Application of Environmentally Preferable Purchasing in Trinity College, Dublin

by

Marcus Phelan

This project is presented in part fulfilment of the HETAC requirements for the award of

Degree of Master of Science in Environmental Protection

at

Institute of Technology, Sligo

September, 2004

Supervised by: ***Mr. N. Connaughton***

Abstract

An investigation into the inclusion of environmental considerations in procurement decisions in college concluded that elements of environmentally preferable purchasing (EPP) are in place, but the application is uneven. Some EPP initiatives are in place specifically to reduce environmental impacts. Other schemes that are designed and implemented to increase efficiency or reduce waste etc. are also generating environmental benefits indirectly.

A number of EPP tools were applied to a selection of college activities and some potential for increasing EPP was identified. Survey participants deemed that a coordinated approach based on a purchasing guide or online database would be a useful aid for integrating purchasing requirements and environmental objectives. A college policy on eco-procurement would be beneficial for those who wish to develop initiatives along defined college guidelines and within legislative compliance.

The participants in the surveys expressed a high level of interest and awareness in environmental matters related to college activities, including the impacts of purchasing. It follows that individual managers or staff members are best qualified to promote EPP in their respective departments.

Acknowledgements

In completing this research I would like to thank the kind assistance of the following people:

Mr. Noel Connaughton – my tutor at Institute of Technology, Sligo, for the help and assistance he provided in completing this project.

Mr. Ben Hartnett – College Procurement and Contracts Officer, for his introduction to purchasing activities in TCD, and his assistance in providing guidance for this study. I also wish to thank the many staff that took part in the questionnaires and interviews, and provided much insight into their respective activities. I am grateful for the time that was afforded me, and I consider their willingness to discuss and debate the issues as the most valuable contribution to the research. I am also grateful for the help of Mr. Colin Harris in providing me with information on the 5E Project.

I conclude by acknowledging the kind help and support given me by my wife, Catriona during the course of this dissertation. Her patience and encouragement was, as always, graciously provided whenever required.

My apologies if I have inadvertently omitted anyone to whom acknowledgement is due.

Table of Contents

List of Tables

List of Figures

Introduction

Much in the area of the environment is currently focused on sustainable development. This concept recognises the need to integrate sound environmental management and ethical trade practices into economic development. To sustain progress into the future, it is becoming clear that environmental protection and social equity must be incorporated into the national policies of governments.

Environmentally Preferable Purchasing (EPP) is a concept that is based on the premise that all purchases will have some environmental impacts. These may occur during any of the stages in the lifecycle of the product or service. EPP seeks to reduce the impact of the product or service by considering alternatives that contribute less to environmental degradation. Alternatives could include natural production methods, recyclable components, use of less hazardous materials, or more efficient systems. Of course, reducing the requirements for products and services represents the most environmentally preferable solution of all.

The Higher Education (HE) sector is a large consumer of materials and services. It is therefore important that the impacts of purchasing are minimised whenever possible in the interests of promoting improvements in environmental performance. This dissertation focuses on the sustainability of purchasing activities in TCD, and the application of current developments in the area of eco-procurement. An investigation into the level of awareness of EPP and closer inspection of a selection of college activities forms the basis of the study.

This dissertation concentrates on four specific product categories, namely Cleaning and Janitorial Products, Food and Food Services, Horticultural Products and Services and Office Supplies (PCs and Paper). The objectives of the study are to assess current purchasing policy and practice in TCD for inclusion of EPP measures (if any), and examine possibilities for expanding and developing EPP based on currently available models.

On the basis of the results given in questionnaires, various EPP tools available in both the public and private sectors were evaluated in terms of their suitability and applicability in the HE sector. Case studies highlighting tools currently employed in the public sector in other organisations in Ireland and abroad were examined. These institutions included schools, universities and local government departments. The EPP tools employed were examined for applicability to TCD.

1 Literature Review

1.1 Background to Environmentally Preferable Purchasing

1.1.1 Origins

The concept of Environmentally Preferable Purchasing (EPP) has its origins in the wider field of sustainable development as detailed in the United Nations Conference on Environment and Development in Rio de Janeiro, 1992 (Erdmenger 2003, p.10-11). This was encapsulated in a blueprint called Local Agenda 21- the consensus by which participant countries agreed to a strategy for the 21st century based on sustainable development. Due to rapid population growth, increasing awareness of environmental systems and climate change, it became clear to participant countries that action was required. As purchasing involves the depletion of natural resources and fuel reserves, and contributes to environmental degradation, therefore EPP can be used as a tool to contribute to Local Agenda 21 objectives.

The focus was to call for changes in consumption and production patterns followed by attempts to raise awareness in relation to sustainable patterns of economic development. On an international level, Agenda 21, the EU's 5th Action Programme on the Environment and the Maastricht and Amsterdam Treaties are all committed to the principles of sustainable development. They encourage an approach designed to promote a change in current growth trends and behavioural attitudes (ENFO-The Environmental Information Service, 1999). At national level, the establishment of Comhar represents an important development in the Irish commitment to Agenda 21 objectives.

Comhar is made up of twenty-five national organisations chosen from fifty-nine applicants with the intention of representing the environmental, economic and social aspects of sustainable development (ENFO, 2000). One of the working groups of particular interest set up under Comhar concerned with national policy aims to address mechanisms and instruments such as:

> Environmental management; eco-labelling; environmental taxation; voluntary agreements; regulation; sustainable proofing/eco-auditing of policies; green procurement; indicators; and effective communication strategies (ENFO, 2000).

Education, information and awareness raising are also core activities in the remit of Comhar. Most of the successful programmes introduced to promote EPP have resulted from pilot work based on increasing awareness of the possibilities to reduce environmental impact at purchasing level.

1.1.2 Forerunners and Early Developments

1.1.2.1 European initiatives

Earlier forays into green purchasing programmes were instigated in European countries such as Germany, Denmark, and Holland in the 1970s and 1980s (Ochoa et al. 2003, p.21-22). These early initiatives included measures to reduce the environmental impact of products and services, such as changes in procurement law to include environmental criteria, eco-labelling and co-ordinated market pressure for green products. In Sweden, a manual for green public procurement, *Västernorrlandsparmen*, was introduced in the early 1990s for twenty-five product groupings, for use by public and private purchasers (Ochoa et al. 2003, p. 22). Mielisch and Erdmenger [no date] state public buyers have considerable purchasing power, and "Through a co-ordinated purchasing policy, public institutions can give market signals." It follows that as demand for green consumption accumulates, supply must follow.

The Dutch published their first National Environmental Policy Plan (NEPP) in 1990 (van der Grijp 1998, p.65). In it they have taken the approach of greening public procurement by utilising environmental management systems, such as the Eco-Management and Audit Scheme (EMAS). In general, however, it appears EPP is not comprehensively included in many systems at the organisational level. Russel (1998, p.10) likens it to the "Cinderella" of environmental management. It could be argued the business case is not strong enough yet, but as technical developments and other product innovations emerge, and consumer demand continues to favour green products, a continued integration of EPP into mainstream purchasing is possible.

1.1.2.2 Pioneers in the United States

Initially in the United States, green purchasing was enshrined in a number of national statutes such as the Resource Conservation and Recovery Act (RCRA) of 1976 and the Pollution Prevention Act of 1990 (Sanders 1998, p.47-48). This rather disjointed approach was greatly improved by the introduction of a series of Presidential Executive Orders in 1993 allowing changes in Federal purchasing requirements to allow for EPP.

These Orders include measures to change procurement policies in relation to ozone-depleting substances and alternative-fuelled vehicles, and implement waste prevention, conservation and freedom of information initiatives. Sanders (1998 p.51) states that a "single-attribute focus" is central to the American approach, reflecting past policy in environmental protection through control. This is less comprehensive than the holistic approach adopted in Japan and Denmark for example, but is nonetheless contributing to reduction of specific impacts. Due to increasing globalisation of markets, led by many American based companies, it is imperative that environmental concerns are paramount. But sustainability must be coupled with parity and equity for all shareholders, and this is the responsibility of all developed countries.

1.1.2.3 Japanese endeavours

The Japanese were early proponents of EPP. They began in the 1980s with eco-labelling and progressed through the mid-1990s with an Action Plan for Greening of Government Operations (Ochoa et al. 2003, p. 21). Green purchasing became obligatory for national departments in 2001.

1.1.3 Public Purchasing

1.1.3.1 Influence on Markets

The rapid worldwide growth of consumerism points to the power of purchasing in influencing the extent of environmental impact. Under Agenda 21, local governments are encouraged to adopt environmentally sound purchasing practices. On average, public procurement represents 12% of EC GDP (Organisation for Economic Cooperation and Development 1999, p.11 cited Commission of the European Communities 2001, p.15).

This substantial proportion is indicative of the potential influence of public spending on stimulating the demand for green products and services. Current and future policies on green purchasing will only be successfully implemented if forward-thinking purchasers continue to develop strategies that favour environmentally preferable products without compromising on cost implications and other factors.

A guide published by the U.K. Local Government Management Board (Bestwick, C. and Harrower, D., [ca. 1997], p.4) suggests that without pro-active local authority involvement, over two thirds of Agenda 21 will be unachievable. This is specifically because of the potential to influence other organisations in incorporating a holistic approach to procurement. Case studies where local governments have successfully introduced sustainable patterns of consumption into their activities can serve as beacons for more hesitant sectors, and public purchasing can demonstrate leadership in achieving Agenda 21 objectives.

1.1.3.2 Importance of Networks

The trend for the development of EPP has been to stimulate demand for green products by purchasers organising networks, thereby co-ordinating attention on specific objectives e.g. BIG-Net, the "Buy It Green" Network of Municipal Purchasers in Europe. The main objective of this network is "sharing experiences among eco-responsible purchasers" (Plas and Erdmenger 2000, p.49). This document contains many hands-on experiences in the field of EPP but three interesting considerations not included in the main document, which are in BIG-Net's agenda, concentrate on three core concepts namely:

1. Substitution of products with services
2. Calculation of follow-up costs
3. Common EU purchasing guidelines

It also found that product information in all categories needs to be continuously updated and accessible from shared databases in order to harmonise demand for green products. This will stimulate demand and aid development of future alternatives.

The state of Voraldberg, Austria has introduced a networked programme of support for EPP in the ninety-six local authorities in the region (Plas and Erdmenger 2000, p.38). The benefits of shared responsibility mean professional and technical expertise can be co-ordinated to provide maximum support to EPP programmes.

The "United States- Asia Environmental Partnership" (US-AEP) aims to encourage the US and Asian governments to adopt joint sustainable development policies, through its ten year "Clean Technology and Environmental Programme" (CTEM) (Haines 1998, p.180-181).

A study undertaken by the programme focused attention on the environmental activities and performance of large multi-national companies (MNCs). Senior executives from thirty *Fortune 500* companies e.g. Monsanto, Microsoft Corporation, Du Pont and Nissan were interviewed to determine how their environmental strategies operated. The relationship of environmental programmes to ISO14001 was assessed and sector-based programmes were examined. A potential weakness in the study is that it is based on voluntary participation and self-regulation in organisational activities relating to environmental impacts. The locating of new industries in developing countries allows MNCs access to cheaper labour markets and natural resources, and less stringent domestic legislation. It is essential that the generation of new products and services from all countries be cognisant of the tenets of sustainability. The CTEM programme, which is funded by the US Agency for International Development (USAID) has the scope to encourage eco-procurement in joint US-Asian ventures and represents an important link for promoting green consumerism in mass production and consumption.

It is likely that the networking approach will be pivotal to the success of future eco-procurement strategies. This is true for both public and private purchasing at all levels, not least the education sector. A common application of EPP throughout third level institutions in Ireland and internationally may be central to obtaining the best results for stakeholders. Collaboration by purchasing policy makers is an essential element in influencing the demand of green products.

1.2 Environmental Impacts of Purchasing

In 1972, the Club of Rome international research forum suggested that current rates of development are depleting natural resources in an unsustainable manner, and the ability of the environment to assimilate our increased waste generation is diminishing rapidly (Meadows, Meadows, Randers and Behrens, 1972 cited Geiser 2001, p.307). Many of the predictions proved alarmist, however the fundamental principles remain intact. It may just be a matter of time before economic activity outstrips the earth's capacity to provide raw materials for continued growth, or re-integrate waste materials in a safe way. This chapter looks at the varied environmental impacts related to the modern patterns of economic development.

1.2.1 Depletion of Natural Resources

1.2.1.1 Availability of Materials

Materials for use in the production of modern products and utilities are being used at a rate far greater than their renewal rate in the environment. For example, in the US in the last century, the flow of materials through the economy increased by approximately seventeen times (Matos and Wagner 1998, p.107-102 cited Geiser, 2000 p.3). This includes an eighty-two-fold increase in synthetic chemicals derived from fossil fuels, and a twenty-nine-fold increase in use of non-fuel minerals. As the largest economy in the world, the US consumes almost a third of the world's non-energy materials despite only having five per cent of global population. The situation is indicative of all the industrialised countries. When compounded with increasing consumption, this is clearly not sustainable. Evolving technical advances in extraction and processing mean the strength of this argument varies depending on estimates

for current reserves and projected usages. Whatever the future supplies of materials, an essential part of developing greener products must be material conservation. Future products will have to use less and do more to conserve these vital materials.

1.2.1.2 New Materials vs. Renewable Materials

Geiser (2000, p.3-4) also adds that the compositions of materials in use are changing rapidly. Traditional materials such as wood, natural fibres and agricultural materials, i.e. renewable materials, have largely been replaced with synthetic alternatives. These new, largely petroleum-based products (see Figure 1-1 below), are not only non-renewable but also have a larger pollution potential than bio-based materials.

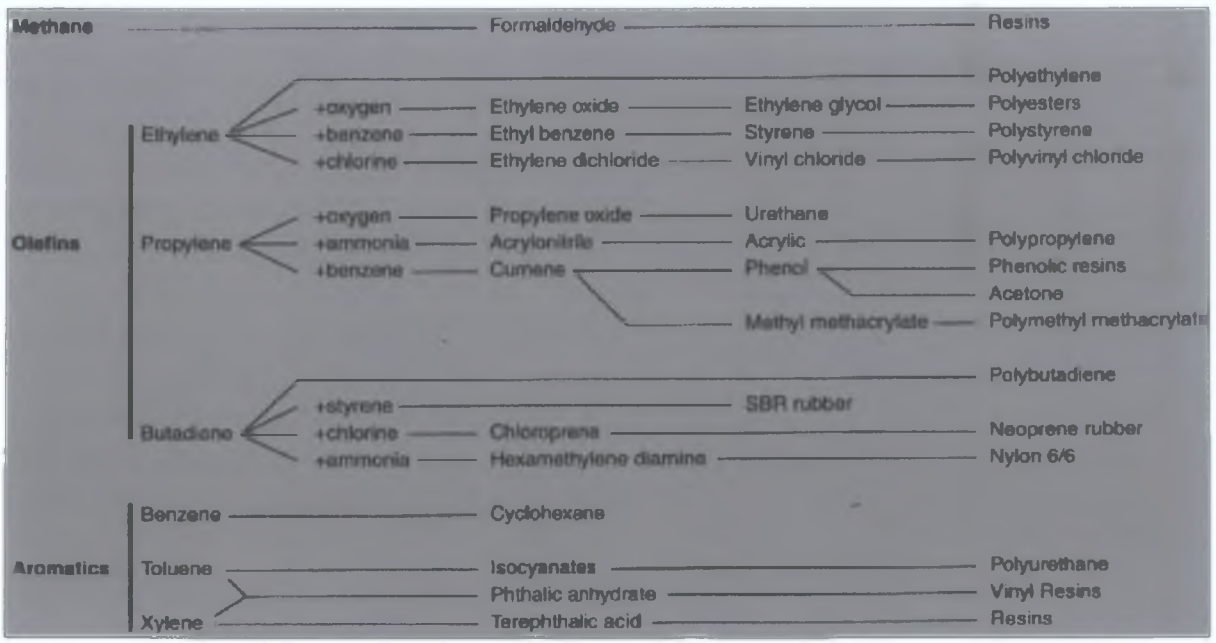


Figure 1-1 Principal routes of synthesis of common petrochemicals

Source: Geiser 2000, p.68.

Plastics, resins and synthetic fibres produced from petroleum-derived materials are used to produce a large variety of consumer products in common use such as clothing, structural materials, coatings and packaging.

Many of these industrial materials have agriculturally based alternatives. Some of these are listed in Figure 1-2.

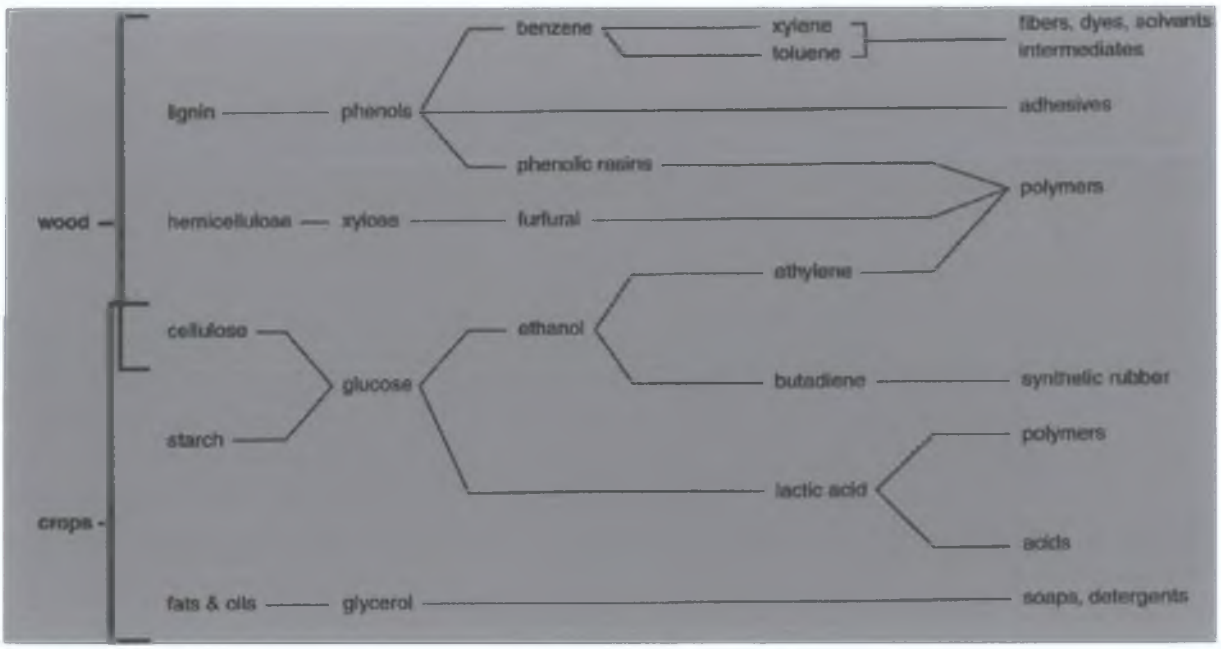


Figure 1-2 Routes of synthesis for organic chemicals from renewable resources

Source: Geiser 2000, p.272

The environmental cost of increased intensification of agricultural practices to produce these materials must be measured against the unsustainable and generally higher pollution impacts associated with use of petroleum-derived materials. Any change is likely to take a long time due to the domination of traditional industries using mined resources.

It remains to be seen if demand for these technologies increases, however, some research suggests a hopeful future for plant-based materials:

> The carbohydrate economy is still very much in its infancy, but our research indicates that it has clearly moved beyond the birthing stage. Plant-matter derived products now have toeholds in markets from which they previously were excluded. And they have captured significant portions of other markets in which they previously had only a marginal presence (Morris 1992 cited Geiser 2000, p.271-272).

Products derived from biomass-based materials represent a substantial opportunity for purchasers to reduce the environmental impact of their organisation. However, the technologies and production processes utilised by the large chemical producers will have to change considerably, to favour these agriculturally based feedstocks in order for the environmental benefits to accrue.

1.2.1.3 Future Materials

The discovery and development of new materials should include sustainability at the design stage. Many developments in environmentally preferable alternatives in the past have been due to discovery of the toxicity or environmental persistence of traditional products. Biodegradable plastics were born out of the necessity to reduce pollution from the vast array of disposable plastic packaging in current use. Environmental safety must also be considered before materials and products are approved and manufactured. Chlorofluorocarbons (CFCs) were introduced as refrigerants and propellants for consumer aerosol products in the 1930s. Once destruction of the earth's ozone layer was attributed to CFCs in the 1980s, efforts were put in place to phase out the use of these chemicals. Whenever possible, Life Cycle Assessments (LCAs) for new materials should be carried out to determine possible future environmental impacts.

1.2.2 Cost of Consumption

1.2.2.1 Rise in Waste Generation

MSW Generation by Region

With the rapid unchecked influx of disposable cheap consumer goods and the increasing affluence of the developed world, the amount of waste produced per capita soared. The rate of generation of municipal waste since the 1980s is presented in Figure 1-3.

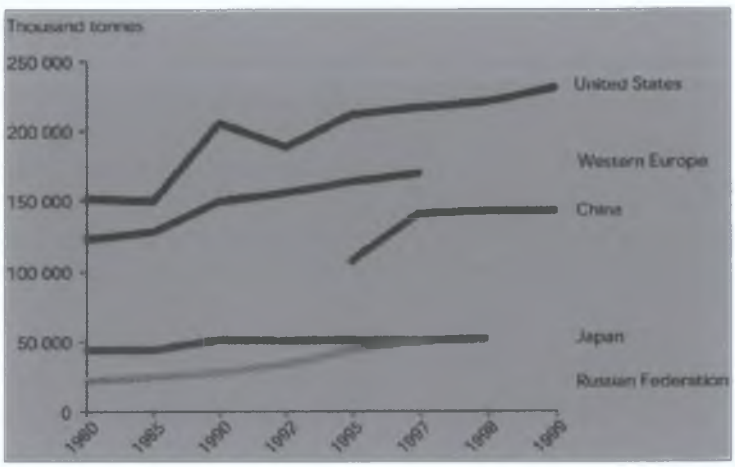


Figure 1-3 Municipal Waste Generation from 1980-1999

Source: [no date] OECD cited European Environment Agency (EEA) 2003, p.338

From 1980-1997 the increase in Municipal Solid Waste (MSW) generation was highest in the Russian Federation at 127%. This was followed by 43% in the USA, 38% in Western Europe and 16% in Japan. The EEA (2003, p.338) also states that the growth of consumerism is one of the main factors for this trend.

MSW Generation per capita

With estimates adjusted to the year 1996, the average generation per capita of daily 'household and commercial waste' in the EU was 368 +/- 47 kg/capita/annum (EEA 2000,

p.28-29). The figure for Ireland was above average at 393 kg/capita/annum. Table 1 also includes comparisons for the USA of MSW generation for "residents businesses and institutions" (US Environmental Protection Agency (USEPA), 2003). Figures for the USA were estimated for 1996 from the graph of trends in MSW Generation 1960-2001. The UK figure is also included.

Region	*Kg MSW generated / capita / annum (Adjusted to1996)*
United States	737
United Kingdom	396
Ireland	393
European Union	368

Table 1-1 Comparison of MSW generated by Region

Source: European Topic Centre on Waste (ETC/W) Survey 1998, OECD 1997, and Eurostat 1996 cited EEA 2000, p.28-29 and USEPA 2003

Differences in definitions of MSW and how it is calculated must be taken into account in these estimates, but they are useful for general comparisons. Note the substantial difference between the US and the EU figures. MSW generation in the US has however begun a slight decline in the last decade, the first since the rise of consumerism in the1960s (USEPA 2003).

The costs associated with the treatment or disposal of this level of waste is considerable and are constantly rising. Consequently, governments are passing on these costs to the consumer i.e. industry, commercial enterprises and the public as per the generally accepted "polluter pays" principle. Almost 2.3 million tonnes of MSW was produced in Ireland in 2000, of which only 12.2% was recycled (Environmental Protection Agency (EPA) 2002, p.25). The remaining 87.8% was reportedly sent to the country's hundred or so landfill sites (fifty local authority and fifty private sites (EPA 2000, p.67-68), which are soon to reach maximum

capacity. A 2002 report by economic consultant Dr. Peter Bacon commissioned by the company Celtic Waste (McDonald 2002, p.6) predicts that landfill capacity will be inadequate even to deal with post-recycled household waste by 2003. As capacity decreases the cost of disposal correspondingly increases. The rising costs vary by region and type of landfill operation, but substantial price increases have been implemented in the last few years. Recycling can ease the situation but markets remain unstable for recycled materials. The spiralling cost of waste management to individuals and organisations is increasingly focusing attention on potential solutions to reduce costs, such as EPP.

1.2.2.2 Rise in Consumerism

The increase in production of petroleum-derived products has led to growth in markets for these materials. In many respects this is due to the rising demand for fuel products (Geiser, 2000 p.83). The low cost of production and higher versatility of these new products and components, introduced in the 1950s and 1960s, led to a flood of consumer items within reach of almost all the populations in the West, with little regard for their environmental impact.

The rise in consumerism is largely a socio-economic phenomenon, and now a political issue also. We now consume more than twenty-five times more products than those in the developing world (Jeffrey [no date]). A substantial proportion of these items could be classed as luxurious or lifestyle products. However the environmental cost of resource usage and the pollution potential can also be considerable. The same pattern of consumerism is already visible in the developing nations and will most likely contribute to environmental degradation similar to that in the West.

The German Federal Environmental Agency estimates that consumption patterns are "directly or indirectly responsible for thirty to forty per cent of environmental problems" (Jordan *et al.*, 2003 p.1). In this report, independently evaluated environmental criteria used to develop eco-label schemes, are seen as a response to these unsustainable patterns. Germany was notably the first country to introduce a national eco-label in 1978.

1.2.2.3 De-Materialisation of economies

It is now largely thought that the development of successful economic policies must involve a de-coupling of economic growth from environmental degradation and non-sustainable resource usage. Increasing product efficiency, and replacing products with services (e.g. replacing post with email), represents two important goals of de-materialisation. The reuse and recycling of materials can also contribute to increased efficient use of resources.

High energy consumption, private transport growth and over-fishing are problems experienced in many European economies today (EEA 2002, p.5-7). One of the main conclusions of this third report in the series on the state of the environment in Europe is the necessity to introduce harmonised taxation systems to internalise environmental costs (EEA 2002, p.14). Some notable successes were mentioned in the report with regard to making economies more eco-efficient, due in part to the increase of renewable energy sources e.g. wind energy in Germany, Spain and Denmark. The issue of a suitable taxation system comparable to the polluter pays principle (PPP) remains essential to any successful strategy for the furtherance of sustainable development. It is an integral part of the future of EPP that financial reward and/ or penalties be integrated into the developing policies of economic advancement.

1.3 Drivers for Promotion of EPP

1.3.1 Policy Change

1.3.1.1 Integrated Product Policy

The Commission of the European Communities in the spirit of the 1992 Rio Declaration on Environment and Development produced a Green Paper on Integrated Product Policy. This paper presents:

> an approach which seeks to reduce the life cycle environmental impacts of products from the mining of raw materials to production, distribution, use, and waste management." (European Commission 2001, p.5).

The Commission's Green Paper proposes to increase attention on environmental policies that would encourage the advancement of green products, using a strategy based on the Integrated Product Policy (IPP) approach. IPP seeks to increase the uptake of green products and services through a variety of instruments by analysing all stages of their life cycle. This "design-to-disposal" view takes stock of all associated environmental impacts, and informs policy makers of adjustments required to maintain or improve performance.

IPP encourages stakeholders to be cognisant of the integrated aspects of their activities, and to take responsibility for the environmental impacts of their inputs into the production process, transport or other respective area of concern. These stakeholders include consumers, non-governmental organisations, industry and retailers. IPP developments rely on local initiatives and research and development to develop a business oriented approach based on innovative economic growth. The life cycle of a product, detailing the stages involved from extraction of raw material to disposal is included overleaf (CEC 2001, p.6):

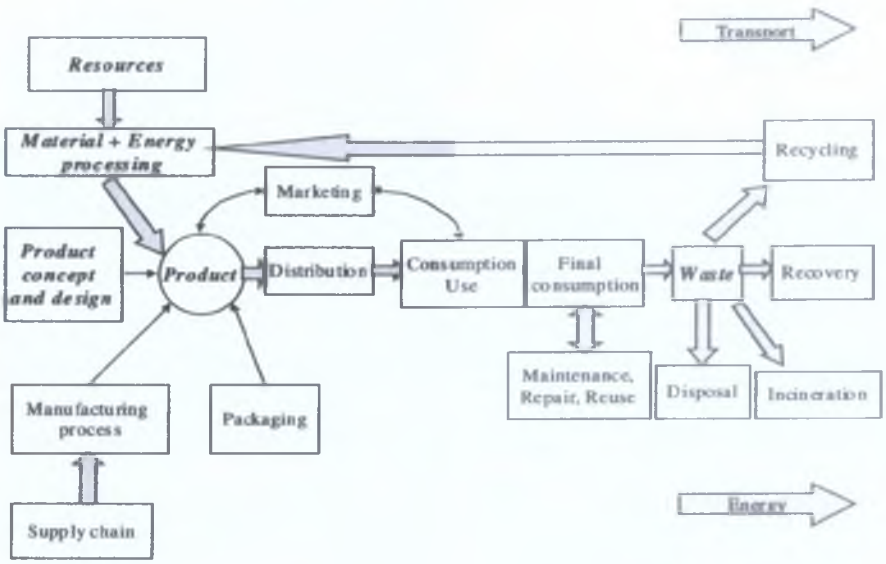


Figure 1-4 Schematic life cycle of a product

Source: CEC 2001, p.6.

1.3.2 Encouragement of EPP within Regulatory Requirements

1.3.2.1 Procurement in the EU

Since 1971, public procurement within the EU has been governed by a number of Directives, namely the Directives concerning:

1. Public works contracts 93/37/EEC
2. Public supply contracts 93/36/EEC
3. Public service contracts 92/50/EEC
4. 97/52/EEC amending the three previous directives
5. Contracts by utilities 93/38/EEC as amended by Directives 94/22/EEC and 98/4/EEC
6. Remedies 89/665/EEC as amended by Directive 92/50/EEC
7. Remedies for the utilities 92/13/EEC (Barth and Fischer 2003, p.52)

As Barth and Fischer (2003, p.53) state these Directives are applicable above certain threshold amounts e.g. €200,000 for Supplies and Services Directive.

Since the 1970s, many developments have taken place in the area of environment; however the Community Directives on public procurement while having being amended, have not changed in most respects. Current EC thinking suggests that public procurement can be used as a tool to pursue environmental policy objectives, as outlined in the Commissions Green Paper and Communication on Public Procurement (EC 1996, 1998a cited Barth and Fischer 2003, p.53). This represents the success of an environmentally friendly perspective, over the previously held view that feared national bias, by including concerns other than purely economic ones.

If buyers include environmental criteria in the technical specifications section of tenders, environmental impact can be reduced e.g. in principal the Commission regards eco-labels as technical specifications for the purposes of the Directives (Barth and Fischer 2003, p.57).

Barth and Fischer (2003, p.64) go on to state that in order to simplify matters, the Commission proposed two new Directives in 1996, one governing public supplies, works and services, and the other the utilities sector; namely (COM [2000] 275 final) and (COM [2000] 276 final). For the first time in European secondary law, consideration for environmental criteria is included in the procurement process. While pressure on purchasers to regard these criteria is only in the infancy stages, it represents a shift in current thinking.

If purchasers are more familiar with environmental issues, they have the ability to encourage promotion of greener goods and services. The effectiveness of the communication of environmental considerations in the procurement process will be key to the ensured inclusion of green procurement criteria in purchasing decisions. All regulatory tools to promote EPP must be encouraged by EU states to allow purchasers to buy more green products more easily.

In a communication on exploring the integration of environmental considerations into public procurement, the Commission (2001, p.7-23) includes the various means available by which this may be done under current restrictions. These are the legal basis for introducing EPP into green purchasing in the public sector in the EU. They are set out as follows:

1. **Definition of the subject matter of the contract**

This could require for example, the design of energy efficient buildings, or those that minimise the need for artificial light. This tool is probably most suited to work contracts.

2. **Define requirements relating to environmental performance in the technical specifications**

This relates to the possibility to prescribe primary materials, to specify production processes, to refer to eco-labels or to use variants. Specific substances, which are banned for environmental reasons, may be excluded from the procurement process once the national legislation is compatible with Community law. European standards are given highest priority followed by similar or related international instruments.

Eco-labels may be European, national or pluri-national, or private depending on origin. The Commission states the possibility of their inclusion in the procurement process:

> In the absence of mandatory references, or where they require a higher level of environmental protection than laid down in standards or legislation, contracting authorities can define the technical specifications related to the environmental performance in line with eco-label criteria and may indicate that products having these eco-label certificates are deemed to comply with the technical prescriptions of the contract documents (2001, p.12).

There can be some confusion over the applicability and relevance of some eco-labels. For example, the meaning of the Mobius Loop eco-label can be unclear at times. The following is a brief explanation of its use on products; when the Mobius Loop is in the centre of a dark spot i.e. three white arrows on black background it means that the product is made from recycled material. Without the presence of a qualifying statement this is assumed to be 100% post

consumer waste (unless amount is otherwise specified). The Mobius Loop without the spot is taken to mean that the product is recyclable. This refers to the entire product unless otherwise specified. Another requirement is that more than 33% of the population in the area where it is distributed must have access to collection and drop-off facilities. A number from one to six inside the loop refers to the type of plastic it is composed (Region of Peel cited Anon 2004). Purchasers must be aware of the limitations of some eco-labels and the strengths of others, particularly third party verified eco-labels.

The possibility to refer to variants allows the contracting authority for example to specify a specific production process, not otherwise a requirement in the standard definition. Higher environmental performance is another example.

3. Selection of candidates

This part is concerned with the procurement legislation that allows for the justification of exclusion of a candidate from participating in a public contract, financial and economic standing requirements and technical capacity of candidates. Non-payment of taxes, grave professional misconduct and non-compliance with legislation are reasons for exclusion. In the case of environmental legislation, this has the potential to allow exclusion of candidates guilty of pollution offences. This may prove to be difficult to implement, as producers may be subject to "uneven" compliance requirements. Also, producers may show an improvement in environmental performance after penalties are imposed. In terms of technical capacity, contracting authorities may require specific environmental experience, or the operation of an environmental management scheme (EMS) such as the Eco Management and Audit Scheme

(EMAS) or ISO14001. The Commission states this would of course only apply if the EMS "impacts on the supply or capacity of a company, for example the equipment and technicians (CEC 2001, p.17)."

4. Award of the contract

The contracting authorities in evaluating the award of contracts, must award either the lowest price or the most economically advantageous tender. Generally the procurement directives impose two principles with regard to the criteria, namely that of non-discrimination and economic advantage for the contracting party. Economic considerations may include environmental protection and resource consumption.

The Communication includes (2001, p.20) that such considerations can "serve to identify the most economically advantageous tender" where an economic advantage is linked with better environmental performance. Costs incurred during the life cycle of the product, and any externalities may also be considered.

5. Execution of the Contract

This refers to the possibility to define contract clauses relating to the mode of execution of the contract such as delivery of goods in bulk, take-back of packaging etc. The Communication points out however "public procurement directives do not cover contract clauses" but the contracting authority "must observe Treaty rules and principles" (2001, p.23).

6. Contracts not covered by Directives

The requirements for these are set by national legislation but must observe principles of Community law and Treaty rules concerning free movement of goods, non-discrimination etc.

The potential for the closer linking of European environmental and economic objectives is considerable as long as it is applied in a measured and equitable fashion. This is evidently the current thinking of the Commission with the issuing of the Green Paper and other publications. The encouragement of free trade practices in the past must be coupled with patterns of sustainable development, which are now widely considered as an integral part to future environmental policy in the EU.

1.3.3 Consumer Demand

1.3.3.1 Increased Awareness of Environmental Issues

There has been much focus of late on the importance of promoting sustainable consumption patterns. As a result, consumers are becoming more aware of the choices available to them, and importantly, the consequences of these choices. However progress is slow, as is evident from the continual rise in environmental degradation and waste generation, partly due to the lack of a cohesive approach to the supply of eco-products by competing providers. This can serve to foster a "why bother" attitude, and increases confusion in an already complicated marketplace.

Increasing awareness may be due to positive or negative perceptions- consumers may be displeased with the cost of waste disposal and service charges (water, energy etc.). These factors may alert them to related environmental issues. Alternatively, individuals may be attracted to sustainable forms of consumption by positive advertising, environmental labelling or by having an interest in certain environmentally friendly activities e.g. organic gardening or co-operatives, thus exploring the availability and viability of eco-products. If this awareness is extended to the workplace from the home, purchasers may be more open to the possibilities of preferring environmentally superior products.

1.3.3.2 Public Health Concerns

Many products and services that are potentially harmful to the environment may also affect human heath in a discernibly direct fashion. These risks can be due to perceived or real

hazards. For instance, global warming may be difficult for the average consumer to be concerned about on a day-to-day basis. But issues such as incineration of waste, genetic engineering and traffic pollution contribute to many topical debates in the media in relation to human health issues. Of course they also represent a threat to the natural environment, but the public health issues are generally more likely to result in the demand for cleaner solutions. This could include for example the prevention of pollution to waters used to supply potable water, or provision of a safe and healthy food supply.

1.3.3.3 Changing Profile of Consumers

The spending power of younger people has dramatically increased in Ireland and similar economically advantaged countries over the last few decades. Young people are now the target consumers for a large array of new products and services. Also many of the endeavours in environmental education designed to promote sustainability, are directed towards these lower age groups. It is likely that they will have a better understanding of the complex issues involved, and will be more aware of the consequences of their patterns of consumerism than previous generations. This is already evident from the many schemes, conferences and exhibitions organised by schools and colleges and community clubs throughout Ireland and abroad.

1.4 Procurement and Sustainability in the Higher Education Sector

1.4.1 Purchasing Relationships

1.4.1.1 Supply Chains

Advancement of environmental performance is at the heart of sound environmental management practices. Logically this must include development of products and services that are designed with environmental criteria in mind. According to the International Council for Local Environmental Initiatives (ICLEI) an "environmentally preferable product"

> is a product which has an overall minimum environmental impact throughout its lifespan, in comparison to other products or services serving the same purpose and having the same functional qualities (Plas and Erdmenger 2000, p.9).

It follows that all of the impacts of a product must be assessed in order to make a judgement on its environmental performance, and to help to design and develop better alternatives. Many tools exist and are being developed to determine impacts. These assessments form the basis for potential changes in purchasing policy.

Sustainable purchasing relies on the availability of green products and services, which in turn relies on purchasing policies to include specific environmental criteria, to enhance demand. Purchasers in the third level sector with similar requirements have the potential to increase demand by co-ordinating eco-procurement policies, which has been achieved in other sectors in the public domain using similar tools. There are also models developed by the private sector to aid green buying in organisations e.g. specific guides for use by purchasers (The Association for Purchasing and Supply, 2003). These are the main routes by which green purchasing may be incorporated into established policies and procedures.

1.4.1.2 Participants in Higher Education Purchasing

In the Higher Education (HE) sector, there are many actors involved in making purchasing decisions, and many managerial, administrative and technical levels at which inputs into purchasing are made. The tools that are used to determine environmental impact must be effectively communicated throughout an organisation to enhance the ability to purchase in a sustainable fashion. Ideally they would be incorporated into purchasing, environmental, and health and safety policies, and in business improvement plans. Many individuals, groups or departments may already be leaders in the area but these initiatives must be capitalised on, and highlighted at senior levels within the college structures.

The Higher Education Partnership for Sustainability (HEPS) under the Forum for the Future initiative in the UK, recognises that "purchasing has a key role to play in bringing about sustainable development" (Forum for the Future [ca. 2003], p.11). It also states purchasing decisions in the HE sector can impact occupational health beneficially, improve working conditions and reduce emissions. In this document, the UK Chartered Institute of Purchasing and Supply (CIPS) recognises this potential:

> purchasing and supply management professionals have a pivotal role in developing and implementing environmental best practice and policies in their own organisations and in the wider supply chains (CIPS Ethical Business Practices in Purchasing and Supply 2000, cited Forum for the Future p.11).

The interface between internal customers and the supply chain is a vital area of control for the allocation of budgets in a manner that is aware of all costs including environmental, health and safety and social. Purchasing practices must be allowed to develop in order to benefit from potential cost reductions.

The HEPS guidance report highlights the business case for EPP in the HE sector, citing many drivers for sustainable purchasing including compliance with environmental legislation, reduction of costs, preserving reputation, securing supply of goods and services, and risk management.

Purchasers and related end-users of products and services must coordinate to develop guidelines or a suitable weighting system that can be added to existing policies and procedures to further explore the possibilities and benefits of EPP.

1.4.2 Purchasing in Trinity College Dublin (TCD)

1.4.2.1 Purchasing Roles in Trinity College

Heads of department are entitled to allocate their budgets subject to college purchasing policies, EU Directives and Public Procurement Guidelines (University of Dublin, Trinity College 2001, p.5). In addition, each Head nominates staff members from their department responsible for all aspects of procurement in that department. Heads must authorise orders over €6350 (see Table 1-2 for more information).

For centrally managed contracts, the Procurement and Contracts Officer works together with key users to determine compliance by suppliers under the terms of the contract.

1.4.2.2 Purchasing Policies and Procedures

All purchasing activities are governed by rules laid down in the Irish and European legislation and the University's Purchasing Manual. The Purchasing Manual states that procurement activity in the college is defined as:

> all the actions from the time a supply is deemed to be required until the materials and/ or service has been received and paid for at the College and in some cases may continue until the time of disposal (University of Dublin, Trinity College 2001, p.7).

The following are the purchasing objectives of the Procurement and Contracts Office:

1. To ensure that optimum quality and service and related Value for Money (VFM) are achieved across all non-pay expenditure.
2. To purchase as efficiently as possible while ensuring that the College deals with quality vendors.
3. To ensure that the College operates in a fair, open, transparent and non-discriminatory manner in the market place.

4. To ensure that all dealings are carried out in accordance with best professional practices and ethical codes of conduct.
5. To ensure compliance with all relevant European and National legislation and government regulations. (University of Dublin, Trinity College 2001, p.4)

All of these objectives could be deemed to encourage EPP as a consequence of their more obviously stated aims. For instance, VFM could be used to promote products that can be reused or shared. Also, reducing or consolidating orders can increase efficiency objectives; by reducing transport costs and consequently the environmental impacts of deliveries. There is however no particular provision for EPP in the written objectives. The benefit of the inclusion of environmentally preferable purchasing objectives is speculative. There is a risk that this could incur complications with regard to some regulatory requirements of purchasing such as non-discrimination and most economically advantageous tender.

Co-ordination of the procurement needs across the college is included in the purchasing policy, in cases where VFM is achieved by doing so. This could be used to foster the development of EPP principles throughout the college at group level. The benefits of current green procurement could be emphasised and new programmes encouraged. The addition of a brief account of how to include environmental considerations in purchasing decisions, and the means to assess them, could aid purchasers in selecting products with less environmental impact and greater cost effectiveness.

Heads of Departments act as legal agents of the University and as such are bound by the domestic and EU procurement legislation and guidelines. The Procurement and Contracts Officer prepares a list annually of approved suppliers, which the heads may use as a basis for

inviting bids and tenders. This list is generated by contact from interested suppliers subsequent to advertisings in the local and national media.

The inclusion of factors in relation to products and services "until the time of their disposal" is significant. This could generally be considered to be the inclusion of the associated waste management costs of any purchases. The department producing the waste, however, may not be responsible for all the disposal costs of the waste. This could discourage the purchase of products without too much consideration of disposal considerations. If the total costs are not borne by the purchaser, any initial higher prices for these goods may be seen as a deterrent for purchase in VFM terms. The very high cost of disposal of specialist waste materials must also be considered. If the material is purchased by a department who is not responsible for its ultimate disposal, there may be less incentive to seek less harmful alternatives.

The Purchasing Manual also refers to the "disposal of surplus or obsolete goods (2001, p.7)". As each department acts independently in respect to its budgetary allocation, there exists a risk that surplus goods may be disposed of unnecessarily or goods may be allowed to expire, when a use may exist for them elsewhere. In order to avoid unnecessary purchases or disposal costs, a register system could be used to itemise surplus stock, which could be accessed by departments prior to making purchasing decisions.

When writing specifications for inclusion in any quotation or tender being sought, the procedures in the Purchasing Manual state that it "is important that a clear and comprehensive list of requirements is compiled, agreed and set" (2001, p.9). This reference alludes to EU

procurement regulations that require open competition, including avoiding the inclusion of brand names or trade names. The procedures also require that:

> The buyer should acquire a good knowledge of the market (suppliers, prices, etc.) for his/ her most commonly required goods or services (2001, p.9)

The meaning of this statement could be extended to refer to the environmental performance of the supplier, or of its goods and services. It is also suggested that when a new supplier is being assessed where there exists a potential risk, the Procurement and Contracts Office may be contacted to obtain an independent financial report on the company concerned. A site visit is also mentioned as a means of making an assessment. Part of a potential visit could focus on the company's environmental and waste management policies and infrastructure, and their environmental emissions.

Where preferred suppliers are used, there is no requirement to obtain competitive tenders and quotations. In all other cases they are required. The Purchasing Manual includes the thresholds (excluding VAT) within which the minimum number of quotations or tenders must be obtained:

Contract Value	*Required Purchasing Procedure*
Under €6350	At least **1** quotation
€6350 to €31750	At least **3** written quotations
€31750 and above	Written tender process with the aim of achieving at least three realistic quotes (Procurement and Contracts Officer must be contacted)

Table 1-2 Thresholds for Quotations and Tenders

Source: TCD 2001, p.11.

These are upper limits laid down by the finance committee but there is also encouragement in the Manual for departments to apply stricter limits "where this leads to improved value for money" (2001, p.11). There exists the potential to seek more than the required number of

quotations and tenders that may involve companies that produce environmentally superior products.

In terms of evaluation of quotations and tenders, the Manual cites a number of criteria as follows:

> The criteria to be applied in determining the award contract should be stated in the tender documents and would normally be the (most economically advantageous) tender taking account of:
>
> - Price
> - Delivery time
> - Lifecycle costs
> - Quality
> - Aesthetic and functional characteristics
> - Technical merit
> - After sales service and technical assistance, including warranty (2001, p.14)

These are a representative sample of what may be included and they may be added to or subtracted from as required in each particular case. A scoring system for each criterion is the usual method for weighing up each bid, which is decided by the evaluation team. Environmental performance may be included at this stage e.g. as a function of the lifecycle cost criterion. Obviously products with higher energy, water usage or disposal implications will have a greater impact on the environment and cost more financially. The scope for the inclusion of other environmental factors exists where this does not affect selection of the most economically advantageous tender. Issues such as delivery frequency and take back schemes for packaging can also be included. Factors like these are vital for the promotion of purchase of greener products.

1.4.2.3 Funding and Budgets

All purchasing decisions are ultimately dependent on the availability of capital resources necessary for all transactions. This in turn is a function of the current funding and other incomes available to the college. In the case of the HE sector in Ireland, much of the funding comes from the Higher Education Authority (HEA).

The income received in State Grants by TCD in the years 2001 to 2003 compared to the net surplus/ deficit reported is presented in Table 1-3:

	2001 €'000	*2002 €'000*	*2003 €'000*
Income	60,149	72,512	79,638
Net (Deficit)/ Surplus	28	831	(893)

Table 1-3 Comparison of Income Received by TCD in State Grants 2001-2003 to Net Deficit/ Surplus

Source: TCD 2002 and 2003.

The table shows an increase in income from 2001 to 2002 of 21%, and a further increase in 2003 of 10%. This is contrasted with a decrease in surplus funds of a massive 97% and 193% in the same time periods respectively. This places a huge financial burden on the University, as government grants are insufficient to maintain current spending. According to the Conference of Heads of Universities (CHIU), when the abolition of fees is taken into account, "direct state support for students actually fell by €1240 between 1995 and 2001" (CHIU 2003).

There are many other factors in the equation with regard to allocation of funds for finance of college activities. It is clear though that the current economic situation for the HE sector in general is not bright. It has been largely recognised in the sector that other sources of funding will be required. CHIU stated in its review of state funding in the university sector:

> Given the expansion in student numbers in recent years and the fact that any capital funding available has been for targeted programmes, institutions have had to look to every possible source of funding development. The HEA has informally acknowledged that there is a significant infrastructural deficit across the sector. In CHIU's submission to the National Development Plan 2000-2006, it was estimated that £460m (€584) would be required to expand and modernise infrastructure, facilities and equipment (CHIU 2000, p.4).

The funding issue continues to be a major concern and much of this focus has been placed on the abolition of third level fees. This forms a critical point in the CHIU commissioned FSG report published in 2003:

> The state has only been able to afford fees at university level at direct cost to universities themselves through reduced levels of state investment in universities in real terms. (FSG Consulting 2003, p.13)

The report goes on further to highlight the key issue involved in the problem:

> The current funding model (and recent funding trends) is irreconcilable with future sectoral funding needs. A changed approach is not a matter of choice- it is a necessity (FSG Consulting 2003, p.13).

In order to maintain current programmes and initiatives, and to compete with other educational institutions on a national and international level, TCD must strive for increased cost effectiveness in all activities. In a climate of reduced state support and as these pressures intensify, a suite of cost saving programmes must and are being considered. Potential savings due to EPP activities could present a much needed contribution to expenditure reduction programmes.

1.5 Opportunities for EPP and Case Studies

1.5.1 The Cleaning Products Pilot Project (CPPP)

Often "environmentally friendly products" are based on home-based formulations largely unsuitable for use on a larger scale or unverified manufacturers' claims, a view corroborated by a study by the USEPA:

> Unfortunately, most of the publicly available environmental information on such products consisted of unsubstantiated vendor claims or "home remedies," such as cleaning solutions made with lemon juice or vinegar (USEPA 2004 c).

The Cleaning Products Pilot Project (CPPP) set up by the General Services Administrations' (GSA) Public Building Service was initiated to establish a methodology to be used to identify environmentally preferable cleaning products for federal buildings.

- Consideration of environmental preferability should begin early in the acquisition process and be rooted in the **ethic of pollution prevention**, which strives to eliminate or reduce, up front, potential risks to human health and the environment.
- A product or service's environmental preferability is a function of **multiple attributes**.
- Environmental preferability should reflect **life-cycle considerations** of products and services to the extent feasible.
- Environmental preferability should consider the **scale (global versus local) and temporal reversibility** aspects of the impact.
- Environmental preferability should be tailored to **local conditions** where appropriate.
- Environmental objectives of products or services should be a factor or subfactor in **competition** among vendors, when appropriate.
- Agencies need to **examine product attribute claims carefully** (USEPA 2004 c).

As a consequence of these considerations, a series of environmental considerations were raised with respect to the purchase of cleaning products. It was intended that this be used as a guide for federal purchasers to select environmentally superior products. These criteria are quite comprehensive and applicable in any district and could be used by college purchasing to

aid development of EPP. The following is a list of factors to be aware of in selecting products with better overall environmental performance:

Minimise	*Favour*
Ozone depleting chlorinated compounds (e.g. CFCs)	Postconsumer recycled content
Organic solvents (e.g. chlorinated and aromatic hydrocarbons)	Reduction in packaging
Reactivity, corrosiveness, flammability, irritation potential	Energy Efficiency (Products that work effectively in cold water reduce energy consumption)
Carcinogens, mutagens, teratogens	Biodegradability upon disposal
Acute and chronic toxicity	Nonflammable products
Volatile organic compounds (VOCs)	Dispensing method should include safety precautions designed to minimize exposure to the concentrated solution.
Phosphorous (phosphate detergents)	

Table 1-4 Attributes to assess environmental preferability of cleaning products

Source: Adapted from USEPA 2004 c.

1.5.2 Green Cleaning Products at US Department of the Interior

The US Department of the Interior introduced EPP in an effort to "procure recycled-content products and to address concerns over indoor air quality (USEPA 2004 d)". Environmental preferability was set as a significant factor in the tender process. Certain "mandatory" characteristics (e.g. no aerosol products or carcinogenic ingredients) and certain "desirable" characteristics (e.g. biodegradability, minimum irritability) were introduced for assessing products. Factsheets were prepared for potential bidders to provide details on the mandatory and desirable characteristic for their product's group. The categories included in the calls for

tender were all-purpose cleaner, general degreaser, general disinfectant, floor stripper, and bathroom cleaner.

The successful tender provided a better service with greatly improved environmental performance. Cost implications were also favourable:

> As it turned out, the bid selected as the most environmentally preferable also had the best overall cleaning operations plan. In addition, the same bid had the lowest price of those under consideration. Establishing best value to the government was not difficult under these circumstances (USEPA 2004 d).

The principles of this approach are applicable to all public purchasing including the higher education sector and it presents the possibility for purchasers to inform themselves of the environmental impacts of cleaning purchases.

1.5.3 EPP of Food Products including Socially Aware Considerations

The following considerations have been identified in the literature as an aid to develop sustainable procurement of food and food products:

Favour	*Discourage*
Organic produce	High fat, salt and sugar foods
Sustainable production methods	Non-accredited suppliers
In-season produce	Over reliance on processed or prepared food
Participation in QA Schemes	Food containing GMOs
Local suppliers	
Special dietary requirements	
Food produced ethically	
Waste minimisation	

Table 1-5 Factors in EPP of food and food products

Source: Adapted from Clement 2003, p.168-177.

Fairtrade products are promoted as an alternative to the largely one-sided agreements between large food companies and growers in developing countries. It came about due to problems experienced by growers, which were highlighted by aid agencies.

> Development agencies recognised the important role that consumers could play to improve the situation for producers. By buying direct from farmers at better prices, helping to strengthen their organisations and marketing their produce directly through their own one world shops and catalogues, the charities offered consumers the opportunity to buy products which were bought on the basis of a fair trade (Fairtrade Foundation 2004).

The "Fairtrade mark" was developed in the Netherlands in 1989 for product labelling, and similarly in other countries and is now amalgamated into an international Fairtrade mark for products such as tea, coffee, sugar, honey, biscuits, fruit and fruit juice. In order for the range of available products to be increased, the EU procurement legislation that refers to the inapplicability of "socially aware" considerations in tender specifications must be changed. Fairtrade options can be included as part of the technical specifications providing "or equivalent" is also included (Office of Government Commerce [no date]).

1.5.4 An Bord Bia's Féile Bia Programme

This programme is a useful addition to an organisations' commitment to providing a recognised "farm to fork" quality assessment of food supplies.

> Féile Bia, a commitment to Quality, is a year round programme that emphasises the importance of food sourcing in hotels, restaurants, pubs and workplaces throughout the country (An Bord Bia, 2004).

The scheme is concerned with ensuring the traceable sourcing of meat, chicken and eggs. Participants must provide details with respect to the quality and origin of the produce, which

must be from recognised or approved quality assurance schemes. This must then be communicated to customers as an assurance of responsibly sourced food.

1.5.5 East Anglia Food Link

The supply of environmentally preferable food in the public sector has had a slow uptake in most European countries. Nonetheless there have been a number of projects that have successfully integrated organic produce into the needs of educational institutions. Notably many of these programmes have focused on public kindergarten or primary school levels. Most also began with the slow but measured introduction of a few organic products.

An organic producer cooperative in East Anglia, Eostre Organics, in partnership with other similar groups in the U.K. and Europe has established the supply of a full range of organic products (Local Food Works [no date]). The produce is sold to retail outlets, markets and box schemes (box schemes involve door to door deliveries of boxes of a selection of available produce). Eostre Organics is also working with East Anglia Food Link to supply the public sector. They are supplying an environmental centre and have also acquired contacts to supply two local schools. The initiative was designed to augment the Healthy Schools Programme in the schools to promote healthy snacks and to replace consumption of chocolate bars and crisps with prepared snacks made from fruit and vegetables.

The implementation of the scheme has been very successful with positive feedback from teachers and pupils. The initiative has included education on nutritional matters, and the cooperative has received increased orders for its vegetable boxes from parents due to the

positive influence of their children's experience. Plans to expand the scheme to three other schools in the area are in place and Eostre Organics is working closely with Norfolk County Council to provide produce for school meals, and with the NHS in relation to supplying local hospitals also.

1.5.6 Opportunities for EPP of Horticultural Chemicals and Supplies

The use of pesticides is used as a widespread solution for the control of pests. There are many approved products on the market by which landscapers can control weeds over large areas. It must be considered also that there are environmental implications for continued use and environmentally preferable alternatives are becoming more and more available. For example glyphospate-based herbicides are generally deemed to be biodegradable and safe by the manufacturer or contract laboratories (Spectrum Laboratories Inc. 2004). However some researchers are convinced that their breakdown products are toxic to wildlife and humans and can cause damage to soil by reduction of nitrogen fixation, amongst other problems (Northwest Coalition for Alternatives to Pesticides 1998). The safety of operators is also a major factor for consideration with the use of chemical pesticide control.

Effective application methods may be a good compromise to reduce the impacts of pesticides and other agrochemicals. This can limit exposure to the operator, and reduce product drift thereby only treating affected areas.

A Global Ecolabelling Network (GEN)* set of eco-labels are concerned with horticultural equipment and supplies including lawnmowers, shredders, lubricating oil and hoses.

* The Global Ecolabelling Network (GEN) is a non-profit association of third-party, environmental performance labelling organizations founded in 1994 to improve, promote, and develop the "ecolabelling" of products and services (GEN 2004).

A Green Guide for Buyers Action Sheet, "Pesticides, Biocides and Artificial Fertilisers" is published online in the U.K. (DEFRA 2004), which is designed to promote environmentally preferable purchasing of these products. It is essentially concerned with limiting the use of these products through application of best practice including:

- Safe storage.
- Promote good husbandry rather than rely on pesticides e.g. tree fungal diseases.
- Plant species suitable for soil conditions.
- Avoid pesticides which deplete the ozone layer e.g. methyl bromide.

1.5.7 Green Campus Design

No two campuses are the same and variations between design and functionality are diverse. Each space must be maintained as appropriate to its allocated purpose. This case study is included as a good example of a programme that incorporated sustainable horticultural and educational benefits for students and the community.

The following is a brief summary of a project undertaken by the University of Washington and Garfield High School under the banner of the Sustainable Community Landscapes Project (SCL). An Urban Horticulturalist from the University and an ecology teacher from the High School wanted to create a teaching garden and decided to co-operate on the project together. The students created a programme of analysis, planning and design and formulated a five year management plan for a sustainable space that would be as self-maintaining as possible:

> The students began by visiting the school and choosing a site to restore. They chose a site that was used heavily but received little maintenance. The students performed a thorough site analysis, looking at soils, hydrology, use patterns, existing vegetation, and other important factors. They also talked to staff, students, and other users to determine their goals and needs, which were incorporated into the design. Based on site conditions, site-appropriate plants were selected to integrate with and complement existing landscaping.
>
> The Garfield community is committed to long-term site maintenance to ensure the success of this project. To help them, the UW students wrote a five-year management plan, detailing how to perform such tasks as watering, weeding, diagnosing and treating pest or pathogen damage, and pruning. The plan includes references for further information, and Sustainable Community Landscapes staff (Cahill, 2002).

The following are some of the benefits that were derived from the scheme.

- Minimal maintenance required since installation.
- No fertilizers or pesticides have been applied.
- Everyone involved gained an understanding of the complex, interdisciplinary process of creating healthy ecosystems and the space is used as an ecology teaching aid.
- New vegetation discouraged rodents (English Ivy had acted as a habitat for vermin).
- Benches were put in place to encourage visitors.

1.5.8 Reduction of Impacts of PCs and Peripheral Equipment

PCs contain many dangerous substances including cadmium (Cd) and lead (Pb) in cathode ray tube monitors, and brominated flame retardants (BFR) in printed circuit boards cables and covers etc. (EPA 2001, p.8, 9).

As a result, the uncontrolled disposal or destruction of PCs and monitors releases into the environment a variety of highly polluting substances. Due to the rapid advances in computer

chip design and monitor display technology, the lifetime of PCs is reducing. Increasingly complex operating systems are requiring the latest hardware to function. Consequently, more PCs have to be replaced more often. This has resulted in a glut of waste PCs for disposal. In Ireland, Waste Electrical and Electronic Equipment (WEEE) accounts for 1.65-3.35% of municipal waste and this figure is rising (EPA 2001, p.2). A key objective of the WEEE Directive is the "separate collection of WEEE" (EP and CEN 2003a). Encouraging supplier take back schemes in the tender requirements is a suitable way to ensure proper recovery and disposal of retired units.

When PCs are supplied, there is also the packaging waste to consider. Cardboard, polyethylene and styrofoam and any other packaging materials have to be disposed or recycled by the customer.

There are various ways by which the impact of PCs may be reduced - again prevention is key. Some reported figures suggest that the materials required for PC production equate to:

> The manufacturing of one desktop computer and 17-inch CRT (cathode ray tube) monitor requires at least 240 kilograms of fossil fuels, 22 kilograms of chemicals and 1,500 kilograms of water. In terms of weight, the total amount of materials used is about equal to that of a mid-size car (Kuehr and Williams 2003 cited Williams 2004).

Williams (2004) also states that:

> 1.7 kilograms of fossil fuels and chemicals and 32 kilograms of water are used to produce a single 2-gram 32M-byte DRAM (dynamic RAM) memory chip.

The ultimate way to reduce the impact of PCs is therefore to extend their useful life wherever possible. This can be done in a number of ways that avoid the need for recycling, recovery

and disposal. The following are some considerations that can be taken before new IT equipment is purchased:

Solution	*Financial Benefit*	*Environmental Benefit*
Upgrade existing equipment	Discourages non-essential investment in new PC	Recycling and raw materials savings: No requirement for recycle of old PC or purchase of new PC
Re-use for other applications e.g. when lower specification is acceptable; for use as word processor only, to record data from a single analytical instrument.	Requires investment in only one new PC (whereas two previously required)	Recycling savings: No requirement for recycle of old PC
Exchange with other departments or offer to staff or local charities/ schools where possible	No requirement for recycling/ disposal	Recycling and raw materials savings: No requirement for recycle of old PC or purchase of new PC by recipient

Table 1-6 Factors in deciding if purchase of new PCs is necessary

Source: Adapted from Wastebusters Ltd. 2000

The considerations listed here are by no means exhaustive, and many other solutions to encourage the re-use of PCs are available. There are of course situations when the need for a new PC or monitor is unavoidable i.e. when the equipment is unsafe for use, damaged beyond repair or when a suitable alternative use cannot be found.

When a purchasing of new PCs is unavoidable there are other environmental considerations besides energy efficiency that are relevant such as waste and noise. Waste management issues include packaging waste (types of packing materials used and their route to disposal), and any "end-of-life" schemes available, such as easy disassembly of units and components (Department of the Environment, Heritage and Local Government (DEHLG) 2003, p.12, 13). Other details of any environmental accreditation attained by the product including any "environmental/ eco-labels or equivalents" are also included in the DEHLG desktop

microcomputer tender document in 2003. See Appendix 6 for details. The following is a summary of relevant environmental considerations prior to purchase of new PCs and peripheral equipment:

Aspects to consider	*Explanation*
Durability (including sufficient warranty and availability of spare parts).	Better to ensure long-term use.
Construction and choice of materials.	Ensure PCs do not contain substances that are likely to be banned in the near future.
Packaging and information (and instruction on appropriate disposal of product).	Can be specifically requested to exclude certain types of packaging waste, and to encourage supplier take-back of packaging.
Emissions and pollutants (including peripheral devices).	Radiation, noise, mercury, ozone, dust and styrene are emitted during disposal. Equipment without these components can be encouraged.
Consumable materials	Choose IT equipment that has duplex functions and uses recycled paper and refillable inks/ toners that do not contain Cd, Pb, Cr and Hg.
Training on efficient use	Power management policies and procedures can significantly reduce power consumption.
Innovative products	*Lean client* systems that rely on a central server to do all major processing, whereby users only require input devices to operate their terminals can reduce the number of units required. Similarly multi-function devices that combine printing, copying, faxing and scanning can reduce the need for separate equipment.

Table 1-7 Environmental considerations prior to purchase of new PCs and peripheral equipment

Source: Clement 2003, p182-185

A requirement to be compliant with the provisions of the WEEE Directive and the restriction on the use of Hazardous Substances in Electrical and Electronic Equipment Directive (RoHS) 2002/95/EC may also be specified. The WEEE Directive objectives include the producer's responsibility for improved product design and free take-back scheme. The RoHS Directive effectively bans from July 2006 the marketing, manufacture or import of EEE which contains the following materials:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr^{6+})
- Polybrominated biphenyls (PBB)
- Polybrominated biphenyl ether (PBDE) (EP and CEC 2003b)

The UK's Department of the Environment, Food and Rural Affairs (DEFRA) Market Transformation Programme (MTP) (MTP, [no date]) cites the inclusion of these directives in tenders and this document also suggests examples of details to be supplied. For instance, mercury content of LCD screens could be specified. PC manufacturers are likely to be cognisant of requirements in relation to relevant EEE and other waste management legislation. But the customer too can also be aware of advances in computer design that offer environmental benefits and generate a demand for environmentally superior products.

Noise limits for idle and accessing drive modes may also be included for the purpose of evaluating noise emissions from PC base units from competing tenders.

1.5.9 EPP of Electrical and Electronic Equipment at NUI Maynooth

The NUI in Maynooth is currently in the process of introducing a Purchasing for Sustainability guide to aid purchasers in the university who wish to procure environmentally superior products (Gaynor 2003). The concept of EPP was introduced, and the possibilities for introducing it into practice were outlined. A "Guide for Choosing Environmentally Preferable EEE Equipment" was also included in this document.

This guide suggests that environmental and energy requirements are included from the outset in the specifications for contracts taking account of "raw material usage, durability, adaptability, distribution, reuse, operation, maintenance, packaging and disposal (Gaynor 2003, p.14)." It makes particular mention of changing legislative requirements:

- Request the supplier to provide details of the arrangements for take-back of equipment with regard to requirements of the WEEE Directive.
- Specify all equipment complies with EU and national regulations on the use of environmentally hazardous substances (e.g. no ozone depleting substances should be used during manufacturing for cleaning electrical assemblies).

The guide goes on to suggest the following aspects for inclusion as potential aids to purchasing environmentally preferable IT equipment:

Design	*Packaging*	*Energy efficiency*
Look for information from manufacturers on ECMA Technical Report TR/ 70. Environmental databases (containing LCAs and toxicity data) are in use by some producers at design stage to reduce impacts approach.	Specify: • Packaging is adequate but not excessive. • Crates, pallets boxes and cartons should be returned and reused. • Cushioning and any non-reusable packaging should be recyclable.	Request • Energy consumption information. • Nameplate ratings and average / standby power demands. • That as a minimum requirement, monitors meet "Energy Star" standards. • Energy saving training of staff, "switch-off" labels etc.

Table 1-8 Considerations for choosing new, environmentally preferable PCs

Source: Adapted from Gaynor 2003.

The publishing of a guide, which explains the benefits of EPP with the inclusion of specific examples, serves as a very useful aid for purchasers to introduce eco-procurement initiatives.

1.5.10 EPP of Office Paper

The production, distribution, use and disposal of paper represents considerable environmental impacts. According to Wastebuster's "Green Office Manual" this includes:

- Loss of natural habitats to intensive tree farming
- Pollution from manufacture
- Energy usage
- Waste disposal; landfill and incineration (Wastebusters Ltd. 2000, p.109).

There are many problems associated with tree farming. As the land used to cultivate trees tends to be peripheral and unsuitable for other types of agriculture, sites used tend to be bog lands. The diversity of the ecology of these areas is affected by tree plantations due to monoculture practices and acidification can be a problem. Also, deep ploughing of peatlands releases stored CO_2. This adds to atmospheric levels and contributes to global warming (Wastebusters Ltd. 2000, p.110). Manufacture of paper can involve the use of chlorine bleach and other chemicals. This can result in the generation of toxic waste products in effluents such as absorbable organic halogens, sulphur and even carcinogenic residues (from the use of optical brightening agents). Chlorine-free processes based on oxygen bleaching have provided a viable alternative. This process eliminates organochlorines in the waste streams.

The environmental impacts associated with waste office paper are evident in everyday offices and facilities where administrative work is carried out. Often large amounts of paperwork are produced to meet regulatory requirements for the movement of goods and supply of services and as such are unavoidable. This duplication of information causes the generation of waste paper and not only represents a visible intrusion when discarded inappropriately, but constitutes to the growing waste problem in Ireland. In fact, paper accounts for 58.6% of overall commercial waste produced in Ireland (EPA 2002, p.25).

However, researchers do not unanimously agree on the level and types of impacts associated with paper. According to the International Institute for Environment and Development (IIED) who examined a number of LCAs reported in 1996:

> Most of the studies support the view that recycling and incineration are environmentally preferable to landfill. There is less agreement on whether recycling is preferable to incineration. Critical factors are the nature of the pulp and paper making process, the level of technology at all stages of the life cycle and the energy structures of the countries under study (IIED [no date] cited Hinds 2002).

In addition, Hinds (2002) questions the logic of the argument for recycled paper in terms of atmospheric CO_2 generated. Paper is considered CO_2- neutral and could be used to augment fossil fuels burned to generate electricity. Even though the energy used to create recycled paper is 28-70% less than that for virgin paper, the energy is derived from fossil fuels which is not generally considered as environmentally preferable to burning wood by-products for energy (as is the case for virgin paper). The fuel requirement for transport of waste paper for recycling is a factor that must be considered in any energy balance calculations. The chlorine effluents produced from chlorine-based bleach from the recycling process are also environmentally unfavourable.

The following methods have been developed to aid purchasers in limiting the environmental impact of paper purchases:

- Contains recycled fibres
- Is 100% recycled paper
- Contains 50% or more of post-consumer waste
- Is non-bleached
- Is chlorine-free (Erdmenger 2003)

The weight of the paper used can also be specified and this can be reduced to reduce impact. 80 g/m^2 should be sufficient for most purposes. It is vital that office paper specified is compatible with existing office equipment and that any warranty agreements are valid.

Referring to eco-labels in the specifications is an appropriate way of helping to reduce the impact of paper purchases. The following is a list of eco-labels and industry standards and includes whether third party accreditation or other verification practices are in place.

Eco-label/ Standard	*Guarantee*	*Accreditation by*
German Blue Angel	100% recycled and contains >51% post-consumer waste	German Quality control Institute
EU Eco-label	Reduction of air (SO_2) and water (organochlorines) emissions. Limitation of energy consumption. Virgin pulp must come from sustainably-managed forests	EU Eco-labelling Board (EUEB)
Nordic White swan	Promotes environmentally preferable production methods	Nordic Council of Ministers
National Association of Paper Merchants (NAPM) Recycled Mark	Contains 75% Genuine waste (process/ printers/ domestic paper waste)	NAPM verified
Chlorine-free	Uses alternative bleaching processes	n/a
Forestry Stewardship Council (FSC) Trademark	Wood harvested from well managed forests	Inspected and evaluated according to set FSC criteria

Table 1-9 Eco-labels and industry standards for office paper

Source: Wastebusters Ltd. 2000, p.112 and Forum for the Future ca. 2003, p.62-64

1.5.11 Communauté Urbaine De Dunkerque and Recycled Paper

The following is a synopsis of the successful introduction of recycled paper by a French municipality - Communauté Urbaine de Dunkerque (Plas and Erdmenger 2000):

The City of Dunkerque introduced a methodology (based on a 6-step plan), for the encouragement of green products, including recycled paper:

1. Ask suppliers for recycled paper (20 were contacted and each were capable of offering papers containing 50-100% recycled materials, **note**: the price obtained was 16% cheaper than conventional paper)
2. Raise awareness of employees (every employee was informed of goals and encouraged to participate)
3. Test eco-product samples (all results were positive)
4. Elaborate a diagnosis from results (recycled paper chosen according to compatibility, eco-label, recycled content, price performance ratio and shade of colour)
5. Introduce replacement purchasing procedures (trial runs)
6. Communicate results (half of 77Kg used per day was recycled)

The municipality claim that their 6-step plan is suitable for application to other public purchasing bodies. It is important to note that for the City's particular paper requirements (three categories; simple medium and high quality) this model is cost effective.

2 Materials and Methods

2.1 Measurement of Attitudes and Awareness of EPP

2.1.1 Introduction

An investigation to determine the level of awareness of EPP in college was deemed a suitable first step for the study. It was decided that in order to get a true appreciation of current thinking on eco-procurement, all staff would be invited to respond. Purchasing is a college wide activity and therefore its environmental impacts are shared across all college sectors. It is relevant then for all sectors, or as many as possible, to be represented in this study. Data on current attitudes in TCD could then be compared to existing data in the literature, to weigh responses against the current position on EPP in terms of the legislative framework and contemporary application.

2.1.2 Method: General Awareness Questionnaire

In order to ascertain the level of awareness of staff in relation to EPP, a General Awareness Questionnaire was prepared for the attention of all staff (see Appendix 1). The focus of this survey was to examine the level of understanding of the issues pertinent to EPP, and to get information on any current EPP practices or programmes. The questions included in the survey ranged from general awareness and attitudes to green products to more specific questions with regard to the inclusion of environmental criteria in purchasing decisions. The questionnaire was published on the college intranet. A link to the questionnaire was published on the college's on-line web noticeboard.

The college's Green Pages web site hosted the survey. The link was located in the web noticeboard in order to avoid bias, as it could be perceived that staff members who frequent the Green Pages might be predisposed to knowledge of, or have a greater interest in environmental issues, and therefore the respondents' answers may not be representative. While not all staff have direct access to a PC or Mac terminal, the vast majority of staff, especially those involved in purchasing, do have access. This was not thought to be a significant factor in the survey.

2.1.3 Response

There were forty respondents to the General Awareness Questionnaire that was published on the Green Pages web site. With college staff members potentially aware of the survey totalling around 2000, this figure represents approximately a 2% sample. The overall poor response rate may be attributable to a perceived low importance of the subject matter. It may also be partly due to the reluctance of potential respondents to reply to unsolicited on-line questionnaires. It must be stated that not all staff members are directly involved in purchasing, and as such, the numbers of staff with an interest in this relatively narrow field would be considered to be reasonably low. However, the thoroughness of the responses with regard to answering the questions displayed a considered interest by particular staff in the area of eco-procurement. There was also an interesting mix in the profiles of the respondents, which will be discussed in greater detail later. The results of the responses to the questionnaire are included in chapter 3.1.

2.2 *Investigation into College Purchasing by Selected Sector*

2.2.1 Introduction

This stage of the project began with contact being made with the college's Procurement Officer. Following a preliminary meeting, a suitable overall strategy was developed for the study. The principles and guidelines of procurement in college were clarified and a general approach was formalised for the method. Four sectors of college activities were chosen for investigation on the basis of their significant environmental impacts. Subsequent to these meetings, representatives of the four college activities were approached to participate in the study. The chosen sectors were:

1. **Cleaning and janitorial supplies**
2. **Supply of food and food services**
3. **Horticultural products and services (grounds maintenance)**
4. **Office supplies (specifically desktop PCs and paper)**

All of the staff and management approached were in favour of participation and a programme of research was developed. There are many other relevant sectors such as building, vehicles etc., but this dissertation was designed to focus on a few areas in greater detail rather than try to cover all sectors with significant associated environmental impacts. Some of the sectors may already have eco-procurement initiatives in place, to a greater or lesser degree. It was thought important to characterise areas where the direct or indirect successful application of EPP principles are already established.

2.2.2 Method: Interview and College Sector Survey

2.2.2.1 Interview

Initially an informal interview was undertaken with a representative from each of the college sectors chosen. This interview involved communicating the aims of the study to the relevant staff and management. The stated objectives were as follows:

- Determine products or services categories in the relevant departments with the greatest environmental impact and characterise these impacts.
- Investigate any eco-procurement initiatives, or similar schemes in place.
- Ascertain whether the future application of the principles of EPP may reduce or limit environmental impacts.
- Highlight any potential environmentally preferable alternatives where applicable, based on current models.

The outcome of these interviews was very positive. The potential benefits were outlined to participants. Meriting particular mention was the high degree of interest and awareness of environmental impacts. There was a readiness to provide any information or assistance that might be required. These interviews formed the basis of designing a Sectoral Questionnaire for each participating area that focused on specific aspects of purchasing activities. The questions contained in the questionnaires were drawn from issues raised in the interviews and commonly associated impacts in the respective sectors.

2.2.2.2 Sector Survey

Following initial contact and consultations, a questionnaire was designed for each of the college sectors (excluding Office Supplies which is explained later). The objective of these questionnaires was broadly to:

- Gather data on targeted product groups from chosen sectors for further examination.
- To further investigate product characteristics and usages and determine the scope for application of EPP.
- Identify areas where EPP tools are already in place.
- Measure success or failures and future routes of growth for current initiatives.

There was also provision in each questionnaire to include comments, or refer to related aspects of purchasing which were deemed relevant to the study. After the return of the questionnaires, a follow up interview was scheduled and the outcome of these interviews is contained in the discussion of the responses. In each case, the questionnaire was initially given to the individual generally responsible for purchasing and related activities. This was seen as the most appropriate approach as highlighted by discussion at interview stage. If information with respect to any of the questions was unavailable, the appropriate staff member or manager was contacted for a response.

The Questionnaire for each sector is presented in its entirety in the following appendices at the end of this work:

Appendix 2: Cleaning and janitorial supplies

Appendix 3: Food and food services

Appendix 4: Horticultural products and services

The reason that a questionnaire was not prepared for the Office Supplies (desktop PCs and paper) sector was that this was not deemed a suitable approach in this instance. Following communication with the Procurement Officer and subsequent discussion with a post-graduate student who was working on a related project in the university, namely the 5E (Energy Efficient Electrical and Electronic Equipment) project, a more suitable approach for desktop PCs was evaluated.

The 5E project is an intervarsity investigation into the energy efficiency of university activities as is discussed in greater detail in chapter 3.2. As a result, inclusion of environmental criteria in tenders for PCs, specifically energy consumption patterns, are already established and in current practice, and therefore the preferred approach was to measure the success rate of this initiative to date.

The situation in relation to office paper i.e. printer and copying paper, was different in many respects to both PCs and the other product groups selected for this study. The method of purchase and supply of this commodity differs to the others and therefore the approach has been adjusted to correspond to this. A substantial amount of paper is purchased centrally but some departments purchase individually and some office equipment contracts include the provision of copying paper. The basis of the methodology applied here was to focus on

interviews, comparison with other models used in the public sector and to examine EPP possibilities.

2.2.3 Response

Once again as with the General Questionnaire, the response by those approached was positive, and there was a genuine interest in participation in the programme. There were additional phone calls and visits to the staff members involved in relation to clarification of certain responses in the questionnaires and this often resulted in more relevant information coming to the fore.

In a few cases whereby information was not personally available, another member of staff needed to be contacted. In these instances, a note was recorded in order to highlight the origin of the specific piece of information. In general however, the vast majority of answers originated from the designated participant in each sector.

3 Results

3.1 Results of the General Awareness Questionnaire

The full text of the complete questionnaire is presented in Appendix 1. The following are the questions asked in the survey, and the results, in terms of either percentage or proportion of the total, as applicable. A full discussion of results will be included in the next chapter.

3.1.1.1 *Question 1: Do you think environmental factors are important in purchasing decisions?*

Results

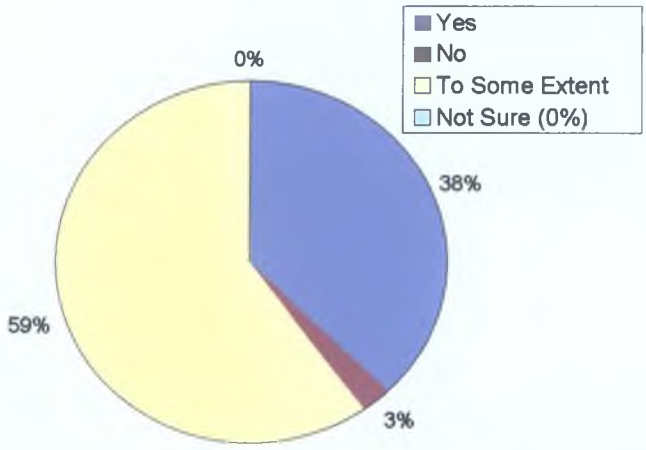


Figure 3-1 Perceived importance of environmental factors in purchasing decisions

Examination of results

The largest proportion of respondents (59%) in the survey has indicated that they believe environmental factors to be important in purchasing decisions "to some extent". The second

greatest response (38%) indicates that they believe environmental factors "to be important" in making purchasing choices. The majority of the respondents have indicated that they consider environmental factors to have some relevance when purchasing goods and services.

It is worth noting that 62% of respondents did not consider environmental factors "to be important" in making purchasing decisions. It may be the case that some of those who consider the factors to be important "to some extent" may not always act to reduce the impacts of their purchases. When confronted with many other considerations perceived as more important, there exists a balancing of checks and requirements whereby environmental considerations may not be given as high a priority as possible.

3.1.1.2 ***Question 2:*** ***If yes, how do you rate their importance in your purchase considerations--- out of 10? (Once other requirements are met i.e. cost, value, H&S, availability)*** ***NB: 0= Not important 10= Extremely important***

Results

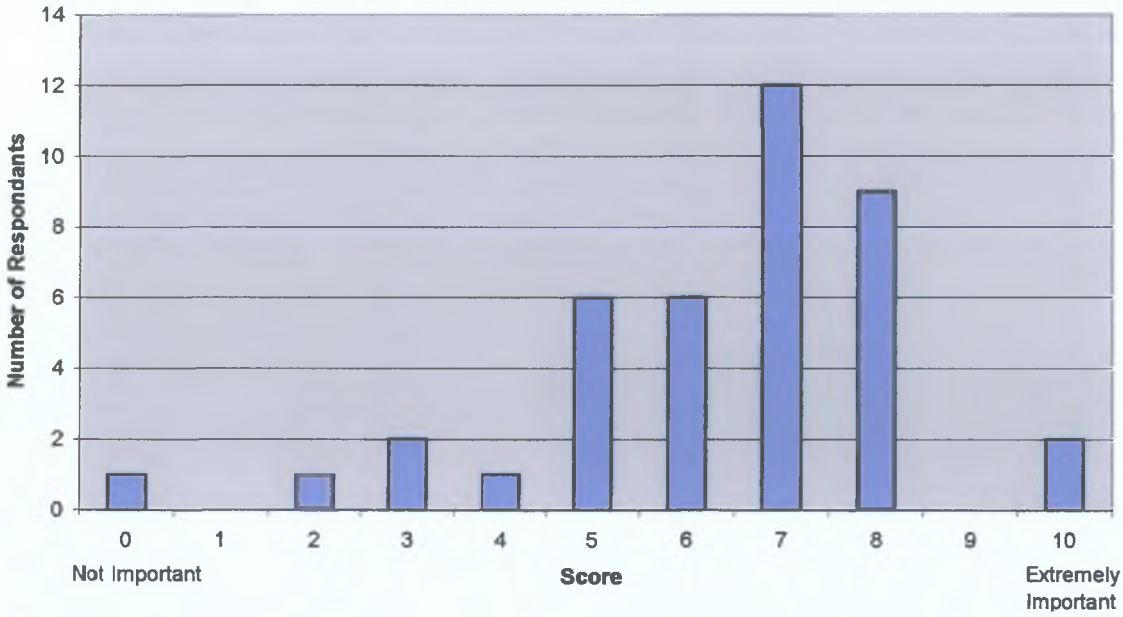


Figure 3-2 Rated importance of environmental factors in purchasing decisions

Examination of results

This question was designed to help qualify the results obtained from the first question. The largest number of respondents (30%) rated the importance of environmental considerations in purchasing decisions at 7 out of 10, once other requirements are satisfied. This implies that a considerable proportion of respondents rate the environmental factors of purchasing highly. It is also relevant to note that 88% of respondents (35) rate these factors greater than 5 out of 10 in importance. The other considerations mentioned in the question are not exhaustive, and chiefly refer to obligations under current national and EU legislation with particular regard to

the EU Purchasing Directives and Treaty Law. They were included in the question to get a measure of the rated importance of environmental factors once other legal obligations are met.

3.1.1.3 Question 3: Are environmental impacts associated with products and services taken into account before you make purchases?

Results

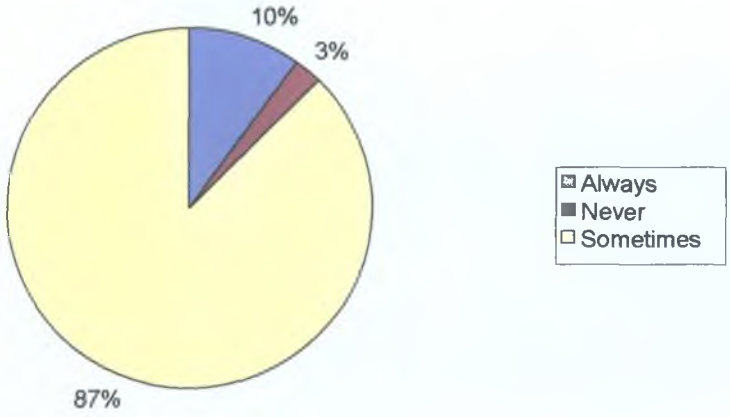


Figure 3-3 Account taken of environmental impacts associated with products/ services prior to purchase

Examination of results

This question was designed to enable respondents to give an indication of whether the environmental impacts of purchasing decisions are taken into account before the goods or services are purchased. It was designed to focus on current measured preventative actions taken at the purchase planning stage. 87% of respondents claim that environmental impacts are "sometimes" taken into account before purchases are made. This is a considerable

proportion of the total, and suggests that at least some products purchased are assessed for their likely environmental impact. However, respondents are more likely to say they consider impacts "sometimes" than "never" so the response may not accurately reflect actual practice. Notably 10% of respondents claim they "always" take account of projected environmental impacts. This requires a considerable investment in time and effort by the purchaser. What is important is that this may suggest a systematic approach to EPP considerations by the relevant respondents. However it might not be the case that an effective assessment of the environmental impacts is always applied.

3.1.1.4 Question 4: If so, how do you determine if a product/ service is "environmentally superior"?

Results

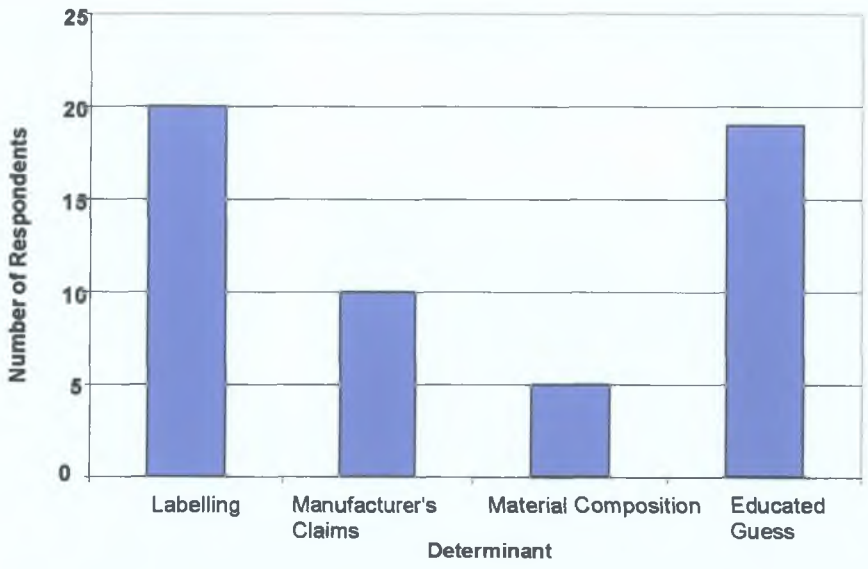


Figure 3-4 Determinants which are used to measure environmental impact

Examination of results

This question was designed to expand on the last one by asking purchasers who take into account environmental impact of good and services, how they determine these impacts. Respondents could include any, all or none of the determinants mentioned above.

Responses for "Labelling" and "Educated Guess" account for 72% of total responses. The proportion between the responses for the two aforementioned determinants is approximately 50:50. Using an "Educated Guess" to select products with lesser environmental consequences relies on knowledge of the products composition, use and interaction with the environment. Also "Labelling" requires third party verification to be a trustworthy method of assessing impacts.

Rather surprisingly, only 11% of respondents claimed that they judge impacts by examining "Material Composition". This determinant is therefore not necessarily linked to the "Educated Guess" response (35% of respondents), which suggests other guessing methods for determining impacts. 19% of responses indicate the use of "Manufacturers' Claims" for reducing impacts of purchases. This may relate to responses relating to the use of "Labelling" which when combined, account for over half of all responses.

3.1.1.5 *Question 5: What proportion of purchases do you think have alternatives with better environmental performance (all other considerations remaining the same)?*

Results

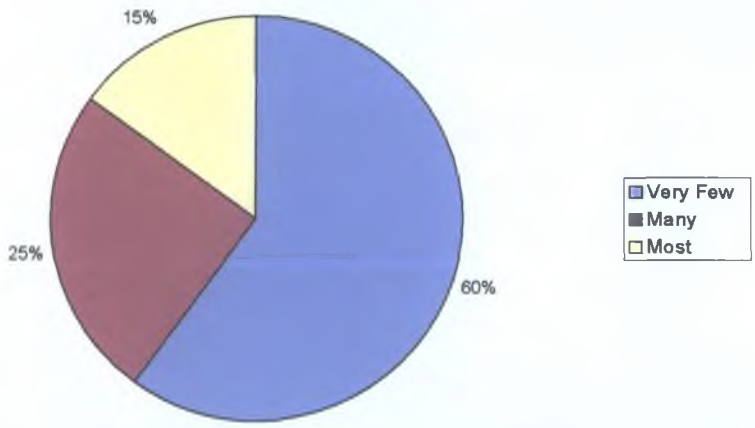


Figure 3-5 Reckoned proportion of purchases with environmentally superior alternatives

Examination of results

60% of respondents thought that there existed "Very few" environmentally superior alternatives to products purchased. This figure was a little higher than expected, as marketing often seems to exaggerate the availability of "green products". In many cases university purchasers may require specialised hazardous equipment or consumables whereby no EPP alternatives exist. It would be expected that this might have influenced at least some of the responses. A total of 40% thought that "Many" or "Most" products have environmentally superior alternatives. There is little evidence to suggest that these levels of green products are currently available. The perception may exist that they do, due to advertising claims or unverified eco-labels or "environmentally friendly" product promotions.

3.1.1.6 *Question 6: Are you aware of the EU eco-label scheme for identifying environmentally preferable products and services? Similarly –The Nordic Swan, German Blue Angel?*

Results

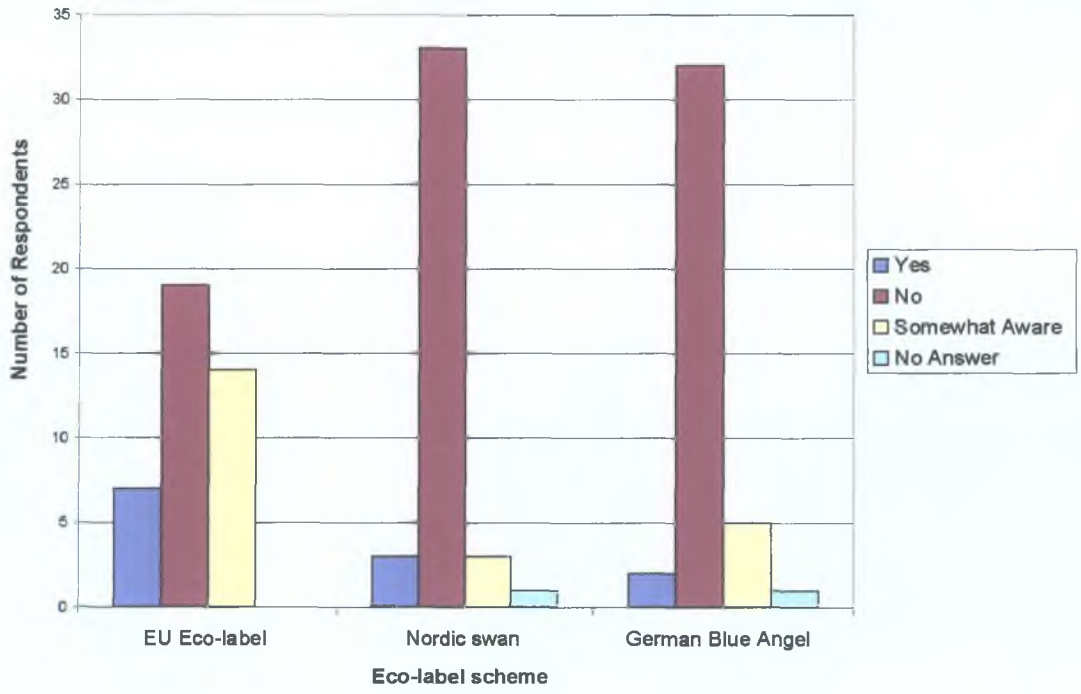


Figure 3-6 Awareness of eco-label schemes

Examination of results

The EU eco-label scheme was identified as the most widely known labelling scheme. 18% of respondents said they were aware of the eco-label and 35% said they were "Somewhat aware" of it. This suggests that over half the respondents have either seen the eco-label on products or have some prior knowledge of the scheme. Many may be familiar with the EU "Flower" eco-label through the EU Energy label on household appliances.

Only 8% of respondents were aware of the Nordic Swan and 5% of the German Blue Angel eco-labels with similar amounts claiming to be "Somewhat aware". These figures are much lower than those who recognised the EU flower symbol, and this suggests a lower exposure to the product or product categories that carry these eco-labels. It also confirms that product accreditation to these schemes is not actively requested at the initial stages of purchasing.

As eco-labelling most likely represents a primary means of identification of environmentally superior products, it is somewhat discouraging to note that 73% of respondents were not aware of any of those mentioned in the question. Of course there exists many other such schemes for example the Forest Stewardship Council (FSC) trademark and the Soil Association organic standard. See Appendix 8 for a more comprehensive list of eco-labels. The focus in terms of the questionnaire was placed on eco-labels that covered a wide range of product categories in use in the home and commercial sector.

Specialists in certain areas will possibly have exposure to certain marks and labels, but it remains clear that those mentioned are not widely recognised or used in making purchasing decisions. This may be due to lack of information available with regard to the types and classification of eco-labels.

3.1.1.7 *Question 7: If yes, do you think eco-label criteria can be included in the technical specifications in the call for tenders under current procurement legislative requirements?*

Results

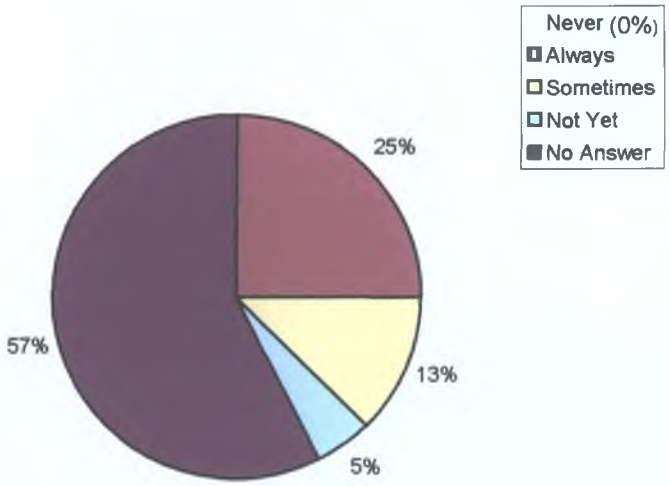


Figure 3-7 Perceived legality of inclusion of eco-labels in technical specifications in calls for tenders

Examination of results

The results of this question indicated much confusion over the perceived legality of inclusion of eco-labels in calls for tenders. 57% of the total number of respondents to the questionnaire did not answer this question. This could be interpreted as a lack of knowledge or understanding of whether technical specifications can include eco-label criteria.

Note: the expression "or equivalent" is legally required in calls for tender so as not to exclude non-ecolabelled products.

It must also be taken into account that only a small number of eco-labelled alternatives may exist for any particular product category required. 13% of respondents answered that the eco-label criteria may "Sometimes" be included for tenders. This may reflect the proportion of the respondents who believed that the criteria may be included but the level of available alternatives is low. The 5% who responded "not yet" although incorrect, may just not be aware of relatively recent changes in procurement legislation.

3.1.1.8 *Question 8: Do you think that "eco-procurement" should be enshrined in College purchasing activities i.e. included in purchasing policy/ procedures?*

Results

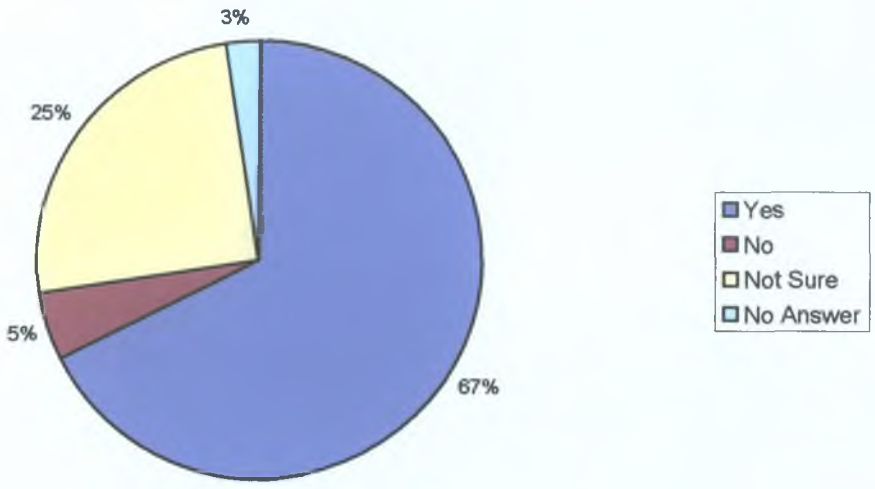


Figure 3-8 Inclusion of eco-procurement practices in college purchasing policies and procedures

Examination of results

Clearly a large proportion (67%) of respondents indicated that they believe that eco-procurement is something that they feel should be included in college purchasing policy and procedures. Interestingly 25% of respondents were "Not Sure" if eco-procurement should be included in college policy. This may reflect concern over the adequacy of environmentally friendly products and services to meet performance requirements. There may also be other concerns over the "greening" or purchasing practices, such as discontinuation of old supply lines or introducing additional considerations into purchasing practices.

3.1.1.9 Question 9: If you do (See Q8), what barriers could you foresee to its development?

Results

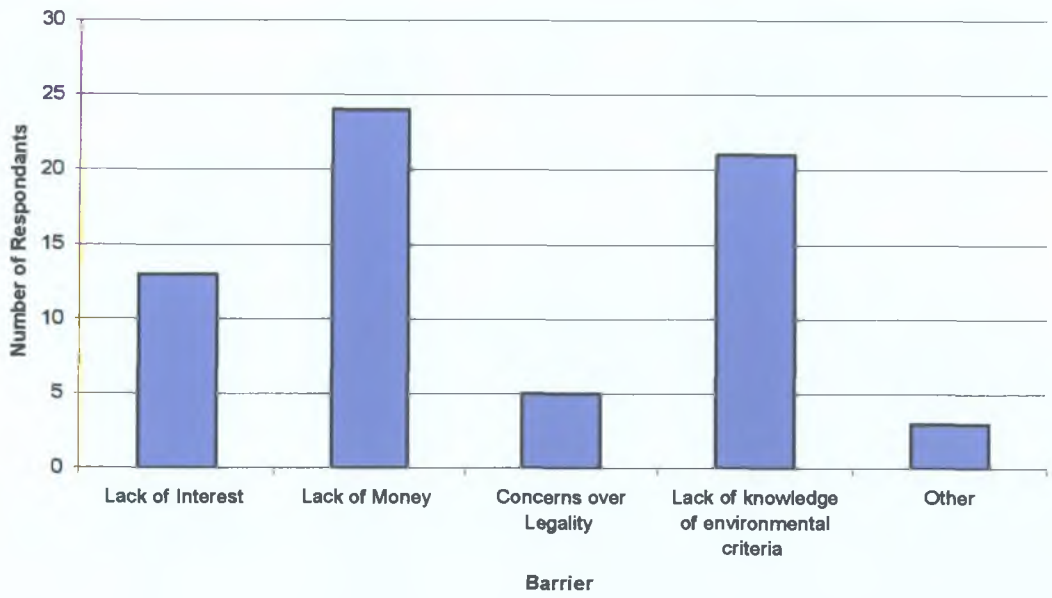


Figure 3-9 Barriers to development of eco-procurement

Examination of results

Multiple responses were possible to this question. The largest number of responses (24) cited "Lack of Money" out of a total of 66 i.e. 36%, as a barrier to the development of eco-procurement in the college. This is not particularly surprising due to the current financial situation and general budgetary objectives of departmental spending. 21 responses (32%) cited "Lack of knowledge of environmental criteria" as a restriction on growth of EPP. This is possibly due to a perceived lack of emphasis in this particular area of purchasing practice.

The third largest response (13 or 20% of total responses) was "Lack of Interest". The response indicates that respondents believe that environmental issues with regard to purchasing may not be considered as important as other factors (or indeed that they have any relevance at all). The question was not asked as a personal opinion per se, but as a perception of the actual situation in departments. The response suggests that more available information on the environmental implications of purchasing may aid to highlight the issue with purchasers and generate interest.

3.1.1.10 Question 10: Which of the following options do you think, if any, might help to develop "green procurement" activities in College?

Results

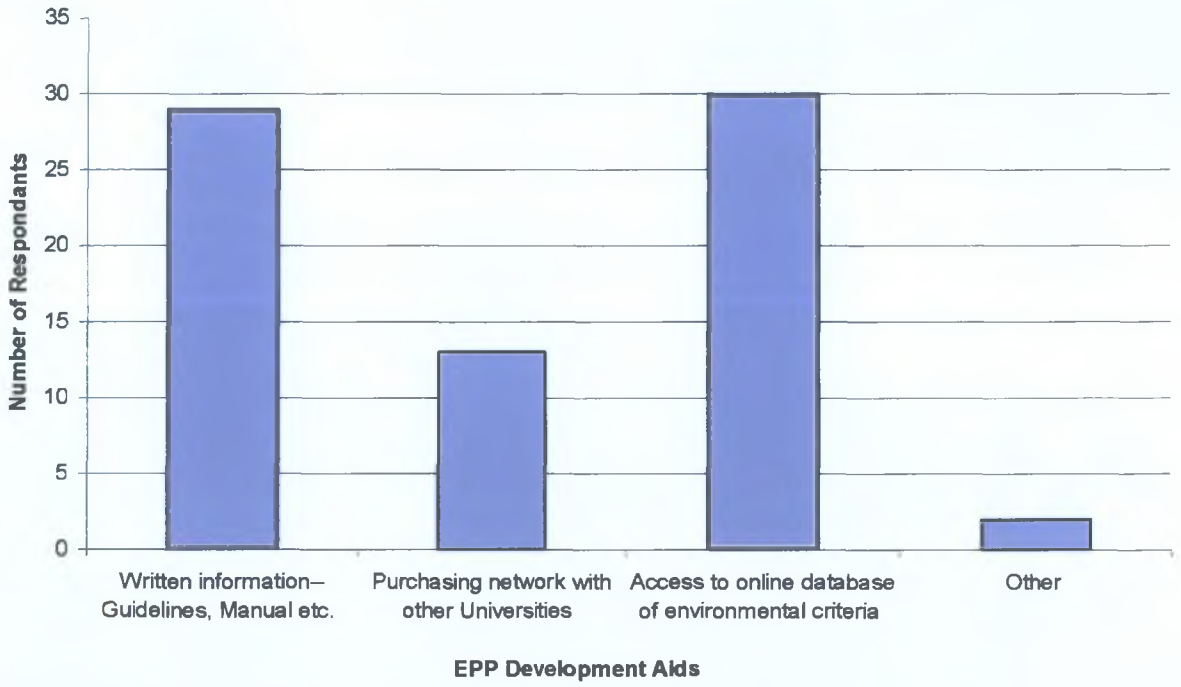


Figure 3-10 Possible aids to development of EPP

Examination of results

More than one selection was permitted in this question. There were 29 responses out of a total of 74 (40%) that indicated the availability of "Written information" on eco-procurement would assist its development in college. An almost equal proportion cited the availability of "Online databases" as a suitable aid to development of EPP. The large number of responses from the participants to this question may relate to a desire for available information that would aid purchasers in greening their procurement practices.

13 responses (18% of total) offered by participants related to "Purchasing networks with other Universities". This is a considerably less favoured option by participants and may represent a reluctance to share sensitive information with other institutions competing for the same resources or investment. This would not be considered to apply to general purchases and these product categories present the greatest opportunities for forming networks. There may also be considerable scope to affect the market by effectively combining requirements or by coordinating requests for greener products from current or potential suppliers.

3.2 Results of Sectoral Questionnaires

3.2.1 Cleaning and Janitorial Products

3.2.1.1 Background

Approximately 200 Trinity staff are employed by the Housekeeping department. The Housekeeping department provides cleaning services for campus buildings including administrative, accommodation and technical facilities. A wide range of janitorial supplies is consumed in the performance of these duties. All supplies are received by a centrally located store on campus. Cleaning products are allocated and distributed from the store to the different areas. Most of the associated cleaning activities are carried on out of hours i.e. early morning and late evening.

This questionnaire was based around 12 specific questions on the purchase of cleaning products. It is designed to highlight products that have the greatest environmental impacts, and how these are related to their procurement. The full text of the questionnaire is presented in Appendix 2.

> ***Note:*** In multi-choice questions, the **underlined and bold** selection represents the participant's choice. This section can be read alone but is best read in conjunction with the actual text and layout of the questionnaire.

3.2.1.2 Q1: Do you use cleaning products (cleaning agents, detergents and soaps), which are biodegradable and contain low or no phosphates?

Response

Yes/ No/ **Not Aware**

Follow-on Interview

After subsequent investigation, no specifically low phosphate containing or biodegradable cleaning products were in stock or on order.

3.2.1.3 Q1 cont.– Are these types of products specifically requested in tenders or other purchasing decisions?

Response

Yes/ No/ **Not Aware**

Follow-on Interview

After subsequent investigation, no low phosphate containing or biodegradable cleaning products are specifically requested in tenders or in other purchasing decisions.

3.2.1.4 Q2A: Is there a request made to suppliers, prior to purchase of cleaning products, to state any environmentally preferable production methods used? E.g. non-toxic, chlorine-free, biocide-free, water-based formulations, natural production methods?

Response

Yes/ No/ **Not Aware**

Follow-on Interview

None of these types of cleaning products or production methods is specifically requested prior to purchase. It was highlighted that bleach was no longer in use by the college Housekeeping department. The consumption of chlorine bleach was approximately 300 x 750ml (225l) per month. A change in mindset was required for its elimination and uptake on the proposal was initially slow.

This decision was not solely motivated by consideration for environmental protection, but it certainly has a beneficial effect for the environment. The discontinuation of bleach from the cleaning programme in college has resulted in the prevention of approximately 2700L per annum entering the wastewater.

3.2.1.5 Q2B: What products are purchased from the categories below?

Response

- Non-toxic products
- Chlorine free products
- Biocide-free products
- **Water based products**
- Natural/ Traditional production methods
- Other, please specify

Follow-on Interview

A transition from traditional products to a new concentrate system is currently being implemented. These concentrated products are water diluted, and are generally surfactant based. Product information on the range was obtained from the relevant Material Safety Data Sheets (MSDS):

The labelling of these products states conformance to the requirements of the EC ingredient labelling Recommendation 89/542/EC, and the EC Directives on biodegradability 73/404/EEC and 73/405/EEC and their subsequent amendments, namely 82/242/EEC and 82/243/EEC. Other ingredients included in product formulations include (in concentrations of 5-15%) sulphonic, citric and sulphamic acids. These constituents are considered irritating. Only one of the products in the range contains an organic solvent, 2-propanol at 5-15%. The products range from pH <2.0-10, are fully miscible in water and are slightly perfumed. Most of the products are classified as special waste under regulations derived from the Environmental Protection Agency Act, 1992.

3.2.1.6 Q3: Is there a provision that products containing toxic substances be identified prior to use?

Response

Yes/ **No**/ Not Aware

Follow-on Interview

There is no specific requirement, but toxic or harmful products are assessed for occupational health & safety issues in lieu of any special controls that may be necessary.

3.2.1.7 Q4: Are there any policies or procedures to purchase products that minimise the amount of volatile organic compounds (VOCs) produced?

Response

Yes/ No/ **Not Aware**

Follow-on Interview

There are no specific measures in place to reduce VOC emissions, however some products containing VOCs are being replaced due to the introduction of a new cleaning system.

3.2.1.8 Q4 cont. What information exists on the use, or potential use of products containing VOCs?

Response

Following further discussions, three VOC-containing products in current use were identified and the details are presented in Table 3-1.

Product Type	*Approximate Usage per month*	*VOC contained*
Stainless Steel Cleaner	5 (400ml ea.) tins	Hydrocarbon solvent
Liquid Wax Floor Cleaner	4-5 x 5L containers	Hydrocarbon solvent
Linoleum Cleaner	10-12 x 5L containers	Ethanol

Table 3-1 Examples of VOC-containing products in current use

Source: TCD Interview with Housekeeping Store Manager, May 2004

Follow-on Interview

The products in Table 3-1 contain up to 80% VOCs by weight. Their usage however is relatively minimal compared with other cleaning products in general supply. These cleaning agents are not all used for general purpose cleaning.

One of the products in the new range of cleaning products (mentioned in Question 2), currently being introduced into Housekeeping supplies contains 5-15% isopropanol. However this product is purchased in concentrate and diluted for use using an optic device for dosing the correct amount, and either a spray or mop system is used for application. The effective dosing also reduces wastage by controlling the amount dispensed.

3.2.1.9 Q5: Are there any policies or procedures to purchase products that minimise the amount of unnecessary dyes, inks or fragrances?

Response

Yes/ **No**/ Not Aware

Follow-on Interview

There are no specific policies or procedures to reduce these components. It was noted that the new cleaning system being introduced relies on a colour-coded system to avoid cross contamination from a hygiene perspective. Each colour is for use in one area only e.g. washrooms, and as a consequence is deemed the most user-friendly option available.

3.2.1.10 Q6: Are there any provisions at purchasing level for cleaning products to be purchased in containers that are reusable (refillable) or returnable?

Response

Yes/ No/ Not Aware

Follow-on Interview

Because of the current preference for the concentrated cleaning products, packaging waste has been reduced significantly. The system involves using a one or five litre container, which is used to fill a dosing bottle that has an optic to dispense the required dose for spray or bucket application. This reduces the amount of bulk plastic packaging required to contain the cleaning products. Another benefit is that the containers supplied with the new system are made from a lighter grade plastic, and are therefore easily compactable and so take up less space during disposal.

Another point in relation to containers was raised with regard to the outer cardboard packaging supplied with many of the janitorial products purchased. Cleaning products are distributed throughout campus using the cardboard packaging that contained incoming deliveries. This contributes to a reduction in packaging waste arisings.

3.2.1.11 Q7: Are any of your suppliers participating in any of the following Quality Assurance schemes? ISO14001, ISO9002 or other.

Response

Yes/ No/ Not Aware

3.2.1.12 Q7 cont. – Is this information requested prior to making purchasing decisions?

All cases Some cases **No Cases** Not aware

Follow-on Interview

Housekeeping products are generally purchased from five main suppliers. Four of the five are determined to be certified to international quality management standard ISO9002. Information on accreditation to QA schemes is not specifically requested.

3.2.1.13 Q8: Are you aware of the EU Eco-label and comparable schemes for identifying environmentally preferable products and services?

Response

Yes/ No/ Partially Aware

3.2.1.14 Q8 cont: Which of the following eco-labels are you familiar with?

Response

EU Eco-label	*Mobius Loop*	*German Blue Angel*	*Nordic Swan*
☑	☑	☒	☒

Follow-on Interview

No other eco-labelled products were identified.

3.2.1.15 Q9: Are you aware of any cleaning products, which are currently purchased or used that carry an eco-label?

Response

Yes/ No/ **Not Aware**

Follow-on Interview

No eco-labelled stock items were identified except products that carry the Mobius Loop symbol, which appeared on a variety of items relating to the recyclability of containers and packaging.

3.2.1.16 Q10: Are there any provisions to buy products in bulk packaging?

Response

Yes/ **No**/ Not Aware

Follow-on Interview

The reason given for this response was that because janitorial activities are spread out to about 200 employees and several building complexes over the campus, smaller units are required in order to stock all areas. Larger amounts were deemed impractical in terms of distribution to end-users, and manual handling implications. The time spent by individual staff travelling to

the stores or other central point to dispense from larger units would decrease efficiency unacceptably.

3.2.1.17 Q11: Are there any provision that micro-fibre cloths be used?

(NB: micro-fibre cloths are manufactured from cellulose or synthetic fibres which require much lower or even zero use of chemical cleaning agents. They are as effective as traditional systems and generally last for longer).

Response

Yes/ **No**/ Not Aware

Follow-on Interview

There is no particular provision that micro fibre cloths be used. Approximately 850 cloths are consumed per month by cleaning activities. Of these, about 60% are made from cotton and 40% from man made fibres. A double-bucket mop system is currently being evaluated for the purpose of reducing the consumption of floor cloths (presently 250-300 per month). This has the potential to further conserve products by focusing on practices and procedures, not solely on usages.

3.2.1.18 Q12: Are any other environmental criteria included in the tendering process?

Response

- **Minimising waste**
- **Reducing the frequency of individual delivery journeys**

- Specifying forms of transport with lower environmental impact
- Complying with the wide range of environmental aspects of Government policy as well as safety
- **Training and welfare issues and best practice standards**

Follow-on Interview

The selected environmental criteria in the response are not specifically included in tenders, but are requested of suppliers at purchasing level. Opportunities to minimise waste arisings at purchasing level are requested, e.g. toilet paper rolls used to be supplied in twin packs which were individually wrapped in plastic. The necessity of this was questioned, and now the same product is supplied in bulk packaging. This not only reduces waste generation in the stores but at the point of production also.

The frequency of orders is also restricted to once per month. The order is placed at the end of the month for delivery at the start of the next month. This ensures stock levels are maintained at required levels without requiring unnecessary small deliveries. There is also a strong emphasis on training in relation to the safe and correct use of products and the avoidance of wastage. This is coupled with a continuous review of the product range aimed to reduce, control or discourage harmful or obsolete products.

3.2.2 Food and Food Services

3.2.2.1 Background

The Catering department is responsible for the management of five restaurants (including bar facilities) on campus. The restaurants vary in size and capacity and cater for a large number of diners- potentially 15,000 students and 2,000 staff have access to restaurant facilities (excluding visiting diners). In fact the catering sector in third level institutions in Ireland is second only to the prison service in terms of throughput, and expenditure in TCD is currently about €3.5m p.a. As a consequence, the Catering department has a considerable influence on the type, amount and quality of food consumed.

Food and other supplies are delivered to a central depot in the largest of the restaurants where it is stored and distributed to the other restaurants by a dedicated van on a daily basis. Certain perishables are delivered direct to each of the restaurants individually. Many bulk deliveries are decanted on a daily basis for general use in the kitchens (e.g. fresh fruit and vegetables). The emphasis of this sectoral questionnaire was firstly on the impact of food products purchased on the environment as a consequence of methods of production used. The questionnaire also focused on the health implications of food items purchased including their sourcing, nutritional composition and preparation. The full text of the questionnaire is presented in Appendix 3.

> ***Note:*** In multi-choice questions, the **underlined and bold** selection represents the respondents' choice. This section can be read alone but is best read in conjunction with the actual text and layout of the questionnaire.

3.2.2.2 Q1: Are any organically produced food products available in the canteens and restaurants on campus?

Response

Yes/ No/ **Not Aware**

Follow-on Interview

Organic produce is not specifically requested in food orders. Price was seen as the main barrier. The question over the ability of organic growers to maintain supply in the amounts required was also seen as a deterrent to purchasing organic produce.

3.2.2.3 Q2: Is there a request made to suppliers, prior to purchase of foodstuffs, to state any sustainable methods of agricultural production used? E.g. artificial-fertiliser free, sustainable fisheries, free range, natural/ traditional methods etc.

Response

Yes/ **No**/ Not Aware

Follow-on Interview

There is no particular request made to suppliers in relation to sustainable production methods used but the catering department is a member of the An Bord Bia's "Féile Bia" farm-to-fork quality assurance programme (An Bord Bia, 2004). Members aim to guarantee that suppliers of meat, chicken and eggs have recognised QA systems in place and are compliant with food safety legislation and industry best codes of practice. This scheme aims to ensure that food

supplies are above board, traceable and transparent. An Bord Bia audits suppliers for compliance with the requirements of the scheme.

3.2.2.4 Q3: Is there a requirement at purchasing level, to take into account whether food products are in-season or not?

Response

Yes/ **No**/ Not Aware

Follow-on interview

The response to this question was that no requirement is specifically in place for requesting in-season produce. Menus are run on a four-week cycle and availability is central to formulating recipes. It was stated however that during the creation of menus, in-season produce such as vegetables, is a consideration. Dishes based on seasonally available foods (e.g. winter vegetables) may be included in a topical fashion based on what was traditionally only seasonally available. In this way, in-season produce is occasionally given preference.

3.2.2.5 Q4: Is there a requirement that food products must be free of genetically modified organisms, (GMOs)?

Response

Yes/ No/ Not Aware

3.2.2.6 Q4 cont.–If yes, how is this monitored?

Response

Labelling

Supplier Affirmation

Other

Follow-on Interview

GMO-containing products are not purchased. Genetically modified goods are not grown in Ireland. European legislation governs labelling of food and food ingredients with GMO-content (but it has not been transposed into Irish legislation as yet).

3.2.2.7 Q5: Are any of your suppliers participating in any of the following Quality Assurance schemes?

EN45011/ 12

ISO14001

ISO9001-2000

Other

Follow-on Interview

The Féile Bia programme encourages the purchase of meat products and eggs from reputable suppliers accredited to or participating in recognised quality assurance schemes. This includes certification bodies, food control authorities and private organisations that are accredited to the

independently inspected and certified EN45000 series of standards (see chapter 4: Discussion for further details).

Of the 28 suppliers' details provided covering food and drinks supplies from a wide range of categories including alcoholic beverages, frozen foods, sandwiches and vending products, 15 were ascertained as certified to recognised international standards. 10 suppliers were certified to ISO quality management standards such as ISO9000:2000, 3 to environmental management standard ISO14001 and 2 to IS343:2000 (Food Safety Management incorporating HACCP).

3.2.2.8 Q5 cont.–Is this a specified requirement prior to making purchasing decisions, in the above cases?

All cases	No cases
Some cases	Not aware

Follow-on Interview

Participation in the Féile Bia scheme aims to ensure suppliers adhere to best practice including that suppliers are accredited to relevant industry standards. Suppliers are checked for participation in An Bord Bia QA schemes or other recognised schemes.

3.2.2.9 Q6: How do local producers rate in overall total supply of food products and services, approximately?

0-25% 50-75%

25-50% 75-*100%*

Response

No estimate given

Follow-on Interview

It was stated that as a large consumer of food and food products, the catering department is restricted to dealing mainly with the larger suppliers who can maintain supply of the quantities of goods required. This essentially rules out smaller, intermittent or less flexible suppliers.

3.2.2.10 Q6 cont. –Are there any policies or procedures to promote increase of intake from local supply? E.g.

- Tender more frequently for smaller quantities and have more flexible specifications?
- Facilitate the inclusion of smaller suppliers as second and third tier suppliers?
- Make sure that potential small suppliers know that contracts are available and how to compete?
- Small producers and suppliers can work together to organise a collective response

Response

Yes/ **No**/ Not Aware

Follow-on Interview

Smaller suppliers are deemed unsuitable for the nature and magnitude of college catering, except perhaps in one off, short term, or exceptional situations.

3.2.2.11 Q7: Are there any provisions to specify that foodstuffs being purchased carry the Fairtrade Logo?

Response

Yes/ No/ Not Aware

3.2.2.12 Q7 cont. –If yes, what products are currently purchased?

Response

Tea	Fruit	Sugar	Other
Coffee	Snacks/ Biscuits	Honey	

Follow-on Interview

All of the tea and coffee supply in college restaurants and cafes carries the Fairtrade logo. It is important to note that the decision to purchase Fairtrade tea and coffee does not result in a financial compromise.

3.2.2.13 Q8: Are any other environmental criteria included in the tendering process?

Response

Yes/ No/ Not Aware

- **Minimising waste**
- **Reducing the frequency of individual delivery journeys**
- Specifying forms of transport with lower environmental impact
- **Complying with the wide range of environmental aspects of Government policy as well as safety**
- **Training and welfare issues and best practice standards**

Follow-on Interview

Packaging waste is minimised by buying products in bulk and dispensing into smaller containers, thereby reducing purchase of excess packaging. Examples include fresh fruit and vegetables.

Vegetable oil waste is segregated and sent for recycling for use as an ingredient in the saponification process. This represents a diversion from landfill of an estimated 8,000L p.a. of oil waste. Food scraps and napkins are also sent for recycling in an ongoing project. They are collected by an external waste contractor in wheeled bins. Worms are added to the organic waste to encourage its breakdown and it is then dewatered and converted to mulch for use on campus grounds. This represents the diversion of organic waste going to landfill in the region of 80,000L p.a. Waste oil and food are malodorous wastes and there is a significant environmental benefit from converting them into useful by-products.

The impact of delivery vehicles is minimised by the restriction of access to the depot between 7am and 1pm. This minimises noise pollution on campus by eliminating all day deliveries and encourages suppliers to fully packed vehicles with completed orders.

Government policy on food safety and training is paramount. Participation in the HACCP scheme aims to ensure a safe, traceable food provision service. Rigorous training and regular health checks of all catering staff are routinely done to reduce the risk of accidents and food contamination.

3.2.2.14 Q9: Are special dietary requirements considered in the planning and promotion of menus, and the selection of dishes, to ensure that the demands from minority customers for cultural or religious reasons are met?

Response

Yes/ No/ Not aware

3.2.2.15 Q9 cont.–If yes, please specify

Response

Gluten-free	**Vegetarian**
Lactose-free	Vegan
Low-salt	**Hal-Al**
Low-fat	Kosher
Nut-free	**Other: sugar free (artificial sweetener)**

Follow-on Interview

Following consultations between the Head of Catering and the Student Health centre, a programme for the promotion of healthier meals has been introduced. These dishes include low salt and low fat recipes that are designed to reduce health risks such as high cholesterol and obesity.

Vegetable oil only is used for frying as it is deemed the best option over other oils e.g. lard. A sunflower oil based spread is now favoured over traditional milk butter due to reduced salt and fat content. The unnecessary use of seasonings and sauces has also been eliminated, including over reliance on butter-based sauces. Reduced fat products are also provided and encouraged, including mayonnaise and yoghurts. There is also now the option to use a low sodium salt alternative, and an artificial sweetener instead of sugar.

A further measure introduced is the inclusion of a "healthy option" item on menus. This is designed to identify meals that are particularly wholesome, for those who wish to control their intake of high calorie foods. Cornflour is used as a thickening agent in all sauces to facilitate the celiac requirement for a gluten free diet. With regard to religious, lifestyle and ethical dietary requirements; Hal-Al produce is available. A vegetarian option is also available on each menu, but the vegan diet is not strictly catered for.

3.2.3 Horticultural Products and Services

3.2.3.1 Background

The services provided by the Grounds and Gardens department to TCD facilities include the organisation and provision of horticultural services and co-ordination of waste management. The areas under the jurisdiction of the department include:

- **TCD Main Campus**- 18.6 hectares (46 acres)
- **Santry playing fields and grounds**- 14.6 hectares (36 acres)
- **Trinity Hall at Dartry**- 4.2 hectares (10.5 acres)
- **Trinity Centres in St. James Hospital** and **Tallaght Hospital**
- **Trinity Boat club in Islandbridge**- 0.4 hectares (1 acre)
- **Cumberland St. Stores** approximately- 0.1 hectares (1000m^2)

This represents a considerable area covering approximately 40 hectares or 100 acres that requires continuous horticultural maintenance. With the general exception of Trinity Hall, which is run relatively autonomously, maintenance of all of these sites is directed from the Grounds and Gardens department on the main campus. Most of the land at these sites is devoted to sport and recreation. Playing grounds include rugby, lawn sports, athletics, gaelic games and soccer pitches, which are extensively used throughout the year by students and other groups. There are also a number of areas dedicated to decorative planting whereby green areas and borders are landscaped to provide open space for amenity purposes.

> ***Note:*** In multi-choice questions the **underlined and bold** selection represents the participant's choice. This section can be read alone but is best read in conjunction with the actual text and layout of the questionnaire.

3.2.3.2 Q1: Is there a request made to suppliers, prior to purchase of horticultural products, to state any environmentally preferable production methods used? E.g. **Water-based formulations, Non-use of corrosive or toxic chemicals, natural production methods?**

Response

Yes/ **No**/ Not Aware

Follow-on interview

There is no particular request made to suppliers to state any specific environmentally preferable production methods used. Many of the horticultural products purchased are controlled substances governed by the EU Directive on Plant Protection Products, 91/414/EEC which aims to uniformly categorise these products based on their safety risk to people and the environment. In the U.K., the Pesticides Safety Directorate (PSD) is the responsible authority for product authorisations under this Directive. Under U.K. legislation, the Control of Pesticides Regulations 1986:

> define in detail those types of pesticides which are subject to control and those which are excluded; prescribe the approvals required before any pesticide may be sold, stored, supplied, used or advertised; and allow for general conditions on sale, supply, storage, advertisement, and use, including aerial application of pesticides (PSD 2004).

The Department for Environment, Food and Rural Affairs (formerly Ministry of Agriculture Fisheries and Food) published a manual containing the approved list of these items called the "Blue Book" which has been superseded by a web based version hosted by the PSD and the U.K. Health and Safety Executive (HSE) websites. In Ireland, "Pesticides 2002" lists information and requirements on plant protection products (Department of Agriculture, Food and Rural Development, 2002).

The approved list is used as a reference for pesticides, wood preservatives, and biocides and is consulted prior to purchase. It ensures only products that are considered safe to humans and the environment are requested. It also provides a valuable tool for tracking amateur and professional products and their ingredients over time e.g. phasing in or out of products, as knowledge of their environmental impacts grows.

3.2.3.3 Q2: What forms of herbicidal and/ or pesticidal control methods are used for park maintenance?

Response

- **Environmentally persistent or bioaccumulating products**
- **Non-residual or biodegradable products**
- Water based products
- Scorching
- Other, please specify

Follow-on Interview

Categorisation of pesticides into these groups depends on many factors. Some of the products in use are however specifically required to be persistent in order to perform their designated function e.g. long term weed suppressants such as the granular pesticide listed in Table 3-2. This product forms a barrier on the soil to suppress unwanted growth for 6-9 months. This offers a low labour requirement for long term weed control. Others pesticides used, for example Roundup is largely considered non-persistent i.e. breaks down in soil in 24 hours. The following is a list of pesticides currently purchased and their usages (total for all sites):

Pesticide/ Herbicide	*Active Ingredient(s)*	*Usages (per annum)*
Herbicide Weed Control	Paraquat	20 L
Herbicide (Roundup)	Glyphosphate	20 L
Select Weedkiller	2,4-dichlorophenoxyacetic acid and 2-methyl-4-chlorophenoxyacetic acid	10 L
Granular pesticide	Bromocyl and Picloram	100 Kg
Tree Insecticide (applied in alternating years only)	n/a	50 L

Table 3-2 Pesticide usages in TCD

Source: Interview with Grounds and Gardens Supervisor TCD, May 2004

As presented in Table 3-2 there is a reliance on chemical methods of pest control over non-chemical methods such as scorching or powerwashing. Scorching was attempted in a trial run, but proved too labour intensive for the large areas to be covered. This form of weed control is generally considered to be environmentally preferable due to the non use of persistent chemicals. Non-chemical methods are deemed unviable due to the large areas involved. Powerwashing for control of the moss, which grows on the cobbles in Parliament Square and other areas is also not suitable. This is because of the relatively weak lime mortar between the stones (compared to modern cement), necessitating a chemical herbicide. Many of the preparations used are however applied directly to plant leaves, which avoids widespread contamination and reduces amount lost from other forms of spraying.

3.2.3.4 Q3: Is there a provision that products containing harmful substances be identified prior to purchase?

Response

Yes/ No/ Not Aware

Follow-on Interview

The majority of the horticultural products purchased are also covered by the approved list mentioned in question 2. This includes antifouling agents, surface biocides, insecticides and wood treatments etc. As such, these products can also be chosen according to the updated list.

It was also stated that many of the more hazardous ingredients have been phased out (e.g. organomercury based products) and there is a constant move towards a tightening of restrictions on products with a high pollution potential.

3.2.3.5 Q4: Are peat-based products currently in use as soil improvers?

Response

Yes/ **No**/ Not Aware

3.2.3.6 Q4 cont.–If no, what information exists on the use of alternative products?

Response

No peat-based products are purchased for use as soil improvers. The only rare exception is the very occasional re-use of peat samples taken by the Civil Engineering Department for preliminary studies for road building projects, and this avoids its unnecessary disposal. Compost obtained from the two main campus compost heaps provides adequate amounts of the composting and mulch materials required. A negligible amount of peat compost is sometimes used to plant out acid loving species.

Follow-on Interview

The majority of requirements are met by compost produced on campus. Additionally, food waste from the Catering department is taken away by a contractor for conversion into mulch, suitable for use in beds and borders. This process involves rendering and dewatering the waste, and pressing it into pellets. It also represents a significant diversion of waste from landfill of approx. 80,000L p.a.

3.2.3.7 Q5: Are artificial fertilizers used as plant growth promoters?

Response

Yes/ No/ Not Aware

3.2.3.8 Q5 cont.–If yes, please specify

Response

Approximately three tonnes of artificial fertilizer are purchased per annum for use on all college sites. This is divided into one tonne of slow-release NPK fertiliser, one tonne of slow release N fertiliser and one tonne of fast acting NPK fertiliser (with lawn seed and moss killer). There is also 15L of a liquid iron supplement applied to the cricket and rugby pitches prior to seeding each year.

Follow-on Interview

Due to the heavy usage of the sports grounds it is essential that fast acting easily absorbed artificial growth promoters are required. It was highlighted that the difficulty with using natural materials is that incorporation into the soil is difficult. Rotavation is not possible, as

this would take the pitches out of use for too long a period of time. The presence of an archaeologist is required on campus when any digging takes place, due to the historical campus site (the college is built on the former site of the monastery of All Hallows).

3.2.3.9 Q6: Is there a provision that ecologically sound management schemes be implemented, developed or incorporated into current practices?

Response

Yes/ No/ Not Aware (if yes please specify below)

- **Efficient Watering Systems**
- **Encouragement of native flora/ fauna**
- **Restriction on mowing of informal areas during sensitive periods**
- **Environmentally Friendly Pruning**
- Other

Follow-on Interview

Watering of the college cricket and rugby grounds and the two small front lawns on campus is done using a modern sprinkler system, which applies water efficiently and prevents wastage. Planting of native species are preferred where possible and mowing is restricted in certain areas to provide a location whereby ecology students can observe and study natural flora. Pruning is done as required after flowering and the issue of nesting birds in foliage is rarely encountered. Most of college green areas are devoted to sports facilities and the amount of garden or other landscaped areas is relatively low.

3.2.3.10 Q7: Are there any provisions at purchasing level for horticultural products to be purchased in containers that are reusable (refillable) or returnable?

Response

Yes/ No/ Not Aware (Please specify if yes)

Follow-on Interview

There is a packaging return system in place by which suppliers accept back empty containers. This is augmented by the re-use of containers for the distribution of products to the off-campus sites.

3.2.3.11 Q8: Are any of your suppliers participating in any of the following Quality Assurance schemes? ISO14001, ISO9001-2000, other (please specify)

Response

Yes/ No/ Not Aware

Follow-on Interview

One of the two horticultural product suppliers is accredited to the ISO 9002 quality standard (and claims to be the first Irish company in this sector to achieve this standard). The second supplier is currently in the process of seeking accreditation to the quality standard.

3.2.3.12 Q8 cont.–Is this information requested prior to making purchasing decisions?

Response

All Cases Some Cases No Cases Not Aware

Follow-on Interview

This question was not deemed relevant: There are relatively few suppliers in this sector and those with which business is done are either accredited or seeking accreditation to the ISO 9002 quality standard. It was also stated that these companies have a good reputation for service built up over a considerable number of years and are willing to meet customers' needs as they develop. This is important for maintaining the supply of appropriate goods to meet stated requirements and the continued development of safer or environmentally friendly products.

3.2.3.13 Q9: Are you aware of the EU Eco-label and comparable schemes for identifying environmentally preferable products and services?

Response

Yes/ **No**/ Partially Aware

3.2.3.14 Q9 cont.–Which of the following eco-labels are you familiar with?

EU Eco-label (Not aware)

Mobius Loop (Not aware)

Follow-on Interview

There was no awareness of any Eco-label schemes in use.

3.2.3.15 Q10: Are you aware of any horticultural products, which are currently purchased or used that carry an eco-label?

Response

Yes/ **No** (please specify)

Follow-on Interview

There is no awareness of any Eco-label horticultural products in use. (Note: Soil Improver is the only product category of horticultural product that carries a EU "flower" eco-label, see chapter 4 for discussion).

3.2.3.16 Q11: Are there any provisions to buy products in bulk packaging?

Response

Yes/ No/ Not Aware (please specify)

Follow-on Interview

Orders are placed twice a year on a seasonal basis i.e. in October and February. These orders supply all of the requirements for horticultural products for the year. Because of this, products are generally supplied in bulk packaging and large containers.

3.2.3.17 Q12: How is green waste disposed/ re-used/ recycled/ treated?

Response

- **Waste Treated e.g. composting**
- **Waste reused e.g. mulch**
- Waste Recycled
- **Waste Disposed**

Follow-on Interview

Approximately 75% of green waste (grass cuttings, clippings, leaves etc.) is composted in the campus compost heaps. This is then returned to the grounds as compost. The surplus is disposed to landfill.

3.2.3.18 Q13: Are any other environmental criteria included in the tendering process?

Response

Yes/ No/ Not Aware

- Minimising waste.
- Reducing the frequency of individual delivery journeys.
- Specifying forms of transport with lower environmental impact.
- **Complying with the wide range of environmental aspects of Government policy as well as safety**.
- **Training and welfare issues and best practice standards**.

Follow-on Interview

Waste minimisation is a priority (college waste management is also under the remit of Grounds and Gardens) and waste is recycled and re-used whenever possible. Best practice is observed with regard to purchase of horticultural products, and training and welfare issues are paramount in all operations.

3.2.4 Office supplies (PCs and Paper)

Personal Computers

As stated in the methodology, the approach taken to this sector was different to the other three. As a result, a questionnaire was not deemed appropriate. Interviews and telephone conversations with the relevant staff involved in the purchase of these items formed the basis for these investigations.

3.2.4.1 Background

A lot of attention has been placed recently in college on the green procurement of office electrical equipment including PCs and monitors with a focus on the reduction of energy usages. This EPP initiative is largely due to a pilot project related to part of the COPERNICUS-5E University project. The objective of this project, which began in 2003, is as follows:

> The COPERNICUS-Project "5E in Universities" (co-funded by the EU) will assist universities across Europe as critical social multipliers to become more energy-efficient and climate-friendly through the integration of energy-efficiency objectives into their procurement of electric and electronic office equipment (EEE) (COPERNICUS, 2004).

The project recognises the considerable market influence of third level institutions and the potential to affect consumer patterns in a positive way. The website states that "there are approximately 4000 HE institutions with 17 million students" (COPERNICUS 2004) which represents a sizable testing ground for manufacturers. The aims of the project facilitated by the participant HE institutions are therefore concerned with establishing best practice for green procurement of EEE in the public sector in the EU.

The initial work plan of this project is to:

1. Collect detailed information on today's procurement policies of universities regarding EEE
2. Assess the implications of new EU directives on energy labelling and public procurement
3. Raise awareness at all university levels for the wide use of energy efficient EEE ("5E")
4. Undertake an EU-wide pilot action by developing and testing a model procurement network to assist universities in purchasing energy-efficient office-equipment, offering a model for other (public) sectors and product groups (COPERNICUS 2004).

An assessment report is currently in draft phase in TCD and other participant institutions. Each report is based on a template document that requires information to be included on the organisations' past activities in the context of energy efficiency (COPERNICUS 2004). Also required in the assessment report is information in relation to:

- Procurement factors at a national level.
- Manufacture and supply details.
- Internal procurement structures and practices.
- Current stocks of EEE.
- Energy consumption and potential savings.
- Use of EEE, particularly power management.
- Co-operative procurement experiences.

The 5E programme was first introduced into TCD in February 2003 and has a two year timescale for completion. A pilot programme of the 5E project involved the development and inclusion in calls for tenders, of information with regard to the energy efficiency of PCs and monitors. Details on the power consumption of PC base units and monitors now form part of the technical and certification section of tenders for the supply of desktop PCs in TCD. The first date for return of tenders with the energy efficiency specification was February 5th 2004.

In terms of addressing the environmental impacts associated with disposal of redundant PC equipment, there is a scheme in operation to reclaim and recycle components. In the 2003/2004 period, approximately 16,000kg of WEEE (excluding fridges and freezers) was sent for treatment, which is a substantial diversion of potentially hazardous waste from going to landfill.

3.2.4.2 Analysis

The requirement for information in relation to power usages of PCs and monitors is a useful tool in predicting the operational costs of these items. This consideration also satisfies some of the requirements of the EC Directive 2002/96/EC on waste electrical and electronic equipment (WEEE Directive) with respect to improving environmental performance.

> This directive... also seeks to improve the environmental performance of all operators involved in the life cycle of electrical and electronic equipment e.g. producers, distributors and consumers... (The European Parliament and the Council of the European Union, 2003a)

There now exists the opportunity to measure how much power will be consumed over the lifetime of the product by cross referencing power performance and power management data. This not only gives more information in relation to the running costs of the purchase but also the environmental costs. As a consequence, a more environmentally informed purchasing decision is possible.

3.2.4.3 Outcomes

As a consequence of the request of the inclusion of power consumption details as a minimum requirement in the "Physical Environment" section of the technical specifications (see Appendix 5), there exists a methodology to assess the most energy efficient PCs and monitors. This enables the Procurement Officer to weigh potential tenders in terms not only of savings in electrical consumption, but also environmental performance. This can be considered as a single attribute focus i.e. energy efficiency, the objective of which is to purchase units which have a direct economic and environmental benefit. As a result, four potential suppliers A, B, C and D, provided information (as per the tender request) in relation to the energy usage of their products. These were then compared to each other and rated. The estimated daily power consumption of the competing products was used to determine the most energy efficient model. The college Procurement Officer, Information Systems Services (ISS) and the 5E project representative, evaluated the tenders. Two of the outcomes of the pilot study are that system standby requirements are recommended to be included in the tender's energy efficiency criteria, and power management considerations also need to be comprehensively addressed.

It is not known if the most energy efficient systems identified by the pilot study were finally selected, or how energy efficiency was weighted relative to other requirements. There is also no available data on actual reductions in energy usage due to purchasing decisions or the recent award of tenders, which included power consumption criteria in the selection process. In any case, the findings and recommendations will serve to further identify areas for improvement, and promote the purchase of more energy efficient PCs.

Office Paper

3.2.4.4 Background

Office paper (white A4 sized photocopy and printer paper) used to be purchased as a commodity on the open market during the mid 1990s. When the price of paper was competitive it was stockpiled, and college needs were drawn down from this supply. Since this period the market forces have changed considerably, and it can currently be purchased on a more ad hoc basis due to a more competitive pricing structure. The quality of paper has improved dramatically in the last decade or so, including paper manufactured with recycled content. As a result, paper supplied from Brazilian and Asian markets is now of a comparable quality with the supply from countries such as Norway which traditionally have been seen as offering paper of superior quality.

Paper made from virgin pulp accounts for the vast majority (>97%) of paper purchased through central supply i.e. Buildings Office for sale to college departments from the Stationery Store. The college Stationery Store provides a central point from which paper and other stationery requirements are distributed to college services. Recycled paper is available for purchase and is actually purchased in preference by some departments. It accounts for 2-3% of paper purchased centrally for use in college activities. Paper made from recycled content is still more expensive than that made from virgin pulp. The current amounts for both recycled and non-recycled paper used are as follows:

Paper made with *virgin pulp*: **50-60** tonnes/year approx.

Paper made with *recycled content*: **1.5-2** tonnes/year approx.

Source: Interview with Building Office Staff

These figures represent the amount of paper bought centrally through the college but there are some departments who purchase their paper directly from their own specific sources. Some of college's contracts with companies supplying office equipment such as photocopiers include the supply of paper for use with these machines. For the scope of this investigation, it was not determinable how much this affects the overall consumption of paper in the college due to supplies from external sources and diverse supply chains. The paper recycled includes envelopes, continuous computer stationery, notepads, letterhead etc. so the contribution of office paper from "other/ outside" sources cannot be directly determined. The focus of this study is on the potential to reduce the environmental impact of office paper at the purchasing level by applying principles of EPP.

As a percentage of the total recyclable waste produced in college, the amount of which was paper (including other waste paper) doubled from the 2001-2002 to 2002-2003 periods to a current level of 12% (TCD 2004). It is likely that this figure will continue to increase as paper recycling proliferates more widely.

3.2.4.5 Analysis

The purchase of office paper is based chiefly on lowest available price. The recycled paper that is purchased is purely due to the small demand created by individuals or particular departments. There has been an increase in focus on the management of paper waste in college in terms of collecting and recycling, but the "environmental loop" of use-recycle-reuse has not been greatly explored.

Recycling of paper has steadily increased over the last three year period. (NB: these figures represent all paper and paper products recycled by college including materials purchased other than from the central stationery store)

Period	*2000-2001*	*2001-2002*	*2002-2003*
Paper waste recycled (tonnes)	**3.4**	**138**	**283.8**

Table 3-3 Amount of Paper Recycled from 2000-2003

Source: TCD Green Pages 2004

Increased recycling services for paper may however give the false impression to users that this solves the problem. Waste paper generation may actually increase if the impression is perpetuated that recycling is the best available option environmentally, as opposed to reduction. Recycling is beneficial in that it represents a diversion of paper waste being sent to municipal landfill; however it does not address environmental impacts that are avoidable at the purchasing stage.

Historically, quality issues have been raised with the performance of recycled paper. It was introduced on a trial basis in the college in the past, but many problems were reported in terms of compatibility with equipment, particularly photocopiers where high usages were involved. The contracted company responsible for maintenance of these items experienced recurrent problems due to dust generation from the paper fibres interfering with the components of the equipment. The trials were deemed as failures and dependency on virgin paper remained unchanged.

The issue was also raised of whether the recycling process contributes more to environmental degradation than is gained in the benefits of recycling. The collection and transport

requirements of recycling, and the generation of chlorine effluents from the recycling process, are real and significant environmental impacts too. It is felt that in real terms, the benefits of recycling such a low grade material were questionable. These factors were also set against a background of the lack of any other perceived benefit resulting from the purchase of recycled paper.

It was also stated that paper usages have not been appreciably affected due to the introduction of electronic media i.e. personal computers. "Hard copies" of documents are still perceived to be the safest or most convenient method of data storage. The advent of email is perceived to have had some impact but much correspondence in the HE sector still relies on paper.

3.2.4.6 Outcomes

Office paper is purchased mainly with value for money objectives in mind. It represents a very large consumable in the college and subsequently has a considerable environmental impact. The financial cost of office paper cannot be accurately determined due to fact it is purchased from multiple suppliers. There is also a lack of available data on consumption levels.

This has been reduced in recent years due to the increased recycling of paper waste. Because of inferior quality in initial production, recycled paper is possibly still seen as an inferior product. The economic and environmental arguments of recycling paper are also seen as debatable and the cost element of purchasing recycled paper is still a real barrier.

The advent of electronic media has not impacted greatly on paper usages. This may be due in part to traceability, record keeping and other similar public sector document storage requirements. To date, it has not resulted in the reduction of paper usages. The promotion of alternatives to paper usage may represent the best available option to reduce impacts.

4 Discussion

4.1 Discussion of General Awareness Questionnaire Results

4.1.1 Introduction

This section focuses on the analysis of the responses to the General Awareness Questionnaire. Information received from the questionnaire is used to assess the respondents' attitudes towards EPP. The survey respondents can be broken down into 3 general categories based on job specification as follows:

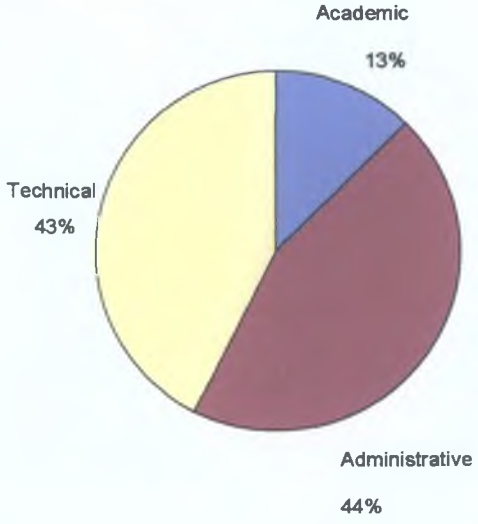


Figure 4-1 Proportion of respondents to questionnaires by job category

There was equal participation in the questionnaire from Administrative and Technical staff. There was a lesser response from the Academic staff. This may reflect the different roles and responsibilities of each group. Each member of staff influences purchasing either directly or indirectly. Some of the returned questionnaires also contained comments on various related topics and a selection of these is included at the end of this section.

4.1.2 General Discussion

The responses to the General Awareness Questionnaire indicated a desire by respondents to include environmental considerations in purchasing, at least in principle. Interest was also expressed for the development of a coherent college policy on EPP to aid purchasers in selecting environmentally preferable products.

Respondents acknowledged the value of assessing the impacts of purchasing, but were not always clear on how this may be achieved. For example, the proportion of respondents who stated awareness of eco-labels did not correlate with a similar proportion with knowledge of how they may be used to reduce impacts. Of course this may not be the fault of purchasers: the estimated availability of purchases which carry an eco-label (which are third party certified as environmentally superior alternatives) is given to be about 5-10% of any given product category. There are others in the private sector which are either unverified or rely on manufacturers' claims or evaluation schemes. These include claims such as "environmentally friendly" and "made from recycled materials". This can be confusing for purchasers, especially if obscure or ambiguous information is included on products or in product brochures.

4.1.3 Discussion Summary

1. Most staff surveyed generally consider environmental factors to have at least some importance in making purchasing decisions.
2. These factors are rated highly once other mandatory considerations are satisfied e.g. value for money, availability, health and safety.

3. The environmental impacts of products are mostly assessed using labelling and by applying an educated guess.
4. Most staff involved in purchasing are aware that not many environmentally friendly product alternatives are available. A contributory factor may be that in some departments, many necessary purchases are inherently environmentally unfriendly.
5. There is a considerable awareness of the EU Flower Eco-label (may be due to "EU flower" on EU Energy Eco-labels on domestic appliances), but less recognition of other eco-labelling schemes.
6. There exists a degree of confusion over the legality of the inclusion of eco-label criteria in calls for tenders. Most respondents did not answer the question on this topic.
7. A majority of respondents believe that eco-procurement should be included in college purchasing policies and procedures.
8. Lack of money and lack of knowledge of environmental criteria are seen as the biggest barriers to the development of EPP. A considerable proportion also cited lack of interest. This may be because users might not be aware of the environmental benefits.
9. Written information e.g. guidelines, manuals etc. and access to on-line database of environmental criteria are deemed the best tools to help develop EPP.

4.1.4 Some Respondents' Comments

The following is a selection of comments and opinions put forward by participants in the General Awareness Questionnaire.

"I guess there will sometimes be a trade-off between cost and better environmental performance which causes problems for purchasers/ consumers"

"A lot of information is available that can help with purchasing decisions if one was willing and interested enough to consider alternatives"

"I think criterion should always be included as a matter of principle while realistically there will be circumstances in which it won't be met.... And some mechanism of accountability whereby purchasers are required to make a case for going for the non-green product... "

"I have worked previously for a large IT company who had a policy of purchasing eco-friendly products e.g. paper, pencils etc. were made from recycled material"

4.2 Discussion of Sectoral Results

4.2.1 Cleaning and Janitorial Supplies

4.2.1.1 Impacts

Many cleaning products are aggressive by their very nature. They generally contain caustic, acid, volatile organic solvent (VOC) and detergent ingredients as a requirement for cleaning and degreasing dirty surfaces. These impacts are currently being reduced by the selection and use of cleaning products with less pollution potential. The new comprehensive product range being introduced into college Housekeeping is replacing many of the traditional products. This system is based on specific colour-coded applications for each of the five main products. The criteria for selection of the new range may not have specifically included environmental performance but efficiency, ease of use and uniformity of application qualities are also contributing to environmental benefits including:

- Purchased in concentrate - Less packaging waste (also easily compressible plastic bottle), lower transport emissions.
- Dosing requirement - Minimises waste due to dosing from optic-type dosing bottle
- Colour coded - Minimises risk of cross-contamination of cleaning zones
- Low VOC content - only one product in the range contains VOCs (5-15%) which represents a significant reduction from traditional products

The products also satisfy EC Recommendation on labelling 89/542/EC and Directives on biodegradability 73/404/EEC and 73/405/EEC and amendments. The presence of certain

ingredients would however preclude admission to eco-label accreditation for the product category (European Parliament and European Council 2001).

The environmental and health and safety effects of chlorine bleach are hotly contested but it is established that when chlorine bleach mixes with other products, harmful acids and toxic gases may be produced (USEPA 2004 a). The elimination of chlorine-based bleach from use in the Housekeeping department carries a considerable environmental benefit. This product was a traditional mainstay, as it still is in many other comparable institutions. Resistance to change from old reliable products can sometimes impede improvements in environmental performance, but the prevention of release to sewers of 2,700L of bleach per annum is considerable. The risk of bleach-related workplace injury has also been eliminated.

Many products containing VOCs have been eliminated but a number remain with respect to floor cleaners. VOCs act as low level air pollutants and contribute to photochemical smog and ozone depletion and are therefore environmentally undesirable. The USEPA stated that:

> Studies have found that levels of several organics average 2 to 5 times higher indoors than outdoors. During and for several hours immediately after certain activities such as paint stripping, levels may be 1,000 times background outdoor levels (USEPA 2004 b).

The new colour-coded ranges of products contain dyes in order to distinguish them for their particular use. The inclusion of colour dyes is done for hygiene reasons (to avoid cross-contamination). Specifying purchase of products in bulk packaging is not deemed practical due to the wide spatial diversity of operations. There are currently no plastic recycling facilities on campus. Cardboard packaging is reused where possible.

Most suppliers are accredited to quality management systems. It follows that the manufacturers are the likely companies to seek accreditation to environmental management standards e.g. ISO14001. Not all manufacturers were checked for accreditation. Some of those that were checked were determined to be accredited, and at least one has achieved eco-label certification for some of its European products.

The knowledge or use of eco-labels is not particularly prevalent. No existing products carry an eco-label except the Mobius Loop, which has varying meanings as previously discussed (Chapter 1), and is generally only considered relevant or significant when recycling facilities exist for packaging waste.

There are many specific examples whereby environmental benefits have accrued due to the introduction of performance improvement or efficiency measures (e.g. the discontinuation of bleach and use of products which incorporate effective dosing). Opportunities to reduce waste arisings and minimise wastage are also routinely considered. These are all recognised tools of EPP. There is no general emphasis on the environment in terms of requiring suppliers to provide environmentally superior products; however there are examples of particular requests.

4.2.1.2 Application of EPP

Much work has been done recently on the introduction of new products that increase efficiency. Also many of the more polluting and hazardous products have been eliminated or are only used under strict controls, representing the prevention of unnecessary purchasing which is the primary tool of EPP.

Effective training in the proper use of products is also seen as essential for communicating precautions to be taken with existing products. This could be applied to the situation whereby elevated levels of VOCs arise during use of certain products. It is advisable to provide a good degree of ventilation during cleaning, any instructions on use should be clear and products should not be mixed. These precautions can be used to limit health and environmental impacts. The recommendations contained in the Cleaning Products Pilot Project case study (Chapter 1) are suitable for inclusion in purchasing decisions. These are summarised in Table 1-4.

Cleaning systems and methods can also be examined. At the moment, a double bucket mop system is being evaluated by the Housekeeping department to investigate if floor cloth usages can be reduced. The potential to introduce micro-fibre cloths could be examined. These cloths have more fibres than cotton cloths, and therefore more surface area that enable them to attract more dirt particles due to the higher electrical charge present. They may be used wet or dry and often do not require detergents to enhance cleaning potential and are long lasting (around two year's normal use).

Specifically requesting any environmental data including Material Safety Data Sheet (MSDS) at the purchasing stage increases the ability of the purchaser to factor in environmental considerations before purchasing is completed. Furthermore, information on participation in any environmental programmes or recognised standards and eco-labels can be used in selecting vendors with better environmental performance.

4.2.2 Food and Food Services

4.2.2.1 Impacts

The impacts of food can be largely divided into the environmental impacts due to agricultural production methods, and the health impacts associated with the processing, preparation and consumption of food and food products.

Modem agriculture, which began with the introduction of chemical methods of pesticidal control and fertilisation, is mostly intensive. The production of milk, meat, cereals and vegetables has become focused on husbandry and planting methods that are designed to achieve maximum yield for minimum input. This intensification of agricultural practices began at a time when the environmental effects of these methods were unknown or disregarded.

The impacts of consumption of food on human health are dependant on what is consumed and how much. Unprocessed foods may be infected with pathogens or contaminated with pesticide residues, antibiotics or preservatives. Processed foods may be high in salt, sugar or fat and may contain unnecessary or harmful additives. Overeating and obesity are a growing problem, as is an over-reliance on fast food, red meat and dairy produce. There is much concern in the media with respect to food safety and concern over food quality is becoming more vocal. As a large provider of food and food services, the Catering department has the potential to have significant impacts.

4.2.2.2 Application of EPP

Organic produce is considered by some to represent a return to less intensive, more environmentally friendly and wholesome agricultural practices. Its emphasis is on natural production methods not wholly reliant on chemicals, and promoting environmental protection. There is not an emphasis on the procurement of organically grown produce due to supply considerations and cost implications. Large orders must be catered for without a break in supply and prices must be competitive for organic produce to get a toehold. Other more sustainable methods of production of food such as free-range and fertiliser-free are still not generally considered.

By taking seasonality into account, certain environmental benefits can be accrued e.g. reduced need for green housing, artificial heating, watering and fuel for transport from distant regions. While modern methods ensure nearly all-year-round in-season production is possible, it is not always environmentally preferable to purchase these goods. In college this is acknowledged by the inclusion of recipes based on seasonal produce.

Assessment of the reputation, credibility and environmental performance of suppliers is an import EPP tool in the procurement of food. College Catering is a participant in An Bord Bia's Féile Bia programme, which addresses this issue (A case study on this programme is detailed in Chapter 1). The International Register of Certified Auditors (IRCA) has listed An Bord Bia Schemes as an acceptable alternative to BS EN ISO 9001 and 9002 for auditor registration purposes. In addition, most of the suppliers to the Catering department are participants in recognised ISO quality or environmental management schemes.

The Catering department is also a participant in the HACCP (Hazard Analysis Critical Control Point) Scheme which aims to ensure a quality food provision service through regular checks and controls.

All tea and coffee purchased on campus carries the Fairtrade mark. This is done without any financial disadvantage. There are other products that carry this mark including fruit juices, bananas, sugar, chocolate etc., which may also be purchased. These products aid socially aware consumption, and there exists scope to include their availability in campus restaurants. Many are already successfully sold in other retail outlets where customers are prepared to pay a higher premium to support growers in the developing world.

The Catering department does not purchase food containing genetically modified organisms (GMOs). This is ensured by labelling and supplier affirmation. The Food Safety Authority of Ireland (FSAI) is the competent authority for:

> novel food and novel food ingredients, including GM food and food ingredients and regulates their marketing and labelling through the relevant EC Regulations (FSAI 2003, p.50).

European law for non-intentional GMO content sets a minimum threshold of 1% before food labels are required to specify GMO presence. Labelling guidelines have been introduced for both "health" and "ethical" concerns.

Food supplies from local or small suppliers is not deemed practical in terms of cost or availability. Since only the larger suppliers can currently provide a suitable service on the scale required, benefits of lower transport and seasonality are diminished. Perhaps scope to

include smaller producers can improve by networking or coordinating of resources by these suppliers.

As part of a health promotion programme, the changes made to recipes and menus have resulted in a healthier selection of meals and dietary options, which have been itemised in the results section. If similar schemes are to be expanded, they may also require dissemination of information with regard to the health implications of various dietary patterns.

Much has been done in the Catering department to promote recycling of food waste and waste cooking oil, and the promotion of reusable mugs. The growing popularity of water and soft drinks sold in plastic bottles is however an ongoing concern as no plastic recycling service is yet available.

Many EPP tools are already in place in college catering which is adapting to changing customer demands all the time. College catering services have a pivotal role in developing eating habits of students. Future initiatives could further the potential for organic produce to feature more in recipes in a cost effective way. Student participant schemes could be used as a tool to increase demand for environmentally preferable products.

4.2.3 Horticultural Products and Services

4.2.3.1 Impacts

The impacts associated with horticultural products and services are largely focused on the use of chemicals. Inappropriate use of pesticides and herbicides can lead to damage to soil and contribute to water pollution. This risk is controlled by the requirement that all pesticides used by the department must be approved for their particular use. But even approved chemicals may have environmental impacts.

A closely related potential source of impact is the choice of application system for pesticides. In college the focus is on direct application, which reduces product drift. This is considered as more efficient and reduces wastage and lowers air emissions.

After chemicals, the use of peat products for soil improvement generally represents the next greatest impact in landscape horticulture. This is not the case in TCD due to the absence of the requirement for peat. Apart from rare exceptions (including recycling of peat used in research) it is excluded from use. This helps to protect Irish peat lands which are internationally recognised havens for biodiversity.

Artificial fertilisers are used for improving soil nutrient status. The widespread overuse of these products by certain sectors in the past has been linked to groundwater pollution and a reduction in biodiversity due to nitrification of watercourses. Their controlled application in TCD is deemed necessary due to land use requirements, and unsuitability of natural methods for playing fields (i.e. Rotavation to incorporate composted organic material).

A further impact is water use particularly for maintaining playing grounds. This is minimised by using efficient sprinkler systems for delivery from mains supply. Some informal space is maintained for ecological studies and is mowed infrequently to encourage growth of natural wild species of flora.

Suppliers are either accredited or seeking accreditation to certified quality management systems. There exists a good relationship with customers with regard to product information and introduction of new product lines which could be used to encourage the supply of environmentally superior products.

The majority of green waste from cuttings, mowing and trimmings is composted and used on college grounds. Packaging is returned and reused where possible, which minimises the amount sent for landfill.

4.2.3.2 Application of EPP

Many of the EPP tools currently available, to aid selection of environmentally superior horticultural products specifically refer to:

- Reduce the requirement for chemicals
- Avoid the use of peat
- Encourage composting of green and food waste
- Promote biodiversity e.g. avoid monoculture
- Favour ecologically sound management methods e.g. efficient watering practices (Wastebusters Ltd. 2000)

There are already provisions for the inclusion of these factors in procurement of products by the Grounds and Gardens department.

In addition, there is the possibility to refer to eco-labels. There is an EU eco-label for horticultural products for the category of soil improvers and growing media, although the requirement for these products is probably minimal. In addition, a GEN eco-label exists for lubricating oil and equipment including lawnmowers, shredders and hoses. There may be scope to include these eco-labels or equivalents in future purchasing decisions.

In general, there is a strong emphasis on safety and environmental concerns in all activities. The greatest scope for reduction of environmental impacts rests with the reduction or substitution of agrochemical usage. Because of the intensive use of land for sports activities, this is unlikely to be a straightforward solution.

4.2.4 Office Supplies (PCs and Paper)

Personal Computers

4.2.4.1 Impacts

The environmental impacts associated with the purchase, operation and disposal of PCs and related equipment can be divided into energy consumption and waste disposal considerations (including hazardous components). In both cases there are initiatives currently in place to address these issues.

In terms of energy usage, there is a methodology for the inclusion of energy consumption criteria in the tenders for PCs. This allows for the purchase of more energy efficient PCs and monitors. Further developments in the 5E project may aid to further reduce consumption, if the introduction of comprehensive power conservation policies and practices is achieved.

There is a separate collection system in place for WEEE in college. PCs, keyboards, monitors, printers, phones, fluorescent light bulbs and other electrical goods are collected and sent for reuse where possible, otherwise for recycling by an accredited company. Components made of the various constituent materials such as metals, precious metals, and plastics are separated and sent for recovery/ recycling as appropriate.

4.2.4.2 Application of EPP Tools

The biggest barrier to the EPP of PCs and equipment in TCD is the availability of information. In particular, users of the equipment need to know the requirements for efficient use and

responsible disposal. Purchase of energy efficient PCs and proper waste management will not reduce impacts if PCs are used or disposed of incorrectly.

An approach similar to that developed at NUI Maynooth for the purchase of EEE could also be adopted in TCD. A published guide, containing both existing and upcoming legislative requirements and opportunities to include environmental considerations, could prove useful in aiding purchasers to make better informed decisions. This could also include details on the proper use of equipment (including power management) and disposal aspects, which would guide departments in responsible control of all aspects of the life cycle of PCs (and related peripherals), and EEE in general.

The product specifications presented in the case study on the reduction of impacts of PCs and peripheral equipment (Chapter 1) may also be included in the purchasing process, to aid reduction of impacts. These specifications could be a useful inclusion in the purchasing guide.

The large amount of WEEE disposed in the 2002/ 2003 period may represent a significant amount of equipment, including PCs, which was unnecessarily disposed. If preventative measures were incorporated into waste management policy, such as upgrading systems, re-using old systems and introducing exchange programmes (also detailed in the same case study) this may help reduce impacts.

Office Paper

4.2.4.3 Impacts

Partly because recycled paper continues to suffer from a perception of low quality, its widespread introduction has not been successful. It generally costs more, which is also seen as a disincentive. As a result, much of the paper (more of which is now being recycled each year) is still made from virgin pulp. The debate over the value of using recycled paper is also a contributory factor to the low usages of recycled paper. Staff may feel that to recycle used paper gives enough consideration to the environment (and recycling rates are increasing). This is not necessarily the case when the impacts of the recycling process (fuel for transport, water, energy, bleach and chemicals) are subtracted from the benefits (reduced virgin pulp requirements). The case study on EPP of Office Paper identifies loss of natural habitats, pollution, energy usage, CO_2 emissions and waste disposal as significant impacts. However, incineration is seen by some to be a better solution than recycling. The debate over the impacts is likely to remain for some time, but in TCD for the present, the demand for recycled paper in preference to that made from virgin pulp is unlikely to change significantly.

4.2.4.4 Application of EPP Tools

In this case, the primary tool of EPP is particularly applicable (i.e. is the purchase avoidable?) The simplest unambiguous solution to the reduction of the environmental impact of paper in college is to reduce the demand for it. There are various mechanisms for this that requires cross-departmental cooperation for implementation. This could take the form of a guide

issued to all departments to offer advice on ways to eliminate excess requirements including practical tips to reduce impacts such as:

- Is a hard copy **required or already printed**?
- Ascertain **actual requirements** before duplicating or printing documents.
- Promote purchase of printers and photocopiers that print on **both sides of the leaf**.
- **Substitute hard copies** of college-wide circulars with emails and web page listings.
- Issuing of **lecture notes, tutorials and handouts** on departmental websites.
- Student assignments could be assigned and submitted **via email**
- **Reuse** paper printouts for rough work (Adapted from Wastebusters Ltd. 2000).

There is no doubt that the best way to reduce impact is to reduce usages. Paper is often overused. Recycling is sometimes seen as a solution to the problem of paper waste, so there is considerable scope in this category for improvement of environmental performance in college. It is particularly relevant for students to be aware of the impact of paper and departments have the opportunity to encourage "paper-less" education in so far as is possible, with measurable economical cost benefits. The requirement for paper is not likely to reduce dramatically unless the way information is communicated and recorded changes radically.

The purchase of office paper is however unavoidable. Therefore the approach that best supports EPP is to specify that paper contains recycled content, is non-bleached or chlorine free. There have been some notable successes, for example the French municipality Communauté Urbaine De Dunkerque successfully (and cost effectively) introduced recycled paper (see Chapter 1). However, this solution may not necessarily transfer to TCD, or meet

college requirements. However a raising of awareness of the benefits of purchasing recycled paper at department level could increase demand. The possibility of cooperation with other Irish HE institutions to encourage further demand for recycled paper could also help to stimulate the market.

5 Conclusions

5.1 Findings

5.1.1 Introduction

This section aims to assess the strengths and weaknesses of the responses (and the data obtained), in the questionnaires. It also presents and collates the final conclusions determined from the study.

5.1.2 Validity of the Data

In general, the questions posed in the questionnaires did not require a prior knowledge of the environmental aspects they addressed. However, some of the responses tended to convey varying personal interpretations with regard to the specific meaning of the issues. This does not invalidate the data, but does highlight the possibility that responses are sometimes borne from pre-conceived assessments of the subject matter.

Another possible weakness in the study is the relatively low amount of quantitative data generated. For example, many of the Sectoral Questionnaires included sections for respondents to include information on product usages per annum and/ or amounts used as a percentage of product category. This data was not often provided. It may be the case that the data are not available, or at least not readily accessible. Another explanation is that in many cases, the question was not applicable, and therefore no quantitative data was required.

Questionnaires were designed to omit references to specific traders or suppliers, (none were mentioned in the study). It was assumed that respondents wished to maintain client customer confidentiality. It is not considered a factor that specific "sensitive" (or other relevant information), was excluded for this reason. There was no information provided on unnamed suppliers that is not already in the public domain (e.g. all suppliers are accredited to ISO9001: 2000 quality management standard).

5.1.3 Summary of Conclusions

The following is a summary of the outcomes and findings of the study:

1. The level of awareness of staff of the impact of purchases on the environment varies considerably. Many participants were aware of the significant impacts of their own activities and of TCD in general, but there was reliance in some cases on obscure or inaccurate information in relation to the environmental aspects of purchasing.
2. Concern for the environmental implications was determined to be high for most participants. The vast majority of the feedback suggested that the inclusion of environmental criteria in purchasing decisions would be beneficial. This also needs to be communicated to suppliers in order to stimulate demand for environmentally superior products.
3. No defined policy exists for determining the environmental impact of purchases. There are also few comprehensive written procedures, by which purchasers can assess the environmental performance of products, services or suppliers.

4. Most assessments of the impacts of purchases are made on the basis of product labelling and educated guesswork. These methods may not always be successful in identifying the real impacts.
5. There is no readily available information on environmental criteria to aid purchasers in considering EPP alternatives. Easily accessible information on product criteria that is accurate and verified is essential to aid suppliers in making informed decisions. The central provision of this information could reduce the burden of work for individual purchasers.
6. The often perceived higher cost of environmentally preferable products is still considered prohibitive. There are many examples whereby participants dismissed certain products outright, purely on initial financial cost. Whole life cost analysis has the potential to reduce this initial outlay over time. In order for EPP initiatives to be successful, the introduction of novel products and services is generally required. Low cost solutions tend to be based on novel concepts tailored to meet specific requirements.
7. There are many examples whereby the impacts are reduced as a consequence of other initiatives e.g. efficiency measures, quality control. These environmental benefits are not routinely measured. This could contribute greatly to the promotion of EPP. This would require a formal means for highlighting the successful application of EPP (or other related initiatives that reduce environmental impact).
8. Non-centralised purchasers (i.e. individual departments) may benefit by combining requirements to help stimulate the demand for environmentally superior products. This may even be achievable by cooperation across the HE sector.

5.2 Recommendations

In order to ensure a more even and consistent approach to the application of environmentally preferable purchasing in TCD, the following recommendation are presented. They are based on similar models used in public sector purchasing (for example BIG-NET and HEPS Purchasing for Sustainability):

1. Awareness of the benefits of EPP could be better disseminated throughout college. This is seen as the initial step in most methodologies as a prerequisite for the successful introduction of initiatives. It is important to note that traditional products and services are often difficult to replace due to their familiarity and the perceived need by end-users. Therefore training must be included to help encourage the acceptance of environmentally superior purchases and assist their integration into departments' daily activities.
2. The relevance of EPP to sustainable development objectives could be further highlighted. The HE sector is obliged to contribute towards sustainable development. As a large and well recognised educational institution, TCD has the potential to lead the way with regard to the promotion of these ideals, and provide the resources to develop solutions to the problems of implementing sustainable development, including EPP.
3. Access to an eco-procurement manual, or a database of relevant criteria would provide purchasers with a readily available tool to include environmental considerations in their purchases. This could be designed to be specific to certain product categories, or could be a general guide to the basic principles of EPP.

4. A policy document stating the possibilities of including environmental considerations in purchasing decisions, particularly in central purchasing, would be central to promoting and encouraging current and future initiatives. The possibility to include scope for communication between TCD and other HE institutions with similar policies, offers the best possible chance to stimulate demand for environmentally superior products and services.
5. A forum for the communication of successful EPP initiatives may serve to generate further interest. An interdepartmental task force could be established, to highlight recent successes and identify future solutions, to further the development of EPP at TCD.

Bibliography

AN BORD BIA, 2004. *Féile Bia*. Dublin, An Bord Bia – Irish Food Board [online]. Available from: http://www.bordbia.ie/ [Accessed 15 July 2004].

ANON, 2004. *The Mobius Loop: Widely Misused and Often Misunderstood*. [online]. Available from http://www.facilities.utoronto.ca/bldggrou/wasteman/4renviro/Mobius.htm [Accessed 24 May 2004].

BARTH, R., and FISCHER, A., 2003. The European Legal Regime on Green Public Procurement- corresponding and conflicting aspects of environmental law and procurement law in the EU. *In:* C. ERDMENGER ed. *Buying into the Environment- Experiences, Opportunities and Potential for Eco-Procurement*. Sheffield: Greenleaf Publishing Ltd., p.52-53, 57, 64.

BESTWICK, C., and HARROWER, D. (The Groundwork Foundation), [ca. 1997]. *Purchasing and Sustainability- A guide to help local authorities integrate environmental concerns into purchasing practices*. Birmingham: Groundwork National Office, p.4.

CAHILL, A., 2002. *Garfield High School Landscape Renovation- A Sustainable Community Landscapes* [online]. Washington, Urban Pesticide Education Strategy Team (UPEST). Available from: http://www.ecy.wa.gov/programs/wq/pesticides/upest/case_study/garfield.html#top [Accessed 11 June 2004].

COMMISSION OF THE EUROPEAN COMMUNITIES (CEC), 2001. *Green Paper on Integrated Product Policy*. Brussels: EC, COM (2001) 68 Final, p.5, 6, 15.

CLEMENT, S., 2003. Product Guidelines- Guidelines for the Procurement of Six Important Products. *In:* CLEMENT, S., AND ERDMENGER, C., eds. *The Procura+ Manual- A Guide to Cost-Effective Sustainable Public Procurement*. München: ökom verlag, p123-187.

COMMISSION OF THE EUROPEAN COMMUNITIES (CEC), 2001. *Commission Interpretative Communication on the Community law applicable to public procurement and the possibilities for integrating environmental considerations into public procurement.* Brussels: EC, COM (2001) 274 Final, p.7-23.

CONFERENCE OF HEADS OF IRISH UNIVERSITIES (CHIU), 2000. *Current issues: Review of State Funding of the University Sector*. [online]. Dublin, CHIU. Available from: http://www.chiu.ie/issues/funding.html [Accessed 27 April 2004].

COPERNICUS, 2004. *5E Universities*. [online]. Dortmund, COPERNICUS. Available from:http://www.copernicus-campus.org/sites/5Euniversities.html and http://www.copernicus-campus.org/downloads/template.doc [Accessed 26 May 2004].

DEPARTMENT FOR ENVIRONMENT FOOD AND RURAL AFFAIRS (DEFRA), 2004. *Green Guide for Buyers Action Sheet: Pesticides, Biocides and Artificial Fertilisers* [online]. Available from: http://www.sustainabledevelopment.gov.uk/sdig/improving/partf/greenbuy/22.htm [Accessed 11 June 2004].

DEPARTMENT OF AGRICULTURE, FOOD AND RURAL DEVELOPMENT, 2002. *Pesticides 2002*. Dublin: Pesticide Control Service.

DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT (DEHLG), 2003. *Invitation to tender for the supply, delivery and configuration of desktop microcomputers,* p.12, 13. Dublin: DEHLG.

DEPARTMENT OF THE ENVIRONMENT, HERITAGE AND LOCAL GOVERNMENT (DEHLG), 2004. *Cullen Launches PC Reuse Scheme to benefit Charities* [online]. Available from: http://www.environ.ie/DOEI/doeipub.nsf/0/80CA2E4AFF34ABBC80256E2200545431?OpenDocument&Lang=en [Accessed 8 June 2004].

ERDMENGER, C., 2003. *Buying into the Environment- Experiences, Opportunities and Potential for Eco-procurement.* Sheffield: Greenleaf Publishing Ltd, p.10, 11.

ERDMENGER, C., 2003. *Survey on the State of Play of Green Public Procurement in the European Union*. [online]. Freidburg, ICLEI. Available from: http://www.iclei.org/ecoprocura/survey/ukEU-GPPsurvey.pdf [Accessed 5 June 2004].

ENFO- THE ENVIRONMENTAL INFORMATION SERVICE, 1999. *International Actions and Commitments to Sustainability*. Dublin: Department of the Environment and Local Government.

ENFO, 2000. *Comhar- The National Sustainable Development Partnership*. Dublin: Department of the Environment and Local Government, SD5.

ENVIRONMENTAL PROTECTION AGENCY, 2000. *National Waste Database Report 1998*: EPA, Wexford: EPA p.25.

ENVIRONMENTAL PROTECTION AGENCY (EPA), 2001. *EPA Topic Report- Waste from Electrical and Electronic Equipment in Ireland.* Wexford: EPA, p.8,9.

ENVIRONMENTAL PROTECTION AGENCY (EPA), 2002. *Environment in Focus 2002- Key Environmental Indicators for Ireland.* Wexford: EPA, p.25.

ENVIRONMENTAL PROTECTION AGENCY (EPA), 2002. *Irelands Environment- A Millennium Report*. Wexford: EPA, p.67-68.

EUROPEAN ENVIRONMENT AGENCY (EEA), 2000. *Household and Municipal Waste- Comparability of Data in EEA Countries*. Copenhagen: EEA, p.28-29.

EUROPEAN ENVIRONMENT AGENCY (EEA), 2002. *Environmental signals 2002- Benchmarking the Millennium*. Brussels: EEA, p.5-7.

EUROPEAN ENVIRONMENT AGENCY (EEA), 2003. *European Environment- The Third Assessment* [online]. Europe: EEA, p.338. Available from: http://reports.eea.eu.int/environmental_assessment_report_2003_10/en/tab_content_RLR [Accessed 28 November 2003].

EUROPEAN PARLIAMENT and THE EUROPEAN COUNCIL, 2001. Commission Decision of 27 June 2001 establishing the ecological criteria for the award of the Community eco-label to all-purpose cleaners and cleaners for sanitary facilities 2001/523/EEC. Brussels: Official Journal of the European Union, (L 189/25).

EUROPEAN PARLIAMENT and THE COUNCIL OF THE EUROPEAN UNION, 2003 a. Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE). Brussels: Official Journal of the European Union, (L 37/24).

EUROPEAN PARLIAMENT and THE COUNCIL OF THE EURPOEAN UNION, 2003 b. Directive 2002/95/EC of the European Parliament And of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. Brussels: Official Journal of the European Union, (L 37/19).

FAIRTRADE FOUNDATION, 2004. *What is Fairtrade?* [online]. London: Fairtrade Foundation. Available from: http://www.fairtrade.org.uk/about_what_is_fairtrade.htm [Accessed 12 June 2004].

FOOD SAFETY AUTHORITY OF IRELAND (FSAI), 2003. *A Compendium of Food Law in Ireland 2003*. Dublin: FSAI p.50-56.

FORUM FOR THE FUTURE, [ca. 2003]. *Purchasing for Sustainability: Guidance for Higher Education Institutions*. London: Forum for the Future, Higher Education Partnership for Sustainability, p.11, 62-64.

FSG CONSULTING, 2003. *The Future of Funding in the Irish university sector*. [online]. FSG Consulting. Available from: http://www.chiu.ie/issues/funding_report.pdf [Accessed 27 April 2004].

GAYNOR, D., 2003. *NUI Maynooth- Purchasing for Sustainability (Draft)*. Maynooth: NUI Maynooth, p.1-22.

GEISER, K., 2001. *Materials Matter- Towards a Sustainable Materials Policy*. U.S.A: Massachusetts Institute of Technology, p.3-4, 68, 83, 271-272, 307.

GLOBAL ENVIRONMENTAL NETWORK (GEN), 2004. *What is the GEN?*. [online]. GEN. Available form: http://www.gen.gr.jp/whats.html [Accessed 20 June 2004].

HAINES, J.M., 1998. Global Environmental Management- An opportunity for Partnerships. *In:* RUSSEL, T., ed. *Greener Purchasing- Opportunities and Innovations.* Sheffield: Greenleaf Publishing Ltd, p.180-181.

HINDS, R. (2002). *Recycled Paper- To buy or not to buy: that is the question?* [online]. U.K., Department for Environment Food and Rural affairs (DEFRA). Available from: http://www.sustainable-development.gov.uk/sdig/improving/partf/repaper/ [Accessed 5 June 2004].

JEFFRY, D., [no date]. *Ground Rules For The Green Consumer* [online]. Dublin, ENFO. Available from: http://www.enfo.ie/ Library/as/as22.htm [Accessed 1 December 2003].

JORDAN, A., WURZEL, R., ZITO A. and L. BRÜCKNER, 2003. Consumer Responsibility-taking and National Eco-labelling Schemes in Europe [online]. In: M. Micheletti, A. Follesdal and D. Stolle eds. *Politics, Products and Markets: Exploring Political Consumerism.* Somerset, NJ: Transaction Publishers, p.1.

Available from: www.uea.ac.uk/env/cserge/research/ fut_governance/Ecolabels.pdf
Referenced from: www.uea.ac.uk/env/cserge/publications/ external/publ_govsust.htm
[Accessed 15 January 2004].

LOCAL FOOD WORKS (LFW), [no date]. *Producer Cooperative supplies fresh produce to schools and Environment Centre.* Bristol: LFWSA. Available from: http://www.soilassociation.org/web/sa/saweb.nsf/0/678c9e5484a2316580256dce00353198/$FILE/10.%20Eostre%20Organics%20-%20producer%20co-operative%20supplies%20fresh%20produce.PDF [Accessed 12 June 2004].

MARKET TRANSFORMATION PROGRAMME (MTP), [no date]. *BNXS08 Green procurement- made easier.* Oxfordshire, MTP [online].
Available from:
http://www.mtprog.com/approvedbriefingnotes/PrintToPDF.asp?kintUniqueID=172&PDF=True&strPath=GreenProcurementMadeEasier.aspx&intOrientation=2
[Accessed 26 May 2004].

MCDONALD, F., 2002. Waste crisis is worse than had been thought. *The Irish Times*, 12 August, p.6b.

MIELISCH, A. and ERDMENGER, C. [no date]. *Green procurement at the municipal level- the local and European dimension* [online]. Germany, I.C.L.E.I. Available from: http://www.gruene-berlin.de/wirtschaft/papiere/Daseinsvor/Procurem.htm
[Accessed 24 November 2003].

NORTHWEST COALITION FOR ALTERNATIVES TO PESTICIDES (NCAP). 1998. Herbicide Factsheet: Glyphosphate (Roundup). *Journal of Pesticide Reform* [online], 18 (3). Available from: http://www.pesticide.org/gly.pdf [Accessed 31 May 2004].

OCHOA, A., FÜHR, V. and GÜNTHER, D., 2003. Green Purchasing in Practice: experiences and new approaches from the pioneer countries. *In.* C. ERDMENGER ed. *Buying into the Environment- Experiences, Opportunities and Potential for Eco-procurement.* Sheffield: Greenleaf Publishing Ltd, p.21-22.

OFFICE OF GOVERNMENT COMMERCE, [no date]. *Guidance on Fair and Ethical Trading* [online]. Info4local.gov.uk (Information for Local Government from Central Government). Available from: http://www.ogc.gov.uk/embedded_object.asp?docid=1001597 [Accessed 12 June 2004].

PESTICIDES SAFETY DIRECTORATE (PSD). 2004. *Pesticide Law*. [online]. U.K., PSD. Available from: http://www.pesticides.gov.uk/approvals.asp?id=869 [Accessed 31 May 2004].

PLAS, G. and ERDMENGER, C., 2000. *Green Purchasing Good Practice Guide*. Freiburg: The international Council for Local Environmental Initiatives, European Eco-Procurement Programme and Eco-Efficient Economy (ICLEI EPP), p.9, 19-22,38, 49.

RUSSEL, T., 1998. *Greener Purchasing- Opportunities and Innovations.* Sheffield: Greenleaf Publishing Ltd., p.10.

SANDERS, W., 1998. Environmentally Preferable Purchasing- The US Experience. *In:* RUSSEL, T., ed. *Greener Purchasing- Opportunities and Innovations*. Sheffield: Greenleaf Publishing Ltd, p.47-48.

SPECTRUM LABORITORIES. 2004. *Chemical Factsheet (Glyphosphate).* [online]. U.S.A., Spectrum laboratories Inc. Available from: http://www.speclab.com/compound/c1071836.htm [Accessed 31 May 2004].

THE ASSOCIATION FOR PURCHASING AND SUPPLY. 2003. *Creating a Green Buying Programme* [online]. Dublin, The Association for Purchasing and Supply. Available from: http://www.irishpurchasing.com/members/Greenbuying.htm [Accessed 3 October 2003].

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA). 2003. *Municipal Solid Waste- Basic Facts* [online]. U.S.A., USEPA. Available from: http://www.epa.gov/epaoswer/non-hw/muncpl/facts.htm [Accessed 28 November 2003].

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA), 2004 a. *Learn About Chemicals Around Your House*. [online]. U.S.A., USEPA. Available from: http://epa.gov/pesticides/kids/hometour/products/bleach.htm [Accessed 17 May 2004].

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA), 2004 b. *Sources of Indoor Air Pollution - Organic Gases (Volatile Organic Compounds - VOCs).* [online]. U.S.A., USEPA. Available form: http://www.epa.gov/iaq/voc.html [Accessed 8 June 2004].

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA), 2004 c. *Cleaning Products Pilot Project - Origin of the Project* [online]. U.S.A., USEPA. Available from: http://www.epa.gov/opptintr/epp/cleaners/select/origin.htm [Accessed 8 June 2004].

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA), 2004 d. *Department of the Interior Focuses on Cleaning Products* [online]. U.S.A., USEPA. Available from: http://www.epa.gov/epp/ppg/case/doicase.htm [Accessed 10 June 2004].

UNIVERSITY OF DUBLIN, TRINITY COLLEGE, 2001. *University of Dublin, Trinity College Purchasing Manual*. Dublin: TCD, 1st Edition p.4-14.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE, 2002 and 2003. *University of Dublin, Trinity College Financial Statements Year ended 30th September 2002 and 30th September 2003*. Dublin: TCD.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE, 2004. *Green Pages* [online]. Dublin: TCD. Available from (internal only): http://www.tcd.ie/GreenPages/index.html [Accessed 5 June 2004].

VAN DER GRIJP, N., 1998. The Greening of Public Procurement in the Netherlands. *In:* RUSSEL, T., ed. *Greener Purchasing- Opportunities and Innovations*. Sheffield: Greenleaf Publishing Ltd, p.65.

WASTEBUSTERS LTD., 2000. The Green Office Manual- A Guide to Responsible Practice. 2nd ed. London: Earthscan Publications, p.10-112.

WILLIAMS, M., 2004. *Environmental Impacts of PCs* [online]. Portland Independent Media Centre. Available from: http://portland.indymedia.org/en/2004/03/282348.shtml [Accessed 8 June 2004].

Appendix 1

General Awareness Questionnaire

(Note: drop down menu options shown in results section)

Application of Environmentally Preferable Purchasing in Trinity College

Dear participant: I would be very grateful if you could take ***10*** minutes to answer the following ten questions. Please return completed questionnaires via email or post (address above)

Name:
Position:
Department:

1. **Do you think environmental factors are important in purchasing decisions?**
   --select--

2. **If so, how do you rate their importance in your purchase considerations--- out of 10?**
   (Once other requirements are met i.e. cost, value, H&S, availability)
   0 = not important 10 = extremely important
   --select--

3. Are environmental impacts associated with products and services taken into account before you make purchases?

   Always ☐ Never ☐ Sometimes ☐

4. **If so, how do you determine if a product/ service is "environmentally superior"?**

   Labelling ☐ Manufacturer's claims ☐ Material composition ☐

   Educated guess ☐ Recommendations ☐ Other ☐

5. **What proportion of purchases do you think have alternatives with better environmental performance (all other considerations remaining the same)?**
   --select--

6. **Are you aware of the <u>EU Eco-label</u> scheme for identifying environmentally preferable products and services?**
--select--

Tick for "yes"

Similarly **- The Nordic Swan** ☐
- German "Blue Angel" ☐

7. **If <u>yes</u>, do you think Eco-label criteria can be included in the *technical specifications* in the call for tenders under current procurement legislative requirements?**
--select--

8. **Do you think that "eco-procurement" should be enshrined in College purchasing activities i.e. included in purchasing policy/ procedures?**
--select--

9. **If <u>you do</u>, what barriers could you foresee to its development?**

Lack of Interest ☐ Lack of Money ☐ Concerns over Legality ☐

Lack of knowledge of environmental criteria ☐ Other ☐

10. Which of the following options do you think, if any, might help to develop "green procurement" activities in College?

Written information-- Guidelines, Manual etc. ☐

Purchasing network with other Universities ☐

Access to online database of environmental criteria ☐

Other ☐

--comments--

Appendix 2

Environmentally Preferable Purchasing Questionnaire
College Sector: Cleaning & Janitorial Products

This questionnaire is designed to:

- Gather data on targeted product groups from chosen sectors for further examination
- To further investigate product characteristics and usages and determine scope for application of EPP
- Identify areas where EPP tools are already in place
- Measure success or failures and future routes of growth for current initiatives

Q1: **Do you use cleaning products (cleaning agents, detergents and soaps), which are biodegradable and contain low or no phosphates?**

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, can you supply information on amounts and usages?

Ans.: Yes ☐ (Please see Box 1) No ☐

--Are these types of products specifically requested in tenders or other purchasing decisions?

Ans.: Yes ☐ No ☐ Not Aware ☐

Box 1

When answering please specify **product**, **amount purchased per annum** (Kg/ Ltr.), and **amount as % of total for product** e.g. phosphate-free floor Cleaner, 50 Ltr., 20% of total floor cleaner purchased.

Q2: **Is there a request made to suppliers, prior to purchase of cleaning products, to state any environmentally preferable production methods used?**

E.g. *non-toxic, chlorine-free, biocide-free, water-based formulations, natural production methods*?

Ans.: Yes ☐ No ☐ Not Aware ☐

--Can you specify any current suppliers who produce cleaning products using the methods stated or similar methods?

Ans.: Yes ☐ (Please see Box 2) No ☐ Not Aware ☐

Box 2

What products are purchased from the categories below? ***Please tick***

When answering please specify **cleaning product**, **category**, **amount purchased per annum** (Kg/ Ltr.), and amount as % of total for product type e.g. bleach, chlorine-free, 50 Ltr., 20% of total bleach purchased.

Non-toxic products ☐

Chlorine free products ☐

Biocide-free products ☐

Water based products ☐

Natural/ Traditional production methods ☐

Other, please specify ☐ --Other--

Q3: **Is there a provision that products containing toxic substances be identified prior to purchase?**

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **no**, are there any specific examples whereby non-toxic products are given preference over toxic products? (See Box 3-b)

Box 3

Which non-toxic products if any, are given preference over non-toxic products?

Q4: **Are there any policies or procedures to purchase products that minimize the amount of volatile organic compounds (VOCs) produced?**

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, please specify (Please see Box 4-a)

--If **no**, what information exists on the use, or potential use of products VOC's? (Please see Box 4-b)

Box 4

(a) Policies/ procedures to purchase products with lower VOC emissions? (b) **What specific information on VOC content of current or future products is available?**

Q5: **Are there any policies or procedures to purchase products that minimize the amount of unnecessary dyes, inks or fragrances?**

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, please specify (Please see Box 5-a)

--If **no**, what information exists on the use, or potential use of products with? (Please see Box 5-b)

Box 5

a) Policies/ procedures to purchase products with lower dye/ ink/ fragrance content? **b) What specific information on the dye/ ink/ fragrance content of current or future products is available?**

Q6: **Are there any provisions at purchasing level for cleaning products to be purchased in containers that are reusable (refillable) or returnable?**

Ans.: Yes ☐ No ☐ Not Aware ☐

–If yes, please specify (See Box 6)

Box 6

Provisions for reusable/ returnable containers

Q7: **Are any of your suppliers participating in any of the following Quality Assurance schemes?**

Ans.: Yes ☐ No ☐ Not Aware ☐
--If yes, please specify (See Box 7).

--Is this information requested prior to making purchasing decisions?

Ans.: All cases ☐ some cases ☐ no cases ☐ Not Aware ☐

(See Box 7).

Box 7

Current Suppliers participating in Quality Assurance Schemes

	Yes	No	Required
ISO 14001	☐	☐	☐
ISO 9001-2000	☐	☐	☐
Other --Please specify: --Other--	☐	☐	☐

Q8: Are you aware of the EU Eco-label and comparable schemes for identifying environmentally preferable products and services?

Ans.: Yes ☐ No ☐ Partially aware ☐

If **yes**, please specify, (See Box 8)

Box 8

Which of the following eco-labels are you familiar with, Please tick for yes.

EU Eco-label ☐

Mobius Loop ☐

German Blue Angel ☐

Nordic Swan ☐

Other ☐ Please specify

Q9: **Are you aware of any cleaning products, which are currently purchased or used that carry an eco-label?**

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, what products are these items? (Please see Box 9)

Box 9

When answering please specify **product**, **amount purchased per annum** (Kg/ Ltr./ unit), and **amount as % of total for product type** e.g. toilet cleaner, 50 Ltr., 20% of total toilet cleaner purchased.

Q10: Are there any provisions to buy products in bulk packaging?

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, please specify provisions, and specify products purchased (See Box 10)

Box 10

Bulk packaged items--

Q11: Are there any provisions that require micro-fibre cloths be used?

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **no**, what alternatives are used, please specify (See Box 11)

Box 11

Alternatives to micro-fibre cloths used

Q12: Are any other environmental criteria included in the tendering process?

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, Please specify (See Box 12)

Box 12

Other environmental criteria included, Please tick for yes

Minimising waste ☐

Reducing the frequency of individual delivery journeys ☐

Specifying forms of transport with lower environmental impact ☐

Complying with the wide range of environmental aspects of Government policy as well as safety ☐

Training and welfare issues and best practice standards ☐

Other ☐ Please specify --Other--

Further Comments:

Appendix 3

Environmentally Preferable Purchasing Questionnaire College Sector: Supply of food and food services

This questionnaire is designed to:

- Gather data on targeted product groups from chosen sectors for further examination
- To further investigate product characteristics and usages and determine scope for application of EPP
- Identify areas where EPP tools are already in place
- Measure success or failures and future routes of growth for current initiatives

Q1: **Are any organically produced food products available in the canteens and restaurants on campus?**

Ans.: Yes ☐ No☐ Not Aware ☐

--If **yes**, can you supply information on amounts and usages?

Ans.: Yes ☐ (Please see Box 1) No☐

--Are organic food products or ingredients specifically requested in tenders or other purchasing decisions?

Ans.: Yes ☐ No☐ Not Aware ☐

Box 1

Which of the following are purchased? ***Please tick.***

When answering, please specify **food product, amount purchased per annum** (Kg/ Ltr.), and **amount as % of total for product** e.g. bananas, 500 Kg, 20% of total bananas purchased.

Organic vegetables ☐

Organic fruits or fruit preparations ☐

Organic beverages ☐

Organic bread products ☐

Organic ingredients/ meal constituents purchased e.g. flour, sugar ☐

Other, please specify ☐ --Other--

Q2: **Is there a request made to suppliers, prior to purchase of foodstuffs, to state any sustainable methods of agricultural production used?**

E.g. *artificial-fertilizer free, sustainable fisheries, free range, natural/ traditional methods etc.*?

Ans.: Yes ☐ No ☐ Not Aware ☐

--Can you specify any current suppliers who produce food products using the methods stated?

Ans.: Yes ☐ (Please see Box 2) No ☐ Not Aware ☐

Box 2

What products are purchased from the categories below? ***Please tick***

When answering, please specify **food product**, **category**, **amount purchased per annum** (Kg/ Ltr.), and amount as % of total for product e.g. Fish, sustainable fishery, 500 Kg, 20% of total fish purchased.

Artificial-fertilizer free products ☐

Sustainable fishery products ☐

Free range/ non-intensive products ☐

Natural/ Traditional production methods ☐

Other, please specify ☐ --Other--

Q3: **Is there a requirement at purchasing level, to take into account whether food products are in season or not?**

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, please specify examples (See Box 3-a)
-If **no**, are there any specific examples whereby in-season food products are given preference over out-of-season products? (See Box 3-b)

Box 3

(a) Which products are specified to be in-season?

(b) Which in-season products if any are given preference over out-of season products?

Q4: Is there a requirement that food products must be free of genetically modified organisms, (GMOs)?

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, how is this monitored? (Please see Box 4-a)

--If **no**, what information exists on the use or potential use of products containing GMOs? (Please see Box 4-b)

Box 4

a) **How is GMO content of food products monitored?**

Labeling ☐ Supplier Affirmation ☐

Other ☐ Please specify --Other--

b) **What specific information on GMO content of current or future products is available?**

Q5: **Are any of your suppliers participating in any of the following Quality Assurance schemes?**

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, please specify example (See Box 5).

--Is this a **specified requirement** prior to making purchasing decisions, in the above cases?

Ans.: All cases ☐ some cases ☐ no cases ☐ Not Aware ☐

(See Box 5).

Box 5

Quality Assurance Schemes participated in by current Suppliers

	Yes	No	Required
EN45011/ 12	☐	☐	☐
ISO 14001	☐	☐	☐
ISO 9001-2000	☐	☐	☐
Other --Please specify: --Other--	☐	☐	☐

Q6: **How do local producers rate in overall total supply of food products and services, approximately?**

Ans.: 0-25% ☐ 25-50% ☐ 50-75% ☐ 75-100% ☐

--Are there any policies or procedures to **promote increase of intake from local supply?**

Ans.: Yes ☐ No ☐ Not Aware ☐

If **yes**, please specify, (See Box 6)

Box 6

<u>Policies or procedures in place to increase local supply</u>, Please tick for yes.

Tender more frequently for smaller quantities and have more flexible specifications? ☐

Facilitate the inclusion of smaller suppliers as second and third tier suppliers? ☐

Make sure that potential small suppliers know that contracts are available and how to compete? ☐

Small producers and suppliers can work together to organise a collective response? ☐

Other ☐ Please state --Other--

Q7: Are there any provisions to specify that foodstuffs being purchased carry the Fairtrade Logo?

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **<u>yes</u>**, what products are currently purchased? (Please see Box 7)

Box 7

***<u>Which of the following are purchased?</u>* Please tick.**

When answering, please specify **food product**, **amount purchased per annum** (Kg/ Ltr.), and **amount as % of total for product** e.g. tea bags, 500 Kg, 20% of total tea bags purchased.

Tea ☐ Snacks/ Biscuits ☐

Coffee ☐ Sugar ☐

Fruit ☐ Honey ☐

Other, please specify ☐ --Other--

Q8: Are any other environmental criteria included in the tendering process?

Ans.: Yes ☐ No☐ Not Aware ☐

--If **yes**, Please specify (See Box 8)

Box 8

<u>Other environmental criteria included</u>, Please tick for yes

Minimising waste ☐

Reducing the frequency of individual delivery journeys ☐

Specifying forms of transport with lower environmental impact ☐

Complying with the wide range of environmental aspects of Government policy as well as safety ☐

Training and welfare issues and best practice standards ☐

Other ☐ Please specify --Other--

Q9: Are special dietary requirements considered in the planning and promotion of menus, and the selection of dishes, to ensure that the demands from minority customers for cultural or religious reasons are met?

Ans.: Yes ☐ No☐ Not Aware ☐

–If **yes**, please specify (See Box 9)

Box 9

Provisions for minority dietary requirements. Please tick for yes

Gluten-free ☐	Vegetarian ☐
Lactose-free ☐	Vegan ☐
Low-salt ☐	Hal-Al ☐
Low-fat ☐	Kosher ☐
Nut-free ☐	

Other ☐ Please specify --Other--

Further Comments:

Appendix 4

Environmentally Preferable Purchasing Questionnaire
College Sector: Horticultural Products and Services

This questionnaire is designed to:

- Gather data on targeted product groups from chosen sectors for further examination
- To further investigate product characteristics and usages and determine scope for application of EPP
- Identify areas where EPP tools are already in place
- Measure success or failures and future routes of growth for current initiatives

Q1: **Is there a request made to suppliers, prior to purchase of horticultural products, to state any environmentally preferable production methods used?**
E.g. *Water-based formulations, Non-use of corrosive or toxic chemicals, natural production methods*?

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, can you supply information on amounts and usages?

Ans.: Yes ☐ (Please see Box 1) No ☐

--Are these types of products specifically requested in tenders or other purchasing decisions?

Ans.: Yes ☐ No ☐ Not Aware ☐

Box 1

When answering please specify **product**, **amount purchased per annum** (Kg/ Ltr.), and **amount as % of total for product**.

Q2: **What forms of herbicidal and/ or pesticidal control methods are used for park maintenance?**

--Please see Box 2

Box 2

What products are purchased from the categories below? ***Please tick***

When answering please specify **product**, **category**, **amount purchased per annum** (Kg/ Ltr.), and amount as **% of total for product type** e.g. herbicide, non-bioaccumulating, 40 Ltr., 20% of total herbicide purchased.

Environmentally persistent or bioaccumulating products ☐

Non-residual or biodegradable products ☐

Water based products ☐

Scorching ☐

Other, please specify ☐ --Other--

Q3: **Is there a provision that products containing harmful substances be identified prior to purchase?**

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **no**, are there any specific examples whereby less harmful or non-harmful products are given preference over harmful products? (See Box 3)

Box 3

Which less or non-harmful products if any, are given preference over harmful products?

Q4: **Are peat-based products currently in use as soil improvers?**

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, please specify (Please see Box 4-a)

--If no, what information exists on the use of alternative products? (Please see Box 4-b)

Box 4

a) Please state **amounts used per annum** (Kg), **% of total soil improvers used per annum,** and **any other information on usages.**

b) **Alternative soil improving products used,** including **amounts used per annum (Kg).**

Q5: Are artificial fertilizers used as plant growth promoters?

Ans.: Yes ☐ No☐ Not Aware ☐

--If **yes**, please specify (Please see Box 5-a)

--If **no**, what alternatives are used, if any (Please see Box 5-b)?

Box 5

a) **Artificial fertilizers** used including **amounts per annum** (Kg/Ltr.) **% of growth promoters used per annum,** and **any other information on usages.**
b) **What alternative growth promoters are used** including **amounts per annum** (Kg/Ltr.)?

Q6: **Is there a provision that ecologically sound management schemes be implemented, developed or incorporated into current practices?**

Ans.: Yes ☐ No☐ Not Aware ☐

--If yes, please specify (See Box 6)

Box 6

Please tick boxes below as appropriate, and state actions taken under respective headings.

Efficient Watering Systems ☐

Encouragement of native flora/ fauna ☐

Restriction or mowing of informal areas during sensitive periods ☐

Environmentally friendly Pruning ☐

Other
--Please specify: --Other--

Q7: Are there any provisions at purchasing level for horticultural products to be purchased in containers that are reusable (refillable) or returnable?

Ans.: Yes ☐ No ☐ Not Aware ☐

--If yes, please specify (See Box 7)

Box 7

Provisions for reusable/ returnable containers

Q8: Are any of your suppliers participating in any of the following Quality Assurance schemes (See Box 8)?

Box 8

Current Suppliers participating in Quality Assurance Schemes

Required	Yes		No
ISO 14001	☐	☐	☐
ISO 9001-2000	☐	☐	☐
Other --Please specify: --Other--	☐	☐	☐

--Is this information requested prior to making purchasing decisions?

Ans.: All cases ☐ some cases ☐ no cases ☐ Not Aware ☐

Q9: **Are you aware of the EU Eco-label and comparable schemes for identifying environmentally preferable products and services?**

Ans.: Yes ☐ No ☐ Partially aware ☐

If **yes**, please specify, (See Box 9)

Box 9

Whish of the following eco-labels are you familiar with, Please tick for yes.

EU Eco-label ☐

Mobius Loop ☐

Other ☐ Please specify

Q10: **Are you aware of any horticultural products, which are currently purchased or used that carry an eco-label?**

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, what products are these items? (Please see Box 10)

Box 10

When answering please specify **product**, **amount purchased per annum** (Kg/ Ltr./ unit), and **amount as % of total for product type**.

Q11: Are there any provisions to buy products in bulk packaging?

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, please specify provisions, and specify products purchased (See Box 11)

Box 11

Bulk packaged items--

Q12: How is green waste disposed/ re-used/ recycled/ treated?

--Please give details (See Box 12)

Box 12

Waste Treated e.g. composting ☐

Waste reused e.g. mulch ☐

Waste Recycled ☐

Waste Disposed ☐

Q13: Are any other environmental criteria included in the tendering process?

Ans.: Yes ☐ No ☐ Not Aware ☐

--If **yes**, Please specify (See Box 13)

Box 13

<u>Other environmental criteria included</u>. Please tick for yes and supply details;

Minimising waste ☐

Reducing the frequency of individual delivery journeys ☐

Specifying forms of transport with lower environmental impact ☐

Complying with the wide range of environmental aspects of Government policy as well as safety ☐

Training and welfare issues and best practice standards ☐

Other ☐ Please specify --Other--

Further Comments:

Appendix 5

Energy Consumption Criteria in TCD PC RFT Proposal

Desktop PC Energy Efficiency Criteria

Model Details:

Brand Name	Model	CPU	Speed	RAM (MB)	HD (GB)	Operating System	Power (Watts)	Supply

Peripherals

Power Performance Criteria

Power Mode	Power (Watts)	Wake-up time (seconds)	Maintain n/w connection	Description
Off-mode				Device is off but connected to mains.
Standby-1				Highest power standby state.
Standby-2				Next lower standby state (if any).
Standby-3				Next lower standby state (if any).
Standby-4				Next lower standby state (if any).
On-idle-mode				Power on, logged in with no load.
On-max-mode				Power on, CPU 100%, reading from HD.

Power Management Functionality

Describe all of the device's power buttons and their functionality.

Describe any non-standard software power management functionality?

What is the power management policy (usage guidelines) for this device?

How is this policy communicated to the end user of the device?

Monitor Energy Efficiency Criteria

Model details:

Brand Name	Model	Display Technology	Resolution	Refresh (Hz)	Rate	Power (Watts)	Supply

Power Performance Criteria

Power Mode	Power (Watts)	Wake-up time (seconds)	Description
Off-mode			Device is off but connected to mains.
Standby-1 (Energy Star Sleep mode)			Highest power standby state.
Standby-2			Lower power standby state (if any).
On-mode			Power on.

Power Management Functionality

Describe all of the device's power buttons and their functionality.

What is the power management policy (usage guidelines) for this device?

How is this policy communicated to the end user of the device?

Appendix 6

Environmental Considerations included in Department of the Environment, Heritage and Local Government Request For Tenders for Desktop PCs

(Note: not complete RFT document, source: DEHLG, 2003)

Product

Details should be provided on any environmental accreditation the product has attained. In particular, state

- if any environmental/eco-labels have been awarded for the microcomputer [e.g. EU Eco-Label Scheme, Blue Angel Eco-Label Scheme (or equivalents)];
- if any energy labels have been awarded; and
- the product's energy rating (if any).

Details should also be provided on any special features to reduce the impacts on the environment during usage with particular reference to energy consumption.

Packaging and Packaging Waste

Provide details of the type of packaging used (both cartons and internal packing) with particular reference to the use of recycled and environmentally friendly materials.

Details should also be provided on how it is proposed to comply with the *Waste Management (Packaging) Regulations*, on the recovery, reuse and recycling of packaging waste.

In particular, please state how you aim to dispose of packaging after installation paying particular attention to

- recycling
- reuse
- minimising packaging

OUTLINE REQUIREMENT

D. 12 Tenderers must provide a collection service for all packaging waste. In addition, the safe removal and disposal of end-of-life systems must be provided for.

Microcomputer Specification

CRT Monitor		Details
State monitor screen size and type.		
State monitor viewable area.		
State monitor refresh rates (Hz)	at 800 x 600	
	at 1024 x 768	
State dot pitch		
State phosphor		
State power consumption of monitor	In use	
	On standby	
Does the monitor support 'flicker-free' non-interlaced graphics resolutions of 800x600 and 1024x768 operating at a minimum 85Hz refresh rate?		YES/NO
Does the specification supplied confirm monitor compliance with EC Council Directive 90/270 [please see Appendix B for Details]?		YES/NO
Does the monitor comply with anti-glare requirements?		YES/NO
Is there automatic power-down of monitor after period of inactivity?		YES/NO

LCD Monitor (if offered)		Details
State LCD type		
State nominal size.		
State viewable area.		
State viewing angles (vertical and horizontal)		
State native resolution		
State power consumption of screen	In use	
	On standby	
State interface type (analogue / digital)		
State colour depth (eg 8bit, 24bit etc)		
State pixel refresh response time		
Does the specification supplied confirm monitor compliance with EC Council Directive 90/270 [please see Appendix B for Details]?		YES/NO
Does the monitor comply with anti-glare requirements?		YES/NO
Is there automatic power-down of monitor after period of inactivity?		YES/NO
Provide details of stand or mounting arrangement		

Appendix 7

Overview of Eco-Labels

Introduction

Eco-labelling is a voluntary system, designed so that companies can obtain environmental performance certification for their products. Eco-labels are designed to provide purchasers with information in relation to the environmental performance of products.

They can be used specified in RFT (requests for tenders) as long as the words "or equivalent" are included to satisfy legislative requirements. Therefore they have the ability to stimulate demand for environmentally superior or innovative products.

Eco-labels exist for a number of product categories including general purpose cleaners, food, light-bulbs PCs and paper.

Types of Eco-labels

Some eco-labels are based on a single attribute focus and others are based on Life Cycle Assessments (LCAs) that take account of a number of criteria. The International Standards Organisation categorises three general types of eco-labels as follows:

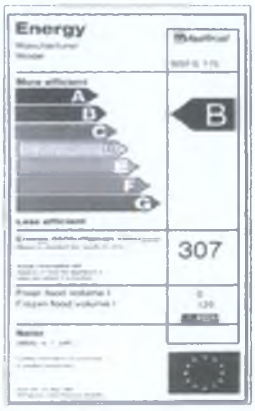
Eco-Label	*Characteristic*	*Explanation*	*Example*
Type I (ISO 4024)	Stamp of Approval	Awarded for fulfilling a set criteria	EU Eco-label
Type II (ISO14021)	Self Declaration	Self declared criteria	Mobius Loop
Type III (ISO/TR14025)	Report card	Quantified product data based of Life cycle assessments (LCA)	Volvos product profile for S8 car

Generally the most **significant aspects** are covered by eco-labels to ensure the **greatest environmental benefit**.

It is important to distinguish between **misleading claims** from manufacturers and **properly certified eco-label schemes**.

Examples of Eco-labels

EU Energy Efficiency label



Rates appliances from A (most efficient) to G (least efficient). Must by law be shown on a selection of domestic appliances including fridges,

EU Eco-label

Designed to create a dedicated EU label. Criteria are set based on life cycle considerations. Now part of

Mobius Loop

Product is recyclable or made form recycled material- see p.106 of dissertation for a fuller explanation.

USEPA Energy Star

US Energy Efficiency eco-label for electrical appliances. Originally designed for PCs and monitors.

Forestry Stewardship Council Mark

FSC

This label indicates that wood comes from well-managed forests according to environmental, social and economic standards.

Soil Association Organic Standard

Indicates that products are organically produced and certified according to a strict set of criteria.

Appendix 8

Websites accessed in relation to EPP

Procura+ Sustainable procurement campaign
http://www.iclei.org/europe/ecoprocura/info/links.htm

Purchasing for Sustainability- Guidance for HE Institutions
http://www.scop.ac.uk/downloads/purchasing.pdf

The Association for Purchasing and Supply- Creating a Green Buying Programme
http://www.irishpurchasing.com/members/Greenbuying.htm

Selected Green Purchasing Resources
http://www.worldwatch.org/press/news/2003/07/25/

RELIEF Sustainable Procurement Project
http://www.iclei.org/ecoprocura/survey/downloads.htm

USEPA Environmentally Preferable Purchasing Guides
http://www.epa.gov/oppt/epp/documents/pfs.htm#

UK Sustainable Development- Procurement
http://www.sustainable-development.gov.uk/sdig/improving/contextf.htm

International Eco-labels
http://www.eco-labels.org/labelIndex.cfm

European Union Eco-label Homepage
http://europa.eu.int/comm/environment/ecolabel/index_en.htm

Global Eco-labelling Network
http://www.gen.gr.jp/

EC Guideline on environmentally friendly procurement
http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0274en01.pdf

Glossary of Terms

An Bord Bia "Féile Bia" Scheme:
A voluntary "farm-to-fork" quality assurance scheme for restaurants. IRCA (International Register of Certified Auditors) has listed the Bord Bia Schemes as being an acceptable alternative to BS EN ISO 9001 and 9002 for auditor registration purposes.

Bioaccumulation:
To bioaccumulate literally means to accumulate in a biological system. However, it is commonly taken to measure the uptake over time of toxic substances that can stay in a biological system.

EC Rules:
Used to refer to the Public Procurement Directives, the EC Treaty and relevant case law together.

Environmental Criteria:
Set of technical and objective requirements aimed at incorporating environmental concerns in the procurement process. These criteria can be part of the tendering specifications, the selection criteria, the award criteria or the contract clauses.

Environmentally Preferable products or services:
Refers to products or services that have a lesser or reduced effect on human health and the environment when compared with competing products or services that serve the same purpose.

Fairtrade Labelling Organisations International (FLO):
FLO is the umbrella body for 17 national initiatives, providing greater international cooperation and common Fairtrade standards across the globe.

Genetically Modified Organisms (GMO):
Any biological entity capable of replication or of transferring genetic material, in which the genetic material has been altered in a way that does not occur naturally by mating and/or natural recombination.

Integrated Product Policy:
Integrated Product Policy is an approach which seeks to reduce the life cycle environmental impacts of products from mining of raw materials to production, distribution, use, and waste management

Irish Institute of Purchasing & Materials Management (IIPMM):
The IIPMM is the professional association for purchasing and supply executives in the Republic of Ireland. The Institute's aim is to promote excellence in all aspects of purchasing and supply chain management.

Sustainable Development:
Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their needs.

Thresholds:
The EC Public Procurement Directives apply to contracts above certain thresholds.

Value For Money:
Optimum combination of whole-life cost and quality to meet user's requirement.

Volatile Organic Compounds:
Volatile organic compounds are compounds that have a high vapour pressure and low water solubility. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, pharmaceuticals, and refrigerants. VOCs are common ground-water contaminants.

Whole Life Cost:
The full cost to an organisation of a solution to a requirement over the full period that the requirement will exist. Whole life cost will take into account running costs such as energy usage, maintenance requirements, staff training needs, and disposal costs such as recycling, as well as the initial purchase price. The life span of the product will also need to be considered.