CEPIS
Council of European Professional Informatics Societies

Energy Efficient Enterprise in Europe

Green ICT Awareness in Organisations

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1 Executive Summary

The Council of European Professional Informatics Societies (CEPIS) is the European network of informatics professionals with 35 national informatics associations as its members in 32 countries across greater Europe. As the leading organisation of European IT professionals in Europe, CEPIS is committed to mobilising its members to promote Green ICT and contributing to the protection of the environment through ICT. The CEPIS Green ICT Task Force representing 10 countries and lead by the Hellenic Professionals Informatics Society (HePIS), the Greek CEPIS Member, carried out research aimed at ICT Managers to examine awareness regarding energy consumption & energy efficiency of ICT equipment & policies within organisations in Europe.

The research was carried out using an online assessment tool, which consisted of almost three dozen questions on the recycling of ICT equipment, green practices within organisations, and general awareness of the energy consumption and energy efficiency of ICT equipment that is used on a day-to-day basis within organisations. In 2011, the European Commission proposed a set of measures in the "Energy Efficiency Plan 2011"[1] to save more energy, as energy efficiency is considered important for reducing the over-consumption of energy and emissions, to the benefit of our environment.

Members of the CEPIS Green ICT Task Force used their expertise on the topic of Green ICT to create this assessment tool. The Task Force Members from informatics associations around Europe represent 10 different countries including; German Informatics, Hellenic Professionals Informatics Society, Irish Computer Society, Associazione Italiana per l'Informatica ed il Calcolo Automatico in Italy, Computer Society of Malta, Asociatia Pentru Tehnologia Informatiei si Comunicatii in Romania, Asociación de Técnicos de Informática in Spain, Swiss Informatics Society, Nederlands Genootschap voor Informatica in the Netherlands, and BCS: The Chartered Institute for IT in the UK. The research was carried out by the Task Force and CEPIS Secretariat. As a result approximately 350 respondents across Europe participated in the research representing 16 countries across Europe.

The feedback from approximately 350 participants in Europe shows that the top three countries with the greenest ICT-aware organisations in Europe are Greece, Ireland and Switzerland[2]. Over two thirds of respondents are employed in micro, or small and medium-sized enterprises (SMEs). The results constitute a broad geographic representation, however since the sample of respondents may not be considered statistically representative, the results of this research reflect only the sample of respondents and are to be considered qualitative.

From this snapshot into organisations' usage of ICT equipment and awareness of energy efficiency and processes the following conclusions can be drawn. These are further elaborated in the final section of this report Conclusions and Recommendations:

- Energy efficient policies are lacking in business
- A large proportion of organisations in Europe are not training/informing their employees about energy efficiency
- Commonly used ICT equipment in SMEs is not sufficiently monitored
- Micro organisations are more likely to implement green ICT policies in business

[1] http://ec.europa.eu/energy/efficiency/action_plan/action_plan_en.htm
[2] These countries had the highest relative number of organisations that implemented green IT policies.

2 Introduction

In recent years, 'being green' has become synonymous with the far-reaching possibilities of ICT in achieving energy-efficiency for the ICT sector itself, and with all other day-to-day activities by citizens, organisations, and government administrations, to name but a few. ICT has a key role in enabling energy efficiency, including the reduction of its own sector's carbon emissions. The European Commission's proposals in last year's Energy Efficiency Plan have also put organisations in particular under increasing scrutiny in relation to energy efficiency. For example, the Plan proposes that large organisations should carry out independent energy audits to monitor whether energy is being used rationally or not[3].

Research participants provided information on various topics including the size of their organisations, whether green IT practices are implemented, how and if ICT equipment is recycled, and whether energy reduction measures are in place within their organisations. The following countries participated in the research; Belgium, Bosnia and Herzegovina, Germany, Greece, Ireland, Italy, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, Serbia, Spain, Switzerland, and the UK. The results therefore constitute a broad geographic representation, however since the sample of respondents may not be considered statistically representative, the results of this research reflect only the sample and are to be considered qualitative.

3 Energy Manager Emergency in Business

Energy Managers are becoming increasingly important for any businesses to save costs in the long run, by efficiently managing the energy used within an organisation. Having qualified Energy Managers within businesses can increase energy efficiency, and may result in costs savings estimated in the region of €60 million per year[4]. Energy Managers therefore could prove to be a valuable resource in saving money for SMEs, yet a large proportion of participants confirmed not having an Energy Manager or Officer working for their organisations.

In fact over two thirds of respondents confirmed that there was no Energy Manager or Officer in their organisation. Overall the highest number of research participants was recorded in Greece, Italy Romania and Spain with at least thirty respondents participating in this research from each of these countries. Analysing these results we can see that Energy Managers/Officers are present in one fifth of organisations in Greece and Spain, and over a quarter of organisations in Romania.

Overall however in Europe, almost 70% of organisations do not have an Energy Manager.

[3] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0109:FIN:EN:PDF
[4] http://www.ihk-eforen.de/display/eurem/About+EUREM

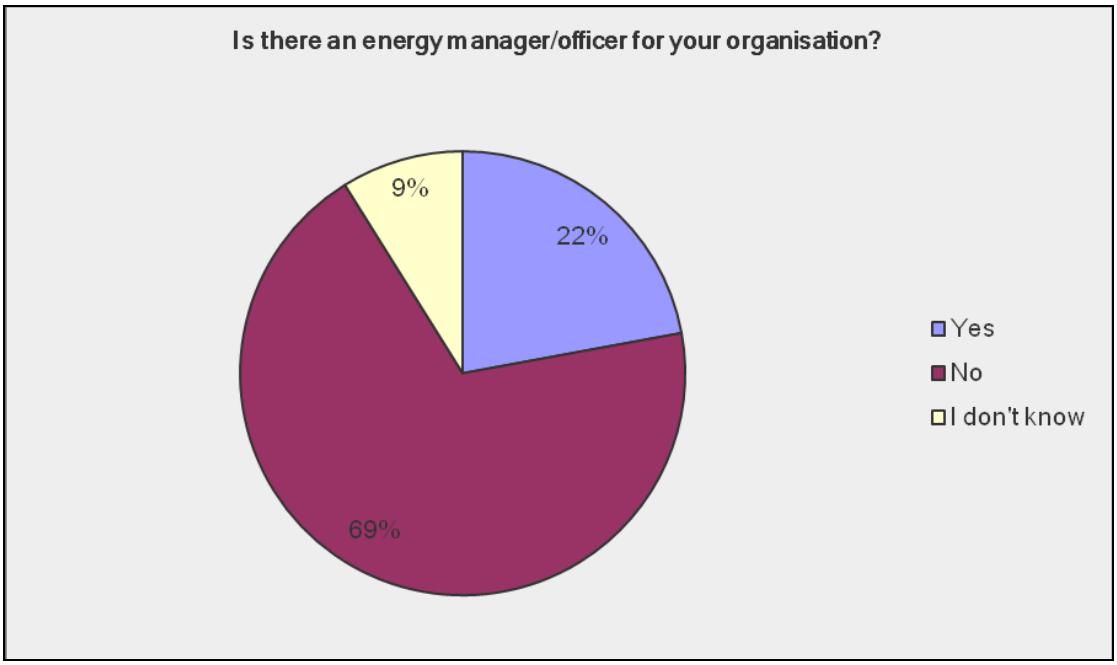

Figure 1 Energy Managers in Europe

4 Implementing Green ICT Policies and Practices

The implementation of Green ICT practices in organisations could limit the amount of energy that is wasted by organisations and thus save costs, but most research participants declared that since there is no official legislation to enforce green ICT practices within their organisations, no such practice has been implemented.

Overall only half of all participants confirmed that green IT practices are implemented within their organisations. But this greatly varied between countries; in Ireland for example 85% of organisations implement green IT practices but in Italy only a third of organisations do so.

From the data gathered by this research, there are three clear driving factors for why green ICT practices are not implemented in organisations:

- No official legislation enforcing green ICT practices
- No pressure from management/customers
- Employees lack the appropriate knowledge/training

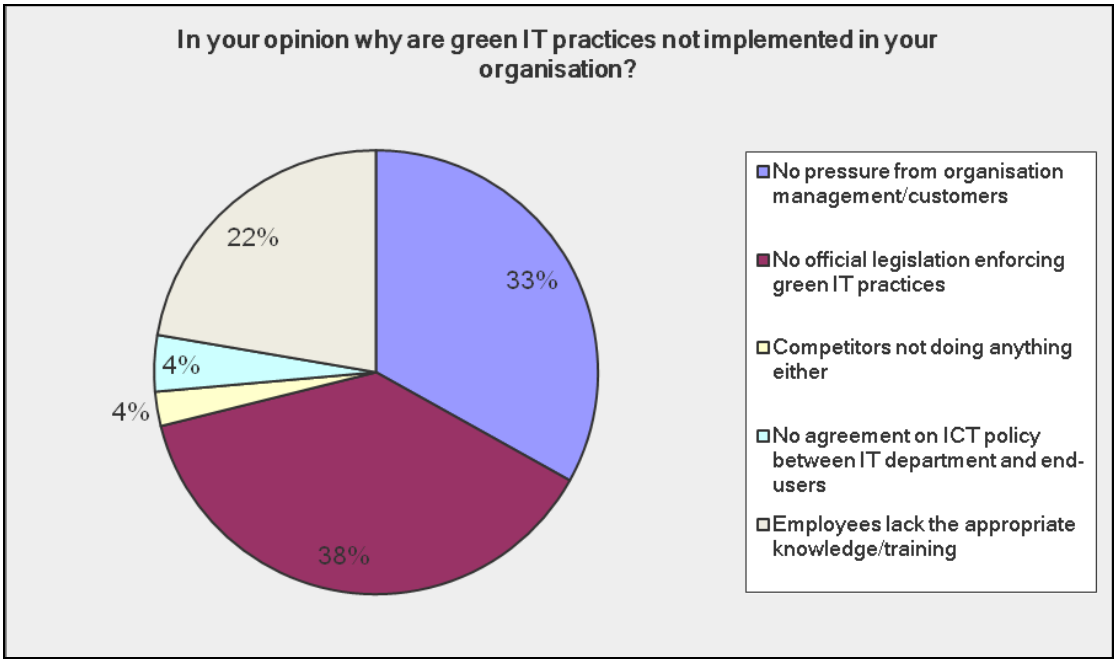

Figure 2 Why Green IT Practices are Not Implemented

In analysing the data, it also appears that micro organisations consisting of 0-10 employees represent the largest proportion of organisations to actually implement green ICT practices. This may be because micro organisations manage tighter budgets, and are more likely to implement energy efficient and cost-saving alternatives. Greek organisations represented the highest proportion to implement energy saving systems for this reason, followed closely by Ireland and Switzerland.

5 Wasteful Approach to Measuring Energy Consumption

It is vital for organisations to measure their energy consumption on a regular basis in order to identify where energy consumption is wasted, and to implement preventative measures as a result. A large proportion of organisations are not implementing green IT practices, and this attitude was also reflected in how organisations use everyday ICT equipment within organisations. As part of the research process, questions were included on ordinary ICT-related processes that employees experience in daily life across all manner of business, and how/if ICT Managers (the target audience of this research activity) carry out measures such as recycling ICT equipment, and implementing energy saving processes.

The research showed how organisations in Europe deal with old ICT equipment, and how they monitor the energy consumption not only of their IT departments but also overall within the organisation.

5.1 Energy Awareness of Everyday Devices – The Printer

A commonly used device in any business is a printer, consuming a large amount of energy and paper. As such the research process focused on establishing whether organisations used it in an optimum manner. Much of the material that is needed to allow a printer to function properly, including the paper, can be used in an optimal fashion so as to reduce the amount of energy consumed. Disposal of the used ink cartridges for example should be carried out in as an efficient way as possible. Most ink cartridges that are used in printers are now recyclable, and almost half (49.7%) of organisations return ink cartridges or toners for a small fee to a company that recycles them. It is encouraging to note that even though a price is

attached to recycling the ink cartridges, many organisations realise the importance of this, and carry out recycling in any case. Worryingly however one fifth (19.4%) of all respondents simply throw away the ink cartridge whereas the rest either return it for a small fee as mentioned above to a recycling company, or return it to the manufacturer company which has its own system of waste collection (30.9%).

Printers can be both expensive to purchase and to run, and the energy consumption of a printer when idling between printing and standby mode could be between 30-40% of its peak energy demand[5].

A beneficial way therefore to try and save energy with printers in an office includes sharing printers. Still quite a high proportion of respondents, almost one fifth (17.9%), stated that only between 0-25% of printers within the organisation were shared and connected to a LAN network. A major resource used during printing is paper, yet over a quarter of organisations responded that only 0-25% of their printers could print double-sided. In fact, a large proportion (45.3%) of organisations that participated in the research did not implement double-sided printing as the default option even though the printers did have this capability.

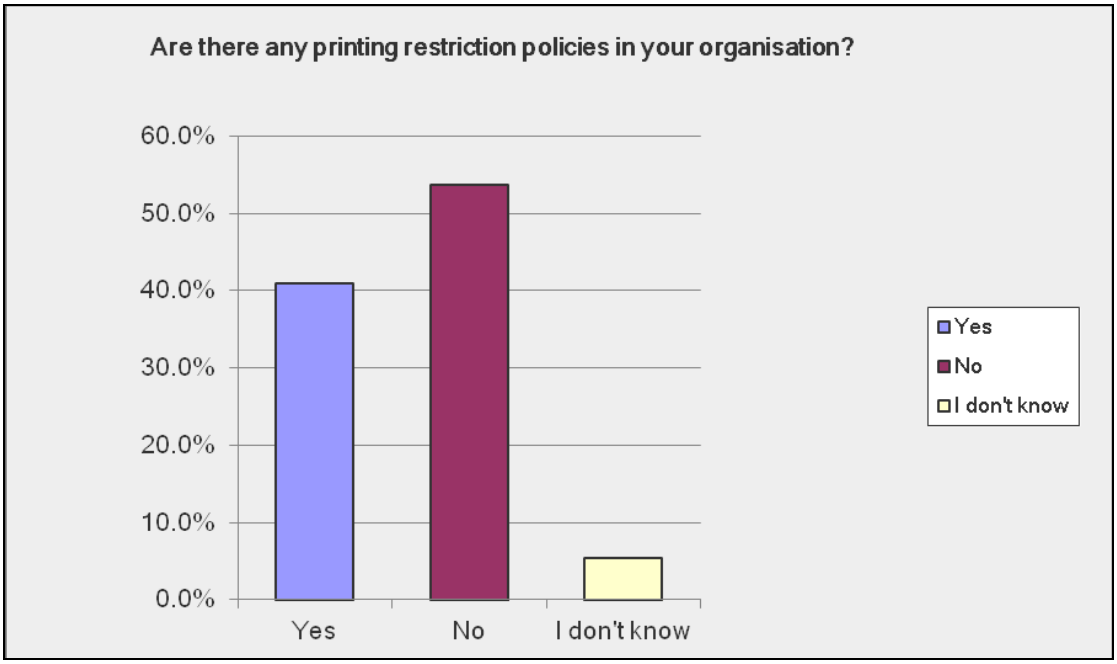

Figure 3 - Printing Restriction Policies

Whether or not printing restriction policies are in place within an organisation can also prove an important factor in saving overall energy consumption. Over half of all respondents stated that there were no such policies in place. Of those countries that responded yes to having printing restriction policies in place, 38% were in Italy, 27% in Greece and 15% in Romania.

Within the three countries mentioned above, the most commonly used restriction measure applied is that only a specific number of users actually have the right to print within organisations.

[5] http://www.carbontrust.com/media/13113/ctv005_office_equipment.pdf

5.2 How Organisations are Failing to Save Energy

Other high-level energy consumption equipment and processes have also been addressed during this research e.g. lights left on in the organisations' premises, and whether there is a system in place that checks that ICT equipment is turned off. A very high proportion of respondents, almost three quarters, stated that there was no system in place to monitor if employees turn off all of their ICT equipment at the end of the day. However the majority of respondents (74.6%) confirmed that the option of computers automatically turning themselves off after a certain period of time had been enabled in their organisations.

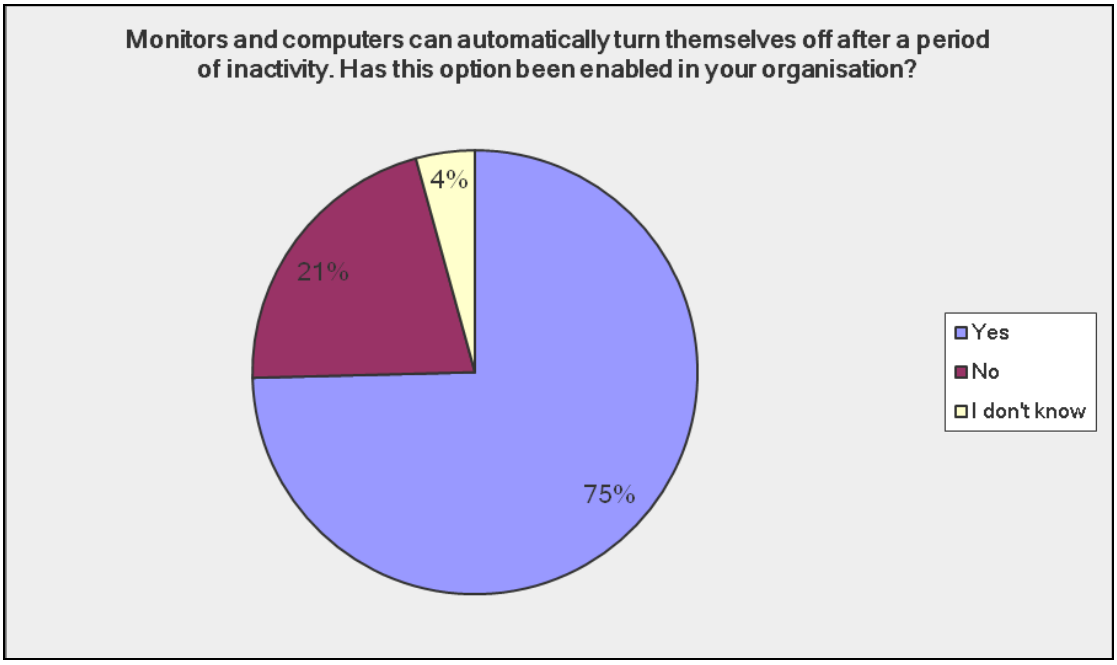

Figure 4 Turning Off Inactive Monitors/Computers

6 Business Attitudes to Going Green

Knowing the level of energy consumption within business is important yet this research has shown that attitudes vary greatly amongst organisations across Europe. Related to how employees use ICT equipment, almost half of organisations in Europe do not inform or train their computer users about energy consumption reduction procedures. Even if the employees have not been trained or informed, there could be a system in place to monitor how employees reduce their energy consumption, but unfortunately over three quarters of organisations do not have such a system in place.

Businesses could benefit from implementing such a system since our research shows that monitoring energy consumption resulted in a reduction in energy used after three months of implementation. Overall a third of organisations have never measured their energy consumption.

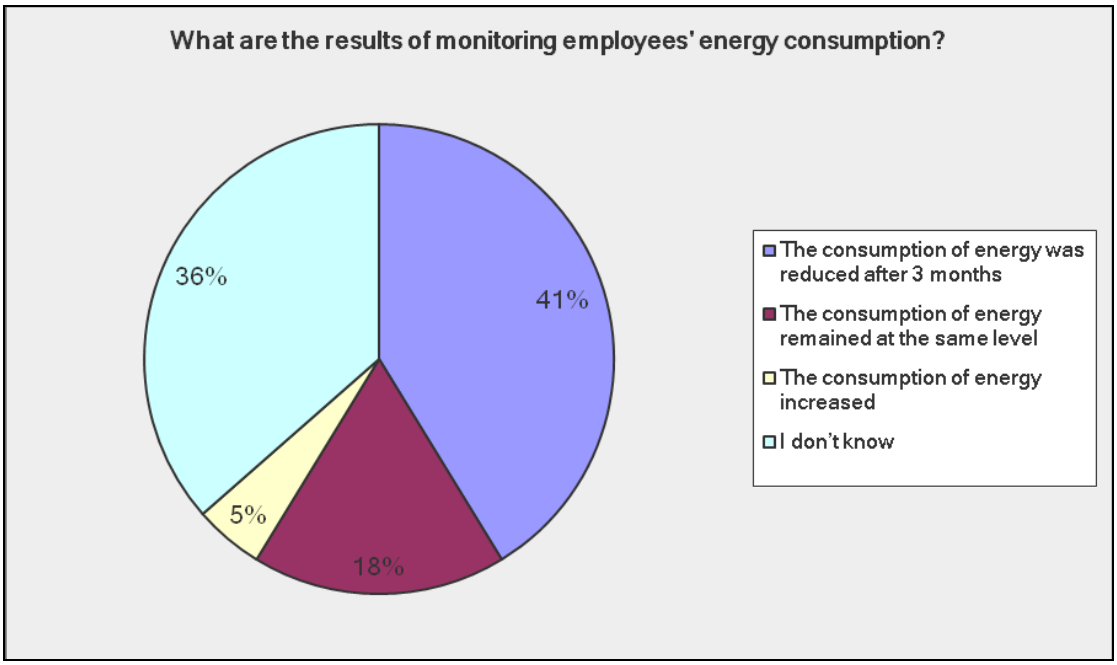

Figure 5 Energy Consumption Monitoring Results

Unfortunately only a third of organisations that monitored their employees' energy consumption actually published results. It is also useful to assess the actual IT departments' energy use but since ICT is becoming transversal across all areas in business, it is increasingly important to monitor this across all departments. In any case, only 12% of participants actually have a monitoring system in place for their IT department, and a quarter of respondents monitor only the energy consumption of the data centre and nowhere else.

It appears that for most organisations energy consumption levels when making purchasing decisions are very important, and almost half responded that they do take into consideration whether ICT equipment is recyclable before making a purchase decision. Yet for a tenth of respondents this factor was not important at all. The choice of supplier and whether they are in line with the requirements outlined in the ISO 14001[6] standard is also not important when making purchasing decisions for almost half of organisations, and almost half of organisations do not implement this standard either.

[6] The ISO 14001 standard specifies requirements for an environmental management system to enable an organisation to develop and implement a related policy and objectives. See http://www.iso.org/iso/iso_14000_essentials

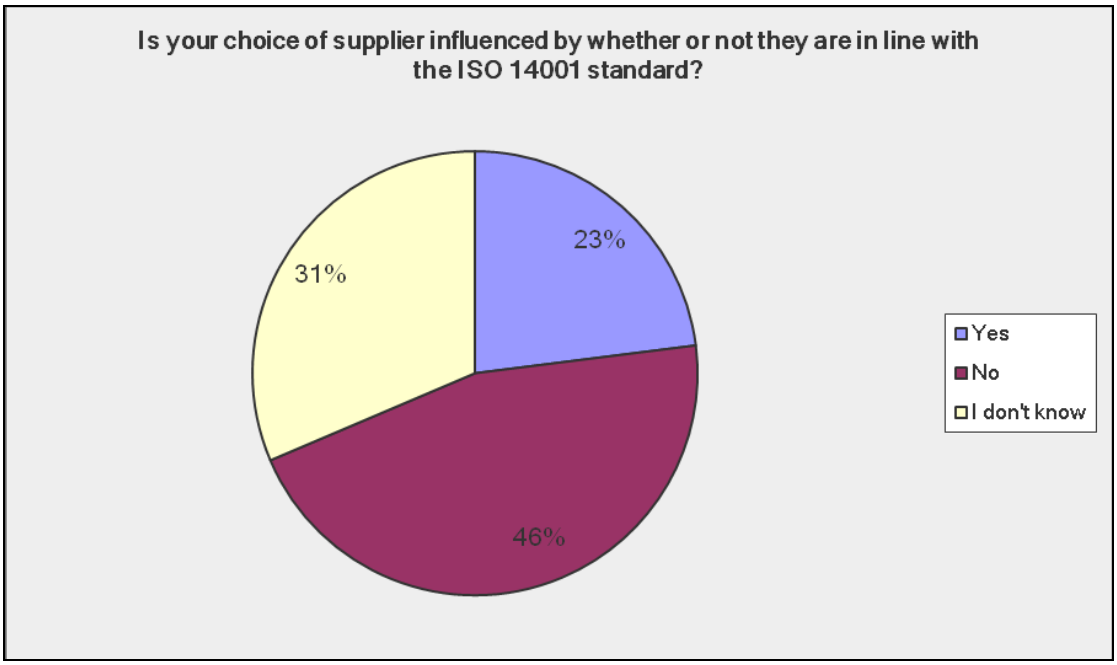

Figure 6 Suppliers and ISO 14001

7 Conclusions and Recommendations

Approximately 350 organisations from across Europe participated in this CEPIS research about Green ICT awareness in organisations, giving an insight into how ICT equipment is used efficiently, and whether organisations actually implement green ICT practices and/or measure the energy consumption of their employees and specifically of the ICT equipment most commonly used by ICT users in business.

From this snapshot into organisations' usage of ICT equipment and processes the following conclusions and recommendations can be derived:

Energy efficient policies are lacking in business: A code of best practice could be developed for organisations. This should describe in simple steps what organisations should do in order to behave more energy efficiently and provide companies with the opportunity to publically commit to such a Code.

A large proportion of organisations in Europe are not training/informing their employees about energy efficiency: National governments and EU institutions should further implement measures to inform organisations, especially SMEs, about how they can save energy. There may be a market for training organisations to produce an energy efficiency course for businesses in Europe.

Commonly used ICT equipment in SMEs is not monitored sufficiently: Since ICT underpins virtually all aspects of business, it is necessary to monitor technology use not only in ICT departments, but increasingly important to also do so across all departments.

Micro organisations are more likely to implement green ICT policies in business: Larger organisations should do the same, in order to save costs and ultimately contribute to the protection of the environment as efficiently as possible.

CEPIS would like to thank its Members, and the CEPIS Green ICT Task Force for undertaking this research into the energy efficiency of ICT equipment and processes within SMEs across Europe.

About CEPIS

CEPIS is a non-profit organisation seeking to improve and promote a high standard among informatics professionals in recognition of the impact that informatics has on employment, business and society. CEPIS is comprised of 35 national informatics associations representing over 350,000 informatics professionals from 32 countries across greater Europe. It provides a coordinated voice on the views of European informatics professionals on major issues to European Institutions. CEPIS is responsible for the highly successful ECDL and EUCIP Programmes and produces a range of research and publications in the area of skills. As a professional body, CEPIS is actively involved in promoting Professionalism in IT practice amongst its members. For more information: www.cepis.org