfactory regulations and measures.

Architects

Section 1 – Company Details

1. What is best described your position in the company?

Director
Employee

☒
☐

2. What is your company's approximate turnover?

<£0.5M
£0.5M - £2M
£2.1M - £5M
>£5M

☒
☐
☐
☐

3. Splitting your company's current workload, what is the percentage in each category?

New Building
Refurbishment/
Conversion

90	Please provide % for each option
10	

4. Which of the following classifications describe your company's main activities?

Public Housing
Private housing

☐
☒

Avva Iugvrou
Αρχιτέκτονας
[Signature]

Interview Questionnaire

Section 2 – Energy Efficiency

1. Are your clients aware of the energy efficiency?

Please provide % for each option	60	No
	40	Yes

2. Do you advice your clients for the use of energy efficient materials technologies and methods?

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

3. Have all your clients considered energy efficiency on their projects before the implementation of the EPC?

Yes	☐	No	☒
-----	--------------------------	----	-------------------------------------

4. Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because of the increase costs?

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

5. Does the town planning and housing department have any requirements regarding energy efficiency for approving the construction licence.

Yes	☒	No	☐
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Αννα Κουάννου
Αρχιτέκτονας


Section 3 – Assessment of Energy Efficiency Regulations and Measures

1. Do you believe that energy efficient measures and regulations are effective?

Yes
✓

No

2. What energy efficiency regulations or measures you find effective?

1	Most effective
2	Fairly effective
3	Not effective at all

Energy Performance Certificate

Efficient requirements for hot water boilers, refrigerators, lighting ballasts

Scheme for subsidizing CFL lamps

The five year plan for energy savings

The Action Plan for Green Public Procurement

Energy labeling and relevant information of household appliances

Governmental financial support schemes for investments in RES/RUS/EE

Information's awareness policies for energy savings

Information, awareness, training for energy efficiency and RES technologies

Information Campaign for Energy Efficiency, RES, RUE

Provision of information to and awareness rising among civil servants to promote energy efficiency measures and behavior in the workplace

The Grant Scheme

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Αννα Ιωάννου
Αρχιτέκτονας
Anna

3. Do you find the E.P.C functional?

Most functional

Fairly functional

Not functional

☒
☐
☐

Αννα Ιωάννου
Αρχιτέκτονας


Architects

Minutes from Meeting with Interviewee Nr 3

Present:

Interviewee Nr 3

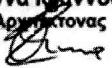
Sotiris Zingas – Student – Neapolis University

Q1 Are your clients aware of the energy efficiency?

An average of 40% of my clients is aware of energy efficiency benefits. However, the remaining 60% are not aware of the energy efficiency because they don't know the benefits and the new efficient technologies.

Q2 Do you advice your clients for the use of energy efficient materials technologies and methods?

As an architect is my duty to inform my clients about energy efficiency. I always suggest them to make their properties energy efficient and i am informing them about the potentials of energy efficiency. At this [point is worth mentioning that many of my clients do not understand the term efficiency therefore, i am explaining them the energy saving prospects in reference with the government statistics and i am describing them the energy materials methods and technologies.

Avva Iugvrou
Αρχιτέκτονας


Q3 Have all your clients considered energy efficiency on their projects before the implementation of the E.P.C?

I have considered to all my projects the fundamentals at the design stage. However, in order to have an energy efficient house the building must be properly insulated by thermal insulations.

At this point I have to say that I have not considered to all my projects the proper thermal insulations. The reasons are because many of my clients they didn't want to install all these technologies to reduce costs.

Q4 Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?

Many of my clients are informed about E.P.C since a building must have an E.P.C in order to get a building permit.

Q5 What is your opinion regarding the regulations, policies and measures of energy efficiency?

I believe that the government has implemented satisfactory measures.

Αννα Ιωάννου
Αρχιτέκτονας


Interviewee No. 04

Interview Questionnaire

WORKING TITLE:

Evaluation of the Energy Efficiency of the Building Sector in Cyprus

RESEARCH AIM:

To review the energy efficiency of the building sector, and determine whether the Cyprus government has set satisfactory regulations and measures.

Civil Engineers

Section 1 – Company Details

1. What is best described your position in the company?

Director
Employee

☒
☐

2. What is yours company's approximate turnover?

<£0.5M
£0.5M - £2M
£2.1M - £5M
>£5M

☐
☒
☐
☐

3. Spitting your company's current workload, what is the percentage in each category?

New Building
Refurbishment/
Conversion

70	Please provide % for each option
30	

4. Which of the following classifications describe your company's main activities?

Public Housing
Private housing

☐
☒

ΘΕΩΔΩΡΟΣ ΚΥΠΡΙΑΝΟΥ
ΠΟΛΙΤΙΚΟΣ ΜΗΧΑΝΙΚΟΣ

Interview Questionnaire

Section 2 – Energy Efficiency

1. Are your clients aware of the energy efficiency?

Please provide % for each option	20	No
	80	Yes

2. Do you advise your clients for the use of energy efficient materials technologies and methods?

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

3. Have all your clients considered energy efficiency on their projects before the implementation of the EPC?

Yes	☐	No	☒
-----	--------------------------	----	-------------------------------------

4. Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because of the increase costs?

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

5. Does the town planning and housing department have any requirements regarding energy efficiency for approving the construction licence.

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

ΘΕΩΝΑ ΚΥΠΡΙΑΝΟΥ
ΠΟΛΙΤΙΚΟΣ ΜΗΧΑΝΙΚΟΣ

Section 3 – Assessment of Energy Efficiency Regulations and Measures

1. Do you believe that energy efficient measures and regulations are effective?

Yes
✓

No

2. What energy efficiency regulations or measures you find effective?

1	Most effective
2	Fairly effective
3	Not effective at all

Energy Performance Certificate

Efficient requirements for hot water boilers, refrigerators, lighting ballasts

Scheme for subsidizing CFL lamps

The five year plan for energy savings

The Action Plan for Green Public Procurement

Energy labeling and relevant information of household appliances

Governmental financial support schemes for investments in RES/RUS/EE

Information's awareness policies for energy savings

Information, awareness, training for energy efficiency and RES technologies

Information Campaign for Energy Efficiency, RES, RUE

Provision of information to and awareness rising among civil servants to promote energy efficiency measures and behavior in the workplace

The Grant Scheme

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ΘΕΩΡ. ΚΥΠΡΙΑΝΟΥ
ΠΟΛΙΤΙΚΟΣ ΜΗΧΑΝΙΚΟΣ

3. Do you find the E.P.C functional?

Most functional

Fairly functional

Not functional

✓

ΘΕΩΛΑΚΥΠΡΙΑΝΟΥ
ΠΟΛΙΤΙΚΟΣ ΜΗΧΑΝΙΚΟΣ

Minutes from Meeting with Interviewee Nr 4

Present:
Interviewee Nr 4
Sotiris Zingas – Student – Neapolis University

Q1 Are your clients aware of the energy efficiency?

Initially, the most of my clients are foreign; many of my clients are aware of the energy efficiency especially the English foreign where the most times are asking me about the energy performance certificate of the property.
In general the foreign are more informed than the Cypriotes regarding the energy efficiency and energy consumption.

Q2 Do you advice your clients for the use of energy efficient materials technologies and methods?

I always suggest to my clients to use these technologies and I always mentioning the benefits of the energy efficiency. Operate as developer I consider energy efficiency almost to all my projects.

Q3 Have all your clients considered energy efficiency on their projects before the implementation of the E.PC?

As I mentioned above the projects that I build are constructing under my own specifications and I have consider energy efficiency in all my projects.



ΓΕΩΡΓΙΟΣ ΚΥΠΡΙΑΝΟΥ
ΠΟΛΥΤΕΧΝΙΚΟΣ ΜΗΧΑΝΙΚΟΣ

Q4 Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?

Most of my clients are informed for the E.P.C.

Q5 What is your opinion regarding the regulations, policies and measures of energy efficiency?

The existing measures and regulations are satisfactory but the government should give more incentives in terms of grants.

ΘΕΟΔΩΡΟΣ ΚΥΠΡΙΑΝΟΥ
ΠΟΛΙΤΙΚΟΣ ΜΗΧΑΝΙΚΟΣ

Interviewee No. 05

Interview Questionnaire

WORKING TITLE:

Evaluation of the Energy Efficiency of the Building Sector in Cyprus

RESEARCH AIM:

To review the energy efficiency of the building sector, and determine whether the Cyprus government has set satisfactory regulations and measures.

Civil Engineers

Section 1 – Company Details

1. What is best described your position in the company?

Director

Employee

✓

2. What is your company's approximate turnover?

<£0.5M

£0.5M - £2M

£2.1M - £5M

>£5M

✓

3. Splitting your company's current workload, what is the percentage in each category?

New Building

Refurbishment/
Conversion

100	Please provide % for each option
—	

4. Which of the following classifications describe your company's main activities?

Public Housing

Private housing

✓

ANDREAS N. SAVVA
Architects - Engineers
Nicosia, Cyprus Tel. 26114441

Interview Questionnaire

Section 2 – Energy Efficiency

1. Are your clients aware of the energy efficiency?

Please provide % for each option	90	No
	10	Yes

2. Do you advise your clients for the use of energy efficient materials technologies and methods?

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

3. Have all your clients considered energy efficiency on their projects before the implementation of the EPC?

Yes	☐	No	☒
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4. Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because of the increase costs?

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

5. Does the town planning and housing department have any requirements regarding energy efficiency for approving the construction licence.

Yes	☒	No	☐
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ANDREAS N. SAWVA
Architects - Engineers
Mousiayiou Nikolaïde 29
Larnaca, Tel. 2811 1111



Section 3 – Assessment of Energy Efficiency Regulations and Measures

1. Do you believe that energy efficient measures and regulations are effective?

Yes

No
✓

2. What energy efficiency regulations or measures you find effective?

1	Most effective
2	Fairly effective
3	Not effective at all

Energy Performance Certificate

Efficient requirements for hot water boilers, refrigerators, lighting ballasts

Scheme for subsidizing CFL lamps

The five year plan for energy savings

The Action Plan for Green Public Procurement

Energy labeling and relevant information of household appliances

Governmental financial support schemes for investments in RES/RUS/EE

Information's awareness policies for energy savings

Information, awareness, training for energy efficiency and RES technologies

Information Campaign for Energy Efficiency, RES, RUE

Provision of information to and awareness rising among civil servants to promote energy efficiency measures and behavior in the workplace

The Grant Scheme

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ANDREAS N. SAWWA
Architects - Engineers
Mousioutou Nicolaide 29
Larnaca, Tel. 26114444



3. Do you find the E.P.C functional?

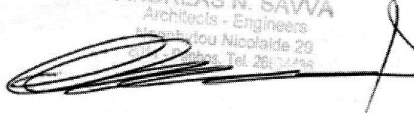
Most functional

Fairly functional

Not functional

☐
☒
☐

ANDREAS N. SAVVA
Architects - Engineers
Machilofou Nicolaide 29
Limassol, Cyprus. Tel 26874298



Minutes from Meeting with Interviewee Nr 5

Present:
Interviewee Nr 5
Sotiris Zingas – Student – Neapolis University

Q1 Are your clients aware of the energy efficiency?

Most of my clients are development companies and between us most of them they don't give particular importance of the energy efficiency of the buildings. The way my company operates is by making offers to the developers and if I have the best bid I take the contract. I don't remember ever a developer to ask me if I have included any energy efficiency materials on the buildings except the E.P.C.

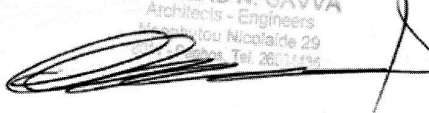
Q2 Do you advice your clients for the use of energy efficient materials technologies and methods?

Yes I advice them and I recommend them the best technologies for energy efficiency in order to construct an energy efficient building that it would save them energy and money.

Q3 Have all your clients considered energy efficiency on their projects before the implementation of the E.P.C?

I have considered energy efficiency technologies to all my projects like thermal insulations for the roofs however, I believe that more technologies should have been used.

ANDREAS N. SAWVA
Architects - Engineers
Mousiyou Nicolaide 29
Larnaca, Tel 26011400



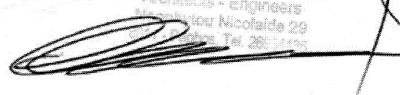
Q4 Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?

All my clients are aware of the E.P.C.
The E.P.C must be enforced not only for the new and sold or rented properties but for all the existing properties.

Q5 What is your opinion regarding the regulations, policies and measures of energy efficiency?

I believe the government should give more financial incentives in order to minimize the energy consumption.

ANDREAS N. SAVVA
Architects - Engineers
15, Antoniou Nicolaide 29
Nicosia, Cyprus Tel: 22600000



Interviewee No. 06

Interview Questionnaire

WORKING TITLE:

Evaluation of the Energy Efficiency of the Building Sector in Cyprus

RESEARCH AIM:

To review the energy efficiency of the building sector, and determine whether the Cyprus government has set satisfactory regulations and measures.

Civil Engineers

Section 1 – Company Details

1. What is best described your position in the company?

Director
Employee

+

2. What is your company's approximate turnover?

<£0.5M
£0.5M - £2M
£2.1M - £5M
>£5M

+

3. Splitting your company's current workload, what is the percentage in each category?

New Building
Refurbishment/
Conversion

+	Please provide % for each option

4. Which of the following classifications describe your company's main activities?

Public Housing
Private housing

+

ανδρέας ν. γονυοπίου
ΡΟΛΟΓΗΣ ΜΗΧΑΝΙΚΟΙ

Interview Questionnaire

Section 2 – Energy Efficiency

1. Are your clients aware of the energy efficiency?

Please provide % for each option	So	No
	So	Yes

2. Do you advise your clients for the use of energy efficient materials technologies and methods?

Yes	+	No	
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3. Have all your clients considered energy efficiency on their projects before the implementation of the EPC?

Yes		No	+
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4. Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because of the increase costs?

Yes	+	No	
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5. Does the town planning and housing department have any requirements regarding energy efficiency for approving the construction licence.

Yes	+	No	
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ανδρας Χ. Yonyopiou
ΠΟΛΙΤΙΚΟΣ ΜΗΧΑΝΙΚΟΣ

Section 3 – Assessment of Energy Efficiency Regulations and Measures

1. Do you believe that energy efficient measures and regulations are effective?

Yes
+

No

2. What energy efficiency regulations or measures you find effective?

1	Most effective
2	Fairly effective
3	Not effective at all

Energy Performance Certificate

Efficient requirements for hot water boilers, refrigerators, lighting ballasts

Scheme for subsidizing CFL lamps

The five year plan for energy savings

The Action Plan for Green Public Procurement

Energy labeling and relevant information of household appliances

Governmental financial support schemes for investments in RES/RUS/EE

Information's awareness policies for energy savings

Information, awareness, training for energy efficiency and RES technologies

Information Campaign for Energy Efficiency, RES, RUE

Provision of information to and awareness rising among civil servants to promote energy efficiency measures and behavior in the workplace

The Grant Scheme

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ανδρέας ν. γονυοπίου
ΠΡΑΚΤΙΚΟΣ ΜΗΧΑΝΙΚΟΣ

3. Do you find the E.P.C functional?

Most functional

Fairly functional

Not functional

+

ανδρέας γ. vonyopliou
ΡΕΑΛ ΕΣΤΑΤΙΣ ΜΗΧΑΝΙΚΟΣ

Minutes from Meeting with Interviewee Nr 6

Present:

Interviewee Nr 6

Sotiris Zingas – Student – Neapolis University

Q1 Are your clients aware of the energy efficiency?

The majority of my clients are aware of the energy consumption since the fees of the Electricity Authority of Cyprus are now more expensive than ever.

Q2 Do you advice your clients for the use of energy efficient materials technologies and methods?

Yes I advice my customers for the new technologies and materials that are available on the market.

However the fees of these materials are expensive making them unapproachable.

Q3 Have all your clients considered energy efficiency on their projects before the implementation of the E.P.C?

The most of the people in Cyprus before the implementation of the E.P.C they didn't knew what energy efficient meant.

ανδρέας ν. γονυοπίου
ΠΡΑΚΤΙΚΟΙ ΜΗΧΑΝΙΚΟΙ

Q4 Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?

Now most of my customers have in mind what E.P.C is because there is a restriction in Town Planning and Housing Department for building permit and properties that are sold or rented.

Q5 What is your opinion regarding the regulations, policies and measures of energy efficiency?

The government has imposed different strategies such as incentives, mandatory codes e.t.c but for me the most important subject is to inform the householders regarding the advantages for making a green house.

ανδρας γ. vonyopiou
ΕΚΔΗΚΤΗΣ ΜΗΧΑΝΙΚΟΣ

Interviewee No. 07

Interview Questionnaire

WORKING TITLE:

Evaluation of the Energy Efficiency of the Building Sector in Cyprus

RESEARCH AIM:

To review the energy efficiency of the building sector, and determine whether the Cyprus government has set satisfactory regulations and measures.

Mechanical Engineers

Section 1 – Company Details

1. What is best described your position in the company?

Director

Employee

☒
☐

2. What is your company's approximate turnover?

<£0.5M

£0.5M - £2M

£2.1M - £5M

>£5M

☐
☒
☐
☐

3. Splitting your company's current workload, what is the percentage in each category?

New Building

Refurbishment/
Conversion

60	Please provide % for each option
40	

4. Which of the following classifications describe your company's main activities?

Public Housing

Private housing

☐
☒

Interview Questionnaire

Section 2 – Energy Efficiency

1. Are your clients aware of the energy efficiency?

Please provide % for each option	20	No
	80	Yes

2. Do you advice your clients for the use of energy efficient materials technologies and methods?

Yes	☒	No	☐
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3. Have all your clients considered energy efficiency on their projects before the implementation of the EPC?

Yes	☐	No	☒
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4. Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because of the increase costs?

Yes	☐	No	☒
-----	--------------------------	----	-------------------------------------

5. Does the town planning and housing department have any requirements regarding energy efficiency for approving the construction licence.

Yes	☒	No	☐
-----	-------------------------------------	----	--------------------------

M. K. BOUZIDES
CONSULTING ENGINEER

1. Do you believe that energy efficient measures and regulations are effective?

Yes
☒

No
☐

2. What energy efficiency regulations or measures you find effective?

1	Most effective
2	Fairly effective
3	Not effective at all

Energy Performance Certificate

Efficient requirements for hot water boilers, refrigerators, lighting ballasts

Scheme for subsidizing CFL lamps

The five year plan for energy savings

The Action Plan for Green Public Procurement

Energy labeling and relevant information of household appliances

Governmental financial support schemes for investments in RES/RUS/EE

Information's awareness policies for energy savings

Information, awareness, training for energy efficiency and RES technologies

Information Campaign for Energy Efficiency, RES, RUE

Provision of information to and awareness rising among civil servants to promote energy efficiency measures and behavior in the workplace

The Grant Scheme

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M. MOUROUZIDES
CONSULTING ENGINEER

3. Do you find the E.P.C functional?

Most functional

Fairly functional

Not functional

✓

M. K. BOUZIDES
CONSULTING ENGINEER

Minutes from Meeting with Interviewee Nr 7

Present:

Interviewee Nr 7

Sotiris Zingas – Student – Neapolis University

Q1 Are your clients aware of the energy efficiency?

The most of my clients are not aware of the general concept of energy efficiency, I can say that a 80% of my clients are aware and have asked me to consider energy efficiency systems in the construction process.

I had also many clients that they knew about these regulations and technologies but they asked me to limited their uses as possible in order to reduce their costs (developers).

Q2 Do you advice your clients for the use of energy efficient materials technologies and methods?

I always advice my clients because they will benefit of these technologies.

Q3 Have all your clients considered energy efficiency on their projects before the implementation of the E.PC?

In all my projects I have considered a form of thermal insulations; however, I believe that I could have used more types of thermal insulations in more parts of the building.


M. K. ZINGAS
CONSULTING ENGINEER

Q4 Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?

Most of clients they didn't know about E.P.C and many times when I have explained them the construction process and the need of the installation of energy efficient technologies they were surprised.

Q5 What is your opinion regarding the regulations, policies and measures of energy efficiency?

I believe that the government must take more action in order to inform the public because most of the people are not aware of the energy deficiency and all the weight has been imposed to us.


M. KOUROUZIDIS
CONSULTING ENGINEER

Interviewee No. 08

Interview Questionnaire

WORKING TITLE:

Evaluation of the Energy Efficiency of the Building Sector in Cyprus

RESEARCH AIM:

To review the energy efficiency of the building sector, and determine whether the Cyprus government has set satisfactory regulations and measures.

Mechanical Engineers

Section 1 – Company Details

1. What is best described your position in the company?

Director
Employee

✓

2. What is your company's approximate turnover?

<£0.5M
£0.5M - £2M
£2.1M - £5M
>£5M

✓

3. Splitting your company's current workload, what is the percentage in each category?

New Building
Refurbishment/
Conversion

100	Please provide % for each option
=	

4. Which of the following classifications describe your company's main activities?

Public Housing
Private housing

✓

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ΕΤΕΚ Αρ. Πρωτ. Α1110054

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Interview Questionnaire

Section 2 – Energy Efficiency

1. Are your clients aware of the energy efficiency?

Please provide % for each option	30	No
	70	Yes

2. Do you advise your clients for the use of energy efficient materials technologies and methods?

Yes	☒	No	☐
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3. Have all your clients considered energy efficiency on their projects before the implementation of the EPC?

Yes	☒	No	☐
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4. Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because of the increase costs?

Yes	☒	No	☐
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5. Does the town planning and housing department have any requirements regarding energy efficiency for approving the construction licence.

Yes	☒	No	☐
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ΕΤΕΚ Αρ. 11110056



Section 3 – Assessment of Energy Efficiency Regulations and Measures

1. Do you believe that energy efficient measures and regulations are effective?

Yes
✓

No

2. What energy efficiency regulations or measures you find effective?

1	Most effective
2	Fairly effective
3	Not effective at all

Energy Performance Certificate

Efficient requirements for hot water boilers, refrigerators, lighting ballasts

Scheme for subsidizing CFL lamps

The five year plan for energy savings

The Action Plan for Green Public Procurement

Energy labeling and relevant information of household appliances

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Information Campaign for Energy Efficiency, RES, RUE

Provision of information to and awareness rising among civil servants to promote energy efficiency measures and behavior in the workplace

The Grant Scheme

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ΜΑΚΑΡΙΟΥ ΧΡΗΣΤΟΣ
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ΕΤΕΚ Αρ. Πρω. Α111005/Τ

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3. Do you find the E.P.C functional?

Most functional

Fairly functional

Not functional

✓

ΜΑΚΑΡΙΟΥ ΧΡΗΣΤΟΣ
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ΕΤΕΚ Αρ. Μητρώ. Α1110056Γ



Minutes from Meeting with Interviewee Nr 8

Present:

Interviewee Nr 8

Sotiris Zingas – Student – Neapolis University

Q1 Are your clients aware of the energy efficiency?

Most of my clients are not aware of the energy efficiency and deficiency.

Q2 Do you advice your clients for the use of energy efficient materials technologies and methods?

I always advice my clients to use their heating or cooling systems in specific period of the day.

Q3 Have all your clients considered energy efficiency on their projects before the implementation of the E.PC?

No.

ΜΑΚΑΡΙΟΥ ΧΡΙΣΤΟΣ
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ΠΑΝΕΠΙΣΤΗΜΙΟΥ ΠΑΤΡΩΝ
ΕΤΕΚ Αρ. Μητρώου Α111005Γ



Q4 Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?

My clients that are recently build their property or they have bought or rent a new property they all informed about E.P.C.
The people which are living in their properties before the implementation of the E.P.C they don't even know what that means.

Q5 What is your opinion regarding the regulations, policies and measures of energy efficiency?

There is not much to say about these regulations since the public has lack of knowledge about energy deficiency.

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ΕΤΕΚ Αρ. Πρωτ. Α111005Γ

Interviewee No. 09

Interview Questionnaire

WORKING TITLE:

Evaluation of the Energy Efficiency of the Building Sector in Cyprus

RESEARCH AIM:

To review the energy efficiency of the building sector, and determine whether the Cyprus government has set satisfactory regulations and measures.

Mechanical Engineers

Section 1 – Company Details

1. What is best described your position in the company?

Director
Employee

☐
☒

2. What is your company's approximate turnover?

<£0.5M
£0.5M - £2M
£2.1M - £5M
>£5M

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3. Splitting your company's current workload, what is the percentage in each category?

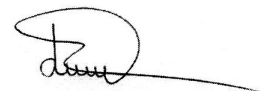
New Building
Refurbishment/
Conversion

☒	Please provide % for each option
☐	

4. Which of the following classifications describe your company's main activities?

Public Housing
Private housing

☐
☒



Interview Questionnaire

Section 2 – Energy Efficiency

1. Are your clients aware of the energy efficiency?

Please provide % for each option	60	No
	40	Yes

2. Do you advise your clients for the use of energy efficient materials technologies and methods?

Yes	☒	No	☐
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3. Have all your clients considered energy efficiency on their projects before the implementation of the EPC?

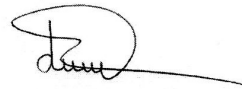
Yes	☐	No	☒
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4. Do you believe that the reasons that your clients have not considered energy efficiency on their projects it's because of the increase costs?

Yes	☐	No	☒
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5. Does the town planning and housing department have any requirements regarding energy efficiency for approving the construction licence.

Yes	☒	No	☐
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Section 3 – Assessment of Energy Efficiency Regulations and Measures

1. Do you believe that energy efficient measures and regulations are effective?

Yes
✓

No

2. What energy efficiency regulations or measures you find effective?

1	Most effective
2	Fairly effective
3	Not effective at all

Energy Performance Certificate

Efficient requirements for hot water boilers, refrigerators, lighting ballasts

Scheme for subsidizing CFL lamps

The five year plan for energy savings

The Action Plan for Green Public Procurement

Energy labeling and relevant information of household appliances

Governmental financial support schemes for investments in RES/RUS/EE

Information's awareness policies for energy savings

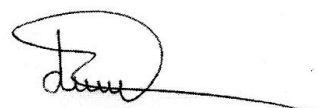
Information, awareness, training for energy efficiency and RES technologies

Information Campaign for Energy Efficiency, RES, RUE

Provision of information to and awareness rising among civil servants to promote energy efficiency measures and behavior in the workplace

The Grant Scheme

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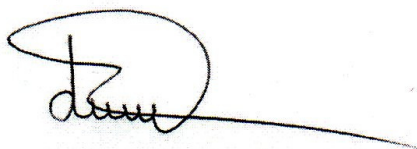
3. Do you find the E.P.C functional?

Most functional

Fairly functional

Not functional

☒
☐
☐



Minutes from Meeting with Interviewee Nr 9

Present:

Interviewee Nr 9

Sotiris Zingas – Student – Neapolis University

Q1 Are your clients aware of the energy efficiency?

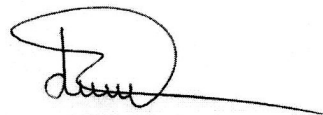
It depends from the customer. The big companies are well informed about the energy consumption. The public are not informed properly.

Q2 Do you advice your clients for the use of energy efficient materials technologies and methods?

Yes I have advice all my customers about the potential's of these technologies.

Q3 Have all your clients considered energy efficiency on their projects before the implementation of the E.PC?

No.

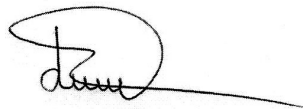


Q4 Are your clients aware of the E.P.C? What is your opinion regarding E.P.C?

I believe the energy performance certificate is an effective measure that will revolutionize the market.

Q5 What is your opinion regarding the regulations, policies and measures of energy efficiency?

As mentioned above the E.P.C is the only measure that has potential to reduce the energy consumption of the building sector.

A handwritten signature in black ink, consisting of a stylized capital 'D' followed by a horizontal line and some smaller, less distinct characters.