BEST PRACTICE IN UNIVERSITY
ENVIRONMENTAL MANAGEMENT

by

Gareth Simkins

Thesis presented in part-fulfilment of the degree of Master of Science in accordance with the regulations of
the University of East Anglia

School of Environmental Sciences
University of East Anglia
University Plain
Norwich
NR4 7TJ

© 2003 Gareth Simkins
This copy of the dissertation is supplied on the condition that anyone who consults it is understood to recognise
that its copyright rests with the author and that no quotation from the dissertation, nor any information derived
therefrom, may be published without the author’s prior written consent. Moreover, it is supplied on the
understanding that it represents an internal University document and that neither the University nor the author are
responsible for the factual or interpretive correctness of the dissertation.
Abstract

This dissertation discusses the motivations of, and barriers to, the creation and maintenance of environmental management systems in the higher education sector, coupled with an analysis of best practice in their structure, deployment and operation. ISO 14001, EMAS and EcoCampus are evaluated according to their suitability for universities and broad recommendations for the adoption of environmental management systems in higher education are presented.

Information is derived from an extensive literature review and original research, from interviews with environmental management personnel at British universities with a leading environmental reputation, conducted by the author in the summer of 2003.
“There’s not anywhere quite like a university”

Martin Whiteland, University of Cambridge Environment Officer, 30.06.03
# Contents

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>1.0</td>
<td>Acknowledgements</td>
</tr>
<tr>
<td>7</td>
<td>2.0</td>
<td>Contact Details</td>
</tr>
<tr>
<td>8</td>
<td>3.0</td>
<td>Terminology</td>
</tr>
<tr>
<td>9</td>
<td>4.0</td>
<td>Introduction</td>
</tr>
<tr>
<td>10</td>
<td>4.1</td>
<td>The background of university environmental management</td>
</tr>
<tr>
<td>12</td>
<td>4.2</td>
<td>A brief history of environmental activities in British universities</td>
</tr>
<tr>
<td>12</td>
<td>4.3</td>
<td>Dissertation Aims</td>
</tr>
<tr>
<td>13</td>
<td>5.0</td>
<td>Literature Review</td>
</tr>
<tr>
<td>13</td>
<td>5.1</td>
<td>Motivations and arguments for EMS implementation in universities</td>
</tr>
<tr>
<td>14</td>
<td>5.2</td>
<td>Barriers to EMS implementation in universities</td>
</tr>
<tr>
<td>19</td>
<td>5.3</td>
<td>Policy, objectives and targets</td>
</tr>
<tr>
<td>20</td>
<td>5.4</td>
<td>Deployment of EMSs and initial environmental reviews</td>
</tr>
<tr>
<td>22</td>
<td>5.5</td>
<td>Operations</td>
</tr>
<tr>
<td>23</td>
<td>5.6</td>
<td>Education, research and student involvement</td>
</tr>
<tr>
<td>25</td>
<td>5.7</td>
<td>Personnel and training</td>
</tr>
<tr>
<td>27</td>
<td>5.8</td>
<td>Indicators and monitoring</td>
</tr>
<tr>
<td>28</td>
<td>5.9</td>
<td>Auditing and the EMS review</td>
</tr>
<tr>
<td>29</td>
<td>5.10</td>
<td>Communication and reporting</td>
</tr>
<tr>
<td>31</td>
<td>6.0</td>
<td>Methodology</td>
</tr>
<tr>
<td>31</td>
<td>6.1</td>
<td>University selection</td>
</tr>
<tr>
<td>32</td>
<td>6.2</td>
<td>Questions</td>
</tr>
<tr>
<td>34</td>
<td>6.3</td>
<td>Research technique appraisal</td>
</tr>
<tr>
<td>36</td>
<td>7.0</td>
<td>Results and Discussion</td>
</tr>
<tr>
<td>36</td>
<td>7.1</td>
<td>Background</td>
</tr>
<tr>
<td>37</td>
<td>7.2</td>
<td>Motivations for and barriers to implementing an EMS</td>
</tr>
<tr>
<td>39</td>
<td>7.3</td>
<td>Environmental policy</td>
</tr>
<tr>
<td>41</td>
<td>7.4</td>
<td>Objectives and targets</td>
</tr>
</tbody>
</table>

*Including: Times' Guide Position vs. University Attitude to EMS Standards*
42  7.5  Initial environmental reviews
43  7.6  EMS deployment
45  7.7  Operations
46  7.8  Environmental purchasing
47  7.9  Information technology
48  7.10 Indicators and monitoring
48  7.11 Personnel
51  7.12 Training
51  7.13 Personal and institutional commitment and student and staff attitudes
53  7.14 Committee structure, lines of responsibility and consultation
57  7.15 Education, student involvement and research
58  7.16 Communication and reporting
58  7.17 Lessons learned
58  7.18 Integration of education into an EMS
59  7.19 Does a university need an EMS to have good environmental management?
60  7.20 Mandatory EMSs and government support
60  7.21 Which EMS standard should a university adopt?
63  8.0 Conclusions
64  9.0 References
68  10.0 Appendix: Best practice in environmental policy
1.0 Acknowledgements

The author would like to thank his adviser, Dick Cobb, his project supervisor, Jon Gurr, his course director, Elaine Colk and the following people who kindly consented to be interviewed for this dissertation:

- Peter Downey, Community and Sustainability Strategy Manager, Sheffield Hallam University.
- Amanda Tolson, Sustainability Co-ordinator, Sheffield Hallam University.
- Michael Goodyear, Health, Safety and Environment Team Leader, University of Sunderland.
- Martin Whiteland, Environment Officer, University of Cambridge.
- Joanna Simpson, Assistant Energy and Environment Manager, University of Bristol.
- Nicola Corrigan, Environmental Advisor, University of Hertfordshire.
- Michael Bateman, Portsmouth, Environmental Champion and Pro-vice-chancellor.
- Peter Redfern, Senior Lecturer, Nottingham Trent University and EcoCampus reviewer.
- Mark Warner, Environmental Projects Manager, Leeds Metropolitan University.
- Simon Gerrard, Secretary to Environmental Working Group, University of East Anglia.
- Gary Tideswell, Director of Health, Safety and Environment, University of York.
- Andy Nolan, Energy & Environment Team Leader, University of Sheffield and the Convenor of the Environmental Association of Universities and Colleges.

The author would also like to thank Lucy Pearce and Ian Davis of People and Planet for their assistance, and would like to wish them well in their campaign for universities to implement environmental management systems.
2.0 Contact details

The author welcomes any inquiry into this dissertation or his opinions in the field of university environmental management and may be contacted in the following ways:

E-mail: garethsimkins@yahoo.co.uk

Permanent post address: 18 Riding Hill, Sanderstead, South Croydon, Surrey, CR2 9LN

Mobile telephone: 07732 122342
### 3.0 Terminology

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAUC</td>
<td>Environmental Association for Universities and Colleges</td>
</tr>
<tr>
<td>EMAS</td>
<td>Eco-management and Audit Scheme</td>
</tr>
<tr>
<td>EMS</td>
<td>Environmental Management System</td>
</tr>
<tr>
<td>HE21</td>
<td>Higher Education for the 21st Century</td>
</tr>
<tr>
<td>HEEPI</td>
<td>Higher Education Environmental Performance Indicators</td>
</tr>
<tr>
<td>HEPS</td>
<td>Higher Education Partnership for Sustainability</td>
</tr>
<tr>
<td>HEFCE</td>
<td>Higher Education Funding Council for England</td>
</tr>
<tr>
<td>IER</td>
<td>Initial Environmental Review</td>
</tr>
<tr>
<td>ISO 14001</td>
<td>The Environmental Management System standard of the International Organisation for Standardisation</td>
</tr>
<tr>
<td>SHE</td>
<td>Safety, Health and Environment</td>
</tr>
<tr>
<td>UEA</td>
<td>University of East Anglia</td>
</tr>
</tbody>
</table>
4.0 Introduction

4.1 The background of university environmental management

Over the past decade, there has been considerable growth in interest and action regarding environmental performance in the higher education sector worldwide, as evidenced by the number of associated declarations, reports, initiatives and collaborative groups. Since 2000, there has even been an academic journal dedicated to the subject.

Universities are major components of communities, are substantial businesses, consume considerable amounts of resources and produce significant amounts of waste. As educators, they have a duty to lead by example. They therefore have a responsibility towards improving their environmental performance. By seeking to do so and in particular by adopting an environmental management system (EMS), a university may be expected to reduce expenditure, ensure regulatory compliance, attract greater research income, be viewed as an environmentally responsible member of the community and attract students.

An environmental management system is the system by which an organisation “controls the activities, products and processes that cause, or could cause, environmental impacts and in doing so minimises the environmental impacts of its operations” (Roberts and Robinson, 1998). Originating from the industrial sector, as a response to the growth of environmental regulations, they have spread into governmental, charitable and service sectors, among others.

EMSs often focus on environmental impacts caused directly by an organisation’s impacts, such as waste production or energy consumption, but perhaps a university’s most significant environmental aspect is the quality of the education it gives to students, which has an indirect impact. As universities train and inform decision makers and leaders, who will be responsible for environmental protection in the future, they surely have a duty to engender a sense of environmental responsibility in their graduates.
This is supported by Chapters 35 and 36 of Agenda 21, the document signed at the United Nations Conference on Sustainable Development\(^2\) held in Rio de Janeiro in 1992 which encourages education and research for sustainability. The charter also promotes the concept of local action.

Universities have signed a number of declarations themselves, notably the Talloires Declaration\(^3\) and the later Copernicus Charter\(^4\), which seek to promote an awareness of sustainability, responsible citizenship and to improve the environmental performance of campuses. Neither document refers to environmental management systems, which is perhaps to be expected as when they were written (the early 1990s) EMSs were generally restricted to the industrial sector. However, they mention a number of activities which can best be managed through the use of EMSs, such as auditing, providing further evidence that universities should adopt them.

One may therefore conclude that from the aforementioned factors that a university should adopt and maintain an EMS.

4.2  A brief history of environmental activities in British universities

Despite the promotion of environmental action by initiatives such as the Higher Education Environmental Performance Improvement scheme\(^5\), the EcoCampus environmental management system and awards scheme\(^6\) and the Environmental Association for Universities and Colleges\(^7\), the response of universities to environmental performance issues, and environmental management systems, has been mixed. Several have become acknowledged sectoral leaders, by developing effective systems and extensive environmental programmes, whereas others have yet to make significant progress or commit to improve their environmental performance.

\(^{1}\) The International Journal of Sustainability in Higher Education \nkonstanza.emeraldinsight.com/vl=10350769/cl=37/nw=1/rpsvljshe.htm accessed 01.07.03
\(^{2}\) Agenda 21 www.un.org/esa/sustdev/documents/agenda21/english/agenda21toc.htm accessed 03.06.03
\(^{3}\) Talloires Declaration www.ulsf.org/programs_talloires.html accessed 26.07.03
\(^{4}\) Copernicus Charter www.unesco.org/iau/fre/fsfd_copernicus.html accessed 26.07.03
\(^{5}\) Higher Education Environmental Performance Improvement www.heepi.org.uk/ accessed 26.07.03
\(^{6}\) EcoCampus Manual (old version) www.port.ac.uk/departments/env_link/ecocamp/eco-hand.pdf accessed 03.07.03
\(^{7}\) Environmental Association for Universities and Colleges www.eauc.org.uk accessed 13.07.03
The University of Cambridge was the first British university to start a process of environmental impact reduction (although one may assume their primary aim was to reduce expense) by appointing a member of staff to reduce energy consumption in 1971 (Dicks, 2001). However, its example was not followed in the following decades, a situation which lead to the publication of “Environmental Responsibility: An Agenda for Further and Higher Education” or “Toyne Report” (Toyne, 1993) It still remains the most important initiator of environmental performance improvement in the UK higher education sector. It recommended that universities:

“should adopt and implement a comprehensive environmental policy statement, together with an action plan for its implementation... supported by a management system which is properly integrated with the institution’s overall systems of governance and management.”

Toyne (1993) p 91

by the academic year 1994/1995.

Many universities actively responded to the paper by such actions as undertaking environmental audits, altering their operational practices and developing environmental policies. However, a subsequent review (Khan, 1996) revealed that disappointingly little progress had been made. This was perhaps due to the somewhat weak nature of the concluding recommendations of the Toyne Report, phrased as suggestions rather than requirements (Dicks, 2001).

The review made a “key recommendation” that:

“Within three years all the FHE [Further and Higher Education] Institutions should be either accredited to, or committed to becoming accredited to, a nationally or internationally recognised environmental management standard, such as the Eco Management and Audit Scheme”

Khan (1996) p 12

Despite such recommendations, environmental management remains primitive in the majority of universities. Only one university in the UK, Glamorgan, is currently
certified to ISO 14001 and none verified to EMAS, although, as will be revealed, there are certain developments in this arena.

4.3 Dissertations aims
This dissertation aims to investigate and evaluate best practice in and attitudes to university environmental management and to develop recommendations for the sector.

This dissertation therefore comprises of:

- A review of the literature concerning EMSs in universities;
- A literature review, concerning the structure, operation and deployment of university EMSs, together with an analysis of motivations for and barriers to their implementation;
- An investigation of environmental management in British universities and a comparison to the literature;
- Recommendations for ways in which the adoption of EMSs may be facilitated and encouraged across the sector.
- An evaluation of the appropriateness of the use of ISO 14001, EMAS and EcoCampus EMS standards in the sector.
- Final conclusions.
5.0 Literature Review

5.1 Motivations and arguments for EMS implementation in universities

A number of papers offer explanations of the motivations for seeking to implement an environmental management system in a university. Noeke (2002), describing the integrated management system an industrial division of the University of Paderborn, Germany, mentions the following benefits of a certified environmental management system:

- Better regulation of responsibilities and competencies;
- Reduced risk of legal penalties;
- A better relationship with the authorities;
- A positive image (so attracting students);
- Cost reduction;
- Improved personnel motivation;
- Delegation of tasks from professors, so that they may concentrate on research and teaching;
- Student education in management systems;
- Increased business.

Creighton (1996, p.6) reinforces Noeke’s fourth assertion by offering evidence that a strong environmental reputation attracts students. HE21 (Higher Education for the 21st Century) (1998) agrees with his fifth and last assertions, noting that the implementation of an EMS may be a prerequisite to attract industrial research contracts and can reduce insurance costs.

The main motivations for Valencia Polytechnic University in Spain (Peris Mora, 2002) to implement an EMAS-verified EMS were:

- The need to respond to a change in hazardous waste regulation;
- That an EMS is part of a university’s corporate social responsibility;
- That an EMS provides evidence of a university’s calibre.
Von Oelreich (2002) adds:

- Legitimisation of environmental efforts to internal and external audiences;
- Provision of mechanisms for the communication of environmental efforts;
- The encouragement of departmental collaboration;
- Investment to create future monetary savings.
- Swedish political developments, encouraging the development of EMSs.
- Need for a structured system to assure that students received education on sustainable development;
- To act as a role model for other Swedish universities.

Gerrard (2003) presents these motivations:

- The suspicion that the government may require universities to operate EMSs in the near future and it being wise to do so before it is compulsory.
- That an EMS may assist in fulfilling existing environmental commitments (namely the Community Carbon Reduction Project)\(^8\).

That the government will require universities have an EMS appears to be more than a suspicion. A Department of Education and Skills paper\(^9\) proposes this, and it is discussed in a responding paper\(^10\) by the EAUC, although whether it will happen will be seen in time.

### 5.2 Barriers to EMS implementation in universities

Universities are rather unlike industry in the relationship between their products and their impacts. In industry, there is generally a direct and visible association between the number of widgets produced and the amount of widget effluent released, or suchlike. The products of a university, principally educated students and research, are intangible and unquantifiable and have an unclear relationship with environmental impacts. Therefore operations managers are “less closely linked to the core functions of the organization as they would be in an industry” (Barnes and Jerman, 2002) which

---

\(^8\) Community Carbon Reduction Project www.cred-uk.org/ accessed 04.08.03
\(^9\) Sustainable Development in Education and Skills: emerging thinking on an action plan for England www.dfes.gov.uk/sd/action.shtml accessed 05.08.03
\(^10\) A Response to the Department of Education and Skills “Sustainable Development in Education and Skills: emerging thinking on an action plan for England” Englawww.eauc.org.uk/documents/consultations/dfes0703.pdf accessed 05.08.03
contributes to the internal divisions discussed in Sharp (2002) and resistance to institutional change, despite being hotbeds of new thought (Peris-Mora, 2002). As an example of resistance to change, one need look no further than the ancient customs of Oxford and Cambridge universities.

There are, however, clear links between education and operations,

“since universities…have to be examples of good practices to students…”

de Keizer (2002)

Sharp (2002), in a remarkable, if perhaps somewhat cynical paper, uses psycho-social analysis to explain resistance to systemic transformation and “rational behaviour.” He contends that, as universities are the major bodies of knowledge in our society, that they consider themselves as supremely rational. This is a barrier as it:

“propagates the assumption that universities have attained the highest possible levels of functionality and whatever is lacking must be accepted as an inevitable limitation of the system. The myth prevents institutional analysis and reform as a response to dysfunction since the political payoff for accepting dysfunction is much greater than the payoff from dealing with root causes.”

Sharp (2002)

He asserts that universities do not have a “single observation point or any single control centre” from which to implement changes. This is complicated by “numerous subcultures of decision-making styles, time constraints, priorities” and differences between departments and stakeholders. On top of these factors, universities are generally:

“...plagued with goal ambiguity and conflict, with poorly understood problems that wander in and out of the system, with variable environment and decision-makers with other things on their minds”

(Cohen and March, 1989, in Sharp, 2002)

While the author would concur with much of this, his assertion that there is no “single
control centre” in universities is simply false. Universities have ‘top-management’
like most other organisations, senior decision making committees and long-term plans
produced by them that apply to the university as a whole. Indeed, if support from
senior university management is lost, staff conflicts can arise, communication is
reduced and the EMS in general is given lower priority, with a concomitant decrease
in its successes (Starik et al., 2002).

There is, however, considerably more distribution of decision-making capability in
higher education than is generally the case in business (Sharp, 2002). This may make
responsibility for the environment unclear and diluted. The traditional approach to
EMS implementation, whereby senior management make the decision to implement
and staff carry it out, will therefore not work well due to this “lack of command and
control” (Barnes and Jerman, 2002). There is therefore a need for considerable
consultation and communication with stakeholders to ensure support before
implementation.

Sharp (2002) discusses the three subcultures, namely faculty (academics),
administration and students (von Oelreich (2002) adds operations managers) present
in universities and the tensions between them “as a result of the delegation of and
struggle for power”.

Students, having few resources, a limited understanding of university management
and little decision-making power, have a tendency to concentrate on particular issues
in the short-term. This is exacerbated by having “no effective means of ensuring a
continuum of organizational learning between multiple student generations.”

Sharp further states that faculty tend to regard operational matters as purely the
business of administration, and hence a distraction. With a perhaps limited
understanding of operational issues, senior academic staff, who maintain ultimate
control, can alienate administration.

Administrative staff have no direct role in the fundamental mission of the institution,
so may therefore be viewed as “an expendable resource.” They are also “wary of the
power of faculty and students to not only block initiatives but to embarrass and isolate
administrative staff.”

Von Oelreich (2002) discusses how these “subcultures” within a university consider environment goals: operations managers emphasise regulatory compliance, administrators cost reduction, faculty are concerned with ensuring students have the required skills for industry and students may be expected to have a purely environmentalist perspective. Barnes and Jerman (2002) describe similar behaviours.

Oddly, no paper mentions non-managerial staff, such as groundsmen or cleaners, as a subculture. Such staff would be on what might be termed the front lines of an EMS, so must be considered and consulted.

While members of the university would surely be more interested in what concerns them directly than indirectly, the attitudes of de Keizer (2002) (who recommends that the environmental roles of stakeholder groups should be considered separately), von Oelreich (2002) and Sharp (2002) strike the author as narrow. For example, why should a member of teaching staff not be interested in how any chemical effluents they create are disposed? Furthermore, the approach of de Keizer (2002) may hinder an interdisciplinary culture and fruitful cross-pollination of ideas across the university as a whole; for example, managers may seek ideas from teaching staff, and may wish to collaborate with students for information gathering purposes.

Many universities are in a phase of growth, leading to considerable resource consumption and waste production (Sharp, 2002). This may distract from the consideration of environmental performance. Such growth can encourage management reorganisation, which can seriously disrupt initiatives (van Weenen, 2000, p. 25).

Barnes and Jerman (2002) discuss further obstacles, namely:

- The turnover of personnel (both staff and students) is greater than in industry, so valuable knowledge may disappear;
- The perception that auditing (and hence EMS) is too difficult to be worth doing;
- Difficulty in quantifying and comparing audit results.
- That, in the consortium approach that they advocate, the number of disciplines,
number of people and distance between institutions are the greatest obstacles as they may inhibit vital communication.

Viebahn (2002) points out that an “unconducive financial system” that discourages the efficient use of resources is common in universities. For example, unlinked development and utilities budgets may encourage the construction of cheaper buildings that will be costly to run, so increasing financial and environmental costs in the long term.

Von Oelreich (2002) adds:
- Long-term management support and will is required;
- The support of external authorities and political administration is important;
- Implementation takes time, but must not loose momentum;
- Clear organisation and timetabling is needed;
- Changing stakeholders’ attitudes to the environment requires substantial effort.

Dahle and Neumeyer (2001) identify these obstacles to campus greening:
- Misconceptions of the meaning of sustainable development;
- Lack of interest among staff and students;
- The costs of initiatives (supported by Barnes and Jerman, 2002);
- Lack of environmental knowledge, expertise and tradition;
- Long pay-back periods for environmental initiatives;
- Lack of information;
- Lack of incentives.

They state that urban universities face a barrier in the form of their location – their facilities tend not to be used for recreation to the extent of campus universities, so generating less of a sense of attachment, and hence responsibility, to the university by students. However, it can be similarly difficult to generate a feeling of attachment to a widely spread campus institution (Starik, et al., 2002).

Finally, universities often generate small but highly variable amounts of chemical waste, the nature of which makes any impacts difficult to manage and mitigate (Peris-Mora, 2002).
5.3 Policy, objectives and targets

According to HE21 (1998), more than fifty British universities, at that time, had environmental or sustainability policies but predominantly without any initial review to inform them, a matter discussed in the subsequent section.

A university environmental policy may emphasise “operational” aspects, such as energy consumption and waste production, or its role as an educator, trainer and influencer of future decision makers, this being the case at both Mälarden University (von Oelreich, 2002) and in the Sustainable Universities Initiative (Barnes and Jerman, 2002). These universities seek to integrate the concept of sustainable development into the curriculum, and in so doing influence their students to make more sustainable choices in their future careers. Therefore, education for sustainability (Jucker, 2002) should be accepted as an environmental aspect in a university EMS, despite it being a ‘positive’ impact, alongside more traditional ‘negative’ impacts such as waste.

A best practice guide in university environmental policy is presented in the appendix.

Barnes and Jerman (2002) and Viebahn (2002) both discuss the setting of objectives and targets, and recommend that they should be set by reference to:

- Policy;
- Legal and regulatory requirements;
- The results of the initial environmental review;
- Relevance to society;
- The concept of continual improvement;
- The relevant aspect’s frequency and severity;
- The potential influence of the university on the aspects (the control being performed, versus that which could be exerted);
- They should apply to all university members;
- All university members should be consulted on their development, ensuring “ownership”, appropriateness, and achievability;
- Suppliers, funders and the local community should also be consulted;
- They should be approved by top management;
- They should be modified after each audit.

### 5.4 Deployment of EMSs and initial environmental reviews

An EMS may be introduced to a university in a number of ways. One way is to establish an operational EMS in a discrete division of a university. The integrated management system for a departmental division, as described by Noeke (2002) was so successful that the university as a whole decided to implement an EMS that was later certified to ISO 14001 and EMAS.

The South Carolina Sustainable Universities Initiative (SC-SUI) (Barnes and Jerman, 2002) uses a similar, but deliberate, methodology of establishing an EMS in particular sections before applying it to a whole university. The University of Carolina (one of the initiative’s members) had initially intended, before the creation of the SC-SUI, to implement an EMS across the whole campus, but this failed due to doubts and funding constraints. One may, therefore, conclude that the deployment of an EMS in one particular section of a university is a wise decision: it would demonstrate the usefulness of EMS to all university members, act as a pilot and cost less initially. It would therefore be more likely to be agreed to by sceptical senior management.

The initiative attempted to gain the support and involvement of all stakeholder groups within the institutions and build on existing environmental programmes. A five-year plan for a staged implementation of an EMS based on ISO 14001 was built upon these.

Brown university (Starik, et al., 2002) similarly sought to involve all stakeholders, the deployment process starting with student research projects and the appointment of a committee. They note the need for a “visible and friendly” centre of operations so that stakeholders are encouraged to make contact and participate in programmes or at least keep them in mind.

Viebahn (2002), of Osnabrück University, Germany, recommends a staged approach to EMS implementation in a manner akin to Barnes and Jerman (2002). The “Osnabrück Environmental Management Model for Universities” is designed to be
compatible with EMAS but the adoption of the standard is not required. It is divided into ten ‘building blocks’, numbered according to the suggested order of their implementation, although this may be changed according to the situation at any other university that may apply the model, and some may be developed simultaneously:

1. “Organisation structure [management hierarchy and responsibilities]
2. Environmental guidelines [policy]
3. External environmental regulations [register of relevant regulatory demands]
4. Environmental audit (life cycle assessment)
5. Environmental goals [targets and objectives]
6. Environmental programme
7. Environmental report
8. Environmental information system
9. Environmental training and courses
10. Staff involvement / public relations work”

The ‘building blocks’ approach was used so that the departments deemed most competent to devise and operate elements of the EMS would be responsible for them. The legal department created block three; block seven was published by the press office; the “administrative data processing department” created block eight; block nine was handled by the personnel department. The intention was to facilitate the integration of the EMS into the existing management structure, the method making the creation of a separate environmental department unnecessary. However, an environmental management co-ordinator is required to act as a “focus point” for the EMS.

Such an approach, one imagines, may decrease potential resistance to an EMS: rather than being imposed on staff from ‘above’, the EMS would be the product of collaboration inside and between departments, so boosting morale.

The University of Osnabrück was the first ever university to use an ISO 14040 (International Organisation for Standardisation, 1997) compliant life cycle analysis, as a methodology for its initial environmental review (IER). One problem with its use is the concept of the functional unit – a way of standardising the amount of inputs and
outputs required for a particular amount of product. Due to the combined educational
and research activities of a university, often coupled with conferences, it is difficult to
see how such a unit could be devised. Viebahn (2002) states that a solution was
found, but does not elaborate upon it. Other problems described in the paper make the
author unable to recommend this approach.

The most significant impacts identified in Viebahn (2002) are predominantly
associated with the atmosphere: greenhouse effect, nitrous oxides emissions, acid
rain, photo-oxidant formation and nuclear power, all of which from the consumption
of electricity and heat.

Von Oelreich (2002) adds impacts through the aspects of education and research,
transport, waste and the use and disposal of hazardous chemicals, among others.

The previously described initial environmental reviews used ‘in-house’ staff rather
than external auditors, with the exception of Barnes and Jerman (2002), in which
auditors from other universities in the SC-SUI are used. HE21 (1998) presents
arguments for and against internal auditing, without making a recommendation. It
states that in-house reviews often ignore indirect impacts, require remission from
normal duties for staff and may be prone to partiality. External consultants are
impartial, but more costly and probably unfamiliar with the eccentricities of higher
education institutions. Their use may, however, enhance the status of the
investigation.

HE21 (1998) is the only paper to consider the importance of finance, in
recommending that universities’ investments be reviewed from an ethical standpoint.

5.5 Operations
A full discussion of university environmental programmes would be inappropriate in
the context of this dissertation, so the author therefore describes the main areas of
activity.

universities tend to focus their activities on energy management, dry waste and hazardous waste, aspects which correspond to the financial resources and time required for their management.

HE21 (1998) recommends that a university should concentrate on environmental literacy, environmental purchasing, ethical investment, resource efficiency, biodiversity and waste minimisation, and integrate suppliers into their EMS.

Other measures are discussed in von Oelriech (2002), Starik et al. (2002), Sharp (2002) and Peris-Mora (2002)

5.6 Education, research and student involvement

Environmental management systems can be valuable tools for student education, and as a tool for environmental improvement. As previously mentioned (section 5.3), universities may use them as tools to integrate sustainability into the curriculum, but they can be used as teaching aids in themselves.

At Mälarden university (von Oelreich, 2002), new students are informed of the university’s environmental efforts, so to encourage them to act in a sympathetic manner. Course supervisors are required to assess the sustainability content of their courses. If this is deemed to be not significant, they must address other aspects of sustainability, such as paper consumption. While this may encourage staff to add sustainability elements to their courses, one wonders if this approach actively discourages staff from dealing with operational issues by adding a few words about sustainability to their courses.

Barnes and Jerman (2002) provide considerably more detail and describe a more sophisticated process for the integration of environmental concerns into student education by the addition of sustainability elements to existing courses and the development of environmental projects. This is complimented by funding relevant research projects and new courses. There is an energy conservation education programme and opportunities for work-based learning (such as student EMS auditing and EMS assistantship programmes) and internships (van Weenen, 2002) on campus have been increased, the results of which have lead to considerable savings.
The approach of the SC-SUI is clearly an example to universities across the world in terms of student involvement. Students are perhaps a university’s greatest resource: their labour is free or low-cost, they are inquisitive and may hold skills and knowledge\(^{11}\) (and, perhaps most importantly, time) that administrative and operational staff simply does not have.

Another excellent example is provided by International Pacific College in New Zealand (Fisher, 2003) in which students were responsible for much of the IER, which contained recommendations for policy, staffing structure, to seek full ISO 14001 certification and an analysis of course contents.

Ho (2002) describes a competition of designs taken from university stakeholders for campus landscaping, the winning design being an educational trail about renewable energy. This successful initiative involved stakeholder involvement and facilitated teaching, research and community education.

A student resource room with details of student environmental careers, magazines and campus environmental information (in the manner of Starik et al., 2002) is another way to provide informal environmental education, perhaps combined with a “visible and friendly” centre of operations, such as at Brown university (ibid).

Von Oelreich (2002), despite emphasising the role of research (as in PhD or postdoctoral) in a university EMS, provides rather little detail as to how this has been accomplished, other than saying that:

“the University requires that the environmental relevance of the research project be stated in the project specification.”

No other paper discusses the matter.

\(^{11}\) For instance, the facilities management department of the University of York were ignorant of the presence of a considerable colony of pippistrelle bats on the campus, until informed of this by the author, as staff would return home before the bats would emerge in the evening.
Please note that the certified EMS auditor programme of the SC-SUI is discussed in the next section.

5.7 Personnel and training

Every EMS must have one or more personnel responsible for its development, operation and maintenance. In a large organisation, a designated management hierarchy is appropriate.

At Mälaren University, the following management structure operates in relation to environmental management. The university president has overall responsibility for the operation of the ISO 14001-certified EMS, and for continual environmental improvement. Assisting him is an environmental supervisor, who ensures the practical and administrative upkeep of the EMS. Departmental chairs (and the administrative director) are responsible for EMS maintenance in their own divisions, and each department has an environmental co-ordinator to support the chair.

Such a system is a balance between two paradigms set out by Wehrmeyer (1996), namely “centralised” and “decentralised” management. Centralised management is that by a dedicated team or member of staff, whereas in decentralised management many members of staff have responsibility for environmental management and there own particular job roles. Centralised management ensures a clear line of responsibility for environmental matters.

This extensive penetration of environmental management into the personnel structure of Mälaren University reduces the potential disadvantage of centralisation; namely that it may reduce responsibility in other staff and hamper their environmental awareness. A clear hierarchy also prevents the disadvantages of decentralisation, namely confusion over accountability, increased cost of training (as roles may be duplicated), and that communication may be impaired (Wehrmeyer, 1996). Centralisation may also create resistance to change in personnel (as discussed in 4.2) as they may feel more pressurised by orders from “above.”

Viebahn (2002) proposes a radically different approach whereby responsibility for environmental protection is integrated into the existing management structure, rather
than by creating a separate hierarchy as above, or creating an environmental management department. In this way it is intended that staff become more responsible and may use their specialist knowledge to effect change. He does, however, maintain that an environmental manager is vital to co-ordinate work, respond to queries, collect ideas and undertake public relations. Such a manager would also be responsible for developing goals, collecting data and staff training and motivation.

The South Carolina Sustainable Universities Initiative, as described in Barnes and Jerman (2002), uses a considerably more complex management structure, comprising two initiative-wide committees, and for each individual university another committee, an “EMS Implementation Team” and groups of staff and student auditors. Its elaborate (and cumbersome?) nature makes the author sceptical of its success, due to the potential for poor communication between and within the units of the structure.

However personnel are structured, the success of an EMS depends on co-operation between staff and their good will. This depends on their consultation and working with them (Holt and Anthony, 2000) rather than against them.

Viebahn (2002) states that “measures are also required to inform, motivate and involve the staff in order to be able to implement environmental measures as effectively as possible” by:

- involving as many members of staff as possible;
- keeping staff informed through exhibitions, brochures, articles etc. and through voluntary participation in working groups, or environmental clubs;
- establishing a suggestion pool;
- action weeks and days;

All staff should be made aware of environmental policy and their general and specific duties towards the environment.

Such measures, and the operation of the EMS, depend on an effective environmental manager or co-ordinator; HE21 (1998) specifically recommends one. Their other functions include ensuring policy compliance, developing reports, consultation with
external bodies, liaison with quality and health and safety managers, and staff training (HE21, 1998).

The post requires certain characteristics to function well in their jobs. Sharp (2002) identifies these as “a high competency in listening, communication, relationship building, vision development, responsiveness and continuous strategic adaptation” coupled with being able to maintain positive relationships, patience, objectivity and creativity. A co-ordinator should also expect setbacks caused by “inertia, resistance, occasional political backlashing, or territorialism that may be provoked along the way”.

At Mälarden University (von Oelreich, 2002), training is centrally organised and provided for all employees. Special training is given for student representatives, environmental co-ordinators, directors and suppliers. New employees are instructed in the application of the sustainable development policy and directors and departmental environmental co-ordinators are instructed in new regulations every three months.

Perhaps the most innovative element of the SC-SUI’s programme is the certified EMS auditor programme for students and staff. Students can take the course over a semester and gain credit for it. This is due to a flexibility in the American higher education system whereby students have more choice in their studies, a situation that is not generally present, at least to the same extent, in British institutions. This may be a significant obstacle if British universities wish to instigate a similar programme.

5.8 Indicators and monitoring

So that progress may be measured, and continual improvement ensured, a suite of indicators must be developed for any environmental management system. EMSs in universities benefit from standardisation of their indicators. This:

“allows them to compare themselves with others, identify their comparative strengths and weaknesses and learn how to improve.”

de Keizer (2002)
Such an approach provides a “a direct tool to measure progress toward the concept of a ‘sustainable campus’” (Shriberg, 2002). Ideal tools focus on the most significant aspects, are quantitative, assess processes and motivations and can be understood by all stakeholders (Shriberg, 2002).

Standardisation allows the creation of minimum and recommended levels of attainment in specific fields. However, the differences in institutions, such as building age, student number, research activity, size, etc. hinder such approaches. Shriberg (2002), in his analysis of 11 “sustainability assessment tools” for universities questions the sense of developing a universal campus assessment tool, as it is likely to take considerable time to do so, and would probably leave out important contextual information. Conversely, it would prevent duplication of effort and enable ranking of institutions. The latter is used for other aspects of university activities which are not “clear cut” such as teaching, but as to whether this is a suitable approach for environmental management, none has provided a convincing argument.


Tufts University uses a very basic indicator suite: success is measured by monitoring research grants, event attendance, and the number of students attracted to the university by its environmental reputation (Starik, et al., 2002).

5.9 Auditing and the EMS review

There is little information in the literature regarding auditing and EMS review, perhaps because few institutions are at such an advanced stage.

Von Oelreich (2002) states that there is an annual audit by each department and institution, which includes a risk analysis, a survey of education needs and a review of
legal and regulatory compliance. The results of the audit are compiled in a report for the whole university.

Following the audit is an EMS review of the whole university, which includes:

- “Compliance with current statutes and other requirements;”
- Needs for changes in environmental policy, environmental goals, and plans of action or other are areas of the environmental management system;
- Follow-ups of target fulfilment and adoption of new objectives;
- Requests by students and other interested parties for environmental measures.”

HE21 (1998) notes that nonconformances to the EMS are most likely to be through non-compliance with regulations or through failing to meet performance targets, rather than through major failures that may cause serious environmental damage, as can be the case in industry.

5.10 Communication and reporting

Without good communication, both internal and external, an EMS cannot function, as stakeholders will not be aware of policy and procedures, and nonconformances will not be reported.

As previously mentioned, the use of electronic communication (specifically intranets and the internet) is of great importance for the communication of environmental information and EMS documentation in a university. Universities are IT-literate environments with frequent and institutionalised use of computers, and IT can facilitate and encourage the free flow of information and ensure documentation is kept current.

The environmental policy, goals, handbook, routines and contact details (von Oelreich, 2002; Noeke, 2002) should be available on an attractive and frequently updated website. An e-mail list for interested stakeholders should also be created (Starik, et al., 2002)
A more sophisticated concept is favoured by Viebahn (2002) in his environmental management model, which includes an environmental information system. It is intended to “collect, administrate and present all...relevant [environment] data regarding the university” and to assist training and facilitate the preparation of the environmental report.

A number of universities have regular environmental reports, for stakeholder communication, public relations purposes and to demonstrate regulatory compliance. This may be through their websites, annual reports, bulletins or other publications, and may be produced by staff, by students or as a co-operative task. Chao et al., 2003) present an analysis of the field and recommendations for content and reporting strategy.

One of the more notable examples of environmental reporting is that of the Canadian Mount Allison University’s Environmental Audit12, which is remarkably detailed and self-critical, yet its sheer size (250 printed pages) makes it an intimidating read. Oddly, considering the effort needed in its production, it is also located in an obscure section of the university’s website, further reducing potential readership.

Environmental communication is not solely to bodies and individuals within and outside a university. There are a number of organisations and networks that are dedicated to improving environmental performance in the higher education sector and facilitating the distribution of best practice information. This is by such means as holding conferences, publishing papers, maintaining websites and e-mail discussion groups. Examples include the UK's Environmental Association for Universities and Colleges13, Eco-campus.net14 (the "German Network for an Environmentally Sound Development of Universities") and University Leaders for a Sustainable Future15.

13 Environmental Association for Universities and Colleges www.eauc.org.uk accessed 28.07.03
14 German Network for an Environmentally Sound Development of Universities www.eco-campus.net accessed 28.07.03
15 University Leaders for a Sustainable Future www.ulsf.org accessed 28.07.03
6.0 Methodology

6.1 University selection

The research methodology employed for this dissertation comprises of semi-structured interviews with relevant staff at environmentally leading universities in the UK to gain an insight into their activities and attitudes to EMS and to compare them with the previous literature review.

Universities were deemed “environmentally leading” if they had the combination of:

- A full-time environmental manager, co-ordinator or similar position;
- An environmental committee or group;
- An operational or proposed environmental management system, or having elements of an EMS in place;

Due to the considerable number of British higher education institutions (325)\(^{16}\), it would have been impractical to investigate them all for compliance with the above criteria. Therefore, universities more likely to be compliant were selected for investigation from Toyne (1993), Khan (1996), Forum for the Future’s Higher Education Partnership for Sustainability website\(^{17}\) and from a list of the executive committee of the Environmental Association of Universities and Colleges\(^{18}\). In this way, it was hoped that a representative sample of universities with superior environmental performance could be established.

Compliance with the above criteria was verified through a search of the universities’ websites.

The following universities and members of staff were selected. All kindly gave their consent to be interviewed in the period 30.06.03 to 29.07.03.

\(^{16}\) UCAS Universities and Colleges www.ucas.co.uk/instit/i/b12.html accessed 04.07.03
\(^{17}\) HEPS Partners www.forumforthefuture.org.uk/aboutus/default.asp?pageid=357 accessed 04.07.03
\(^{18}\) EAUC Executive Committee 2003/04: www.eauc.org.uk/index.cfm?zID=7 accessed 04.07.03
Andrew Smith, estates manager of the Higher Education Funding Council for England (HEFCE), was contacted via telephone to ascertain his organisation’s views on environmental management in universities.

Finally, an investigation of best practice in university environmental policy was undertaken, as described in the appendix.

6.2 Questions

Interviews with university personnel were guided by (but not restricted to) the following questions:
1. How and when did environmental activities start?
2. What were the motivations in (not) implementing an EMS?
3. What EMS standard have you chosen and do you intend to certify to it?
4. What are the major obstacles to implementation and operation (e.g. time and resources, management structure, attitudes, geography)?
5. What are the major impacts and aspects that have been identified? How were they identified?
6. What are the most important elements of the environmental programme (e.g. recycling provision, biodiversity strategy, energy efficiency) by time or cost?
7. How are objectives and targets set?
8. How are environmental management responsibilities distributed? What committee structure operates and how does it function?
9. To what extent is your university’s better than average environmental performance due to the personal commitment of yourself or other members of staff rather than the commitment of the institution as a whole?
10. What indicators are used? How are they monitored?
11. Do you operate environmental purchasing? What criteria do you use?
12. How are students and staff involved and consulted?
13. Can students assist in research for the EMS or in its operation?
14. Is education and research included as an aspect in the EMS?
15. What training is given or available to students and staff?
16. What is the role of IT in the EMS?
17. What are the attitudes of campus communities (administration, students, manual staff, teaching staff, etc)?
18. Is environmental reporting performed? Why? If so, what are their types, frequency and readership?
19. Do you intend to use a staged or piloting approach to the deployment of your EMS, or is it to be deployed across the whole university from the start?
20. What are the key characteristics of a university environmental manager?
21. What partnerships or co-operative efforts is the university involved in?
22. How is a high profile maintained?
23. Should there be more support from the government / HEFCE? Should EMS in universities be made compulsory?
24. What are the main lessons that have been learned?
Further to these questions, Peter Redfern of Nottingham Trent was asked about the current and future positions of the EcoCampus scheme.

6.3 Research technique appraisal

Interviews were chosen partly due to concerns over the likely response rate of a postal or e-mail questionnaire, this being 16% in the case of Dicks (2001). A questionnaire on all the subjects above would probably not be responded to in any case. Interviews are also a two-way rather than a one-way method of information gathering and exchange, so a particular subject can be more or less thoroughly investigated according to circumstance and an ‘off-hand’ remark can lead to important information. A questionnaire cannot do this.

The use of interviews was a successful choice: all persons that the author wished to contact were interviewed.

The main interviews were conducted in person, rather than over the telephone as this facilitated better information exchange and enabled valuable documents and papers to be obtained. A significant disadvantage was the financial cost to the author.

Hand-written notes were taken as this is a less fallible technology than recording. A summary of what was said was written, with direct quotations suitably indicated.

The way in which universities were chosen had the fortunate effect of selecting a diversity of institutions – by the number of campuses, their size, research income, position in the Times’ league table of universities\(^{19}\), etc. In this way, the author’s conclusions may be more reasonably applied to the sector as a whole.

However, the methodology assumed that website details were up to date and correct, which was not the case at Nottingham Trent. Furthermore, the methodology did not enable the author to learn that the University of Glamorgan had held an ISO 14001

---

\(^{19}\) Times Online Good University Guide www.timesonline.co.uk/section/0,,716,00.html accessed 29.07.03
certificate since July 2002\textsuperscript{20} and is currently the only British university to do so. By the time this was discovered it was too late to investigate.

The research technique was appraised according to the advice of Mason (2002).

\textsuperscript{20} The University Of The Valleys Gives A Lesson In Green Living
www.glam.ac.uk/news/releases/000603.phpwww.glam.ac.uk/news/releases/000603.php accessed 30.07.03
7.0 Results and Discussion

7.1 Background
There appears to have been a number of phases of environmental performance improvement in the universities surveyed (and, one may assume, in the sector as a whole) since the first in the late 1970s, which focused on energy efficiency.

The second phase was between 1989 to 1992, when a number of universities or university departments (Hertfordshire, Nottingham Trent, Sheffield Hallam, Leeds Metropolitan and Portsmouth) introduced environmental or sustainability policies, agendas or strategies. This was under the influence of the 1990 United Nations ‘Earth Summit’ at Rio de Janeiro and the general growth of the environmental movement. Secondly, the 1988 Education Reform Act\(^{21}\) provided a motivation for Sheffield Hallam University, prior to the act a polytechnic, to appraise its operations and future accommodation needs and to conduct an environmental review.

The ‘Toyne Report’ (Toyne, 1993) led to a new phase of activity, influencing Oxford Brookes to develop an environmental policy and create an environmental. Similarly, York published its first environmental audit in 1994 under the recommendations of the report.

The current phase of activity may be said to have begun in the late 1990s, since when the other universities have adopted environmental policies and strategies and installed new environmental management positions. Initiatives such as HEPS, HE21, HEEPI and EcoCampus were also started in the period. Furthermore, a number of universities realised that ‘greening’ could provide both a marketing edge and cost reductions.

This has culminated in the development (but not yet certification) of ISO 14001 or EMAS-compliant environmental management systems at Sunderland, Cambridge, Hertfordshire, Sheffield Hallam, Sheffield and Leeds Metropolitan Universities; the University of Glamorgan is currently the only university in the UK to have an ISO 140010-certified system.
The international situation appears similar, judged by the obvious increase in academic research in the area since 1999, as may be seen from the reference list.

7.2 Motivations for and barriers to implementing an EMS

The universities may be divided into two groups regarding their attitudes towards EMSs. The first group is favourable towards the concept. They are either expecting certification to ISO 14001 (Sunderland, Leeds Metropolitan) or verification to EMAS (Sheffield Hallam) within next 12 months; have begun working towards certification (Sheffield, Cambridge, UEA); is considering it (Hertfordshire); or has it as a long-term aim (Oxford Brookes). The second group is unconvinced of the benefit of an EMS (Portsmouth, Bristol and York) or does not have the required funding (Nottingham Trent).

Leeds Metropolitan is expecting in August 2003 to become the second British university, after Glamorgan, to gain ISO 14001 certification. Its motivations in doing so include:

- Good environmental performance documentation;
- Better cohesion between divisions on how to achieve environmental targets;
- A clear strategy for environmental performance improvement;
- Recognition for “good work done”;
- Ensuring legal compliance;
- Promoting more efficient use and management of resources;
- Ensuring relevant training for staff;
- Continual improvement in environmental performance;
- To publicly demonstrate their “commitment to the environment”.

Andy Nolan of the University of Sheffield adds that a full environmental management system “transcends personality” and hence enables a university to avoid the pitfalls of staff moving to new positions. Oxford Brookes’ motivations in improving its environmental management have been compliance with its environmental policy,
pressure by staff, the influence of other universities, competitive advantage, commercial benefits and the improvement of its teaching through ‘curriculum greening.’

Martin Whiteland of Cambridge said that working towards ISO 14001 “gives a target” towards which progress can be judged and doing otherwise would be “reinventing the wheel.”

These motivations are either shared or are similar to those described in the literature review. The further motivation, in attracting students (Noeke, 2002; Creighton, 1996 in Dahle and Neumeyer, 2001) is described in sections 7.3 and 7.13.

The Universities of Portsmouth and Bristol remain unconvinced of the benefits of EMS implementation and certification, with Bristol noting the costs of doing so. Gary Tideswell of York provided these reasons for non-implementation:

- “Senior management non-commitment”;
- It has not been discussed at a senior committee level;
- There is a need to ensure preparation before implementation;
- That significant resources would be needed;

Aside from a lack of senior management commitment, and the issue of available resources, these more practical issues are not mentioned in the literature review.

A further point that he made is that in a major institution such as York there is little “market pressure” for a university to improve its environmental image to attract students, making it “not concerned with PR,” rather “serious activities,” such as legal compliance.

Institutions that rank highly in the Times Good University Guide's Top 100 Universities²² tend to have heavily oversubscribed courses, and any additional students that may be attracted to apply to them are unlikely to generate additional

---

²² Times Good University Guide www.timesonline.co.uk/section/0,,716,00.html accessed 28.07.03
income, as they will not fill empty places. Conversely, institutions further down the list often need to actively attract students to their courses and a ‘green’ image, particularly certification of an EMS, may help in doing so. Of course, this ignores any other reason that a major institution may have for implementing an EMS, such as specific regulatory issues or research funding.

If the attitude of a university towards certifying/verifying to an EMS standard\(^{23}\) (rather than the quality of its environmental management) is compared to its position on the aforementioned league table, the following pattern emerges:

While there may be no *significant* trend to the data as a whole, it is most noticeable that the only universities to have attained or that expect to attain certification to ISO 14001 or verification to EMAS in the near future are those in the lower reaches of the table, between 63 and 76, providing some evidence that their motivations may be to attract students to their courses. However, the author does not believe that this is a significant part of Sunderland’s motivation, due to a lack of student engagement by staff in environmental activities.

---

\(^{23}\) Whereby ‘5’ is awarded to Glamorgan for implementing an ISO 14001-certificated system, ‘4’ is awarded to Sheffield Hallam, Sunderland and Leeds Metropolitan for aiming to certify their systems within 12 months, ‘3’ to Sheffield, UEA and Hertfordshire for beginning to work towards that aim, ‘2’ for Cambridge and Oxford Brookes for considering it and ‘1’ for the other universities (Portsmouth, Nottingham Trent, Bristol and York).
The relationship between student attitudes towards the environment and the above graph is discussed in section 7.14.

A nearly universal response to the question of barriers to environmental measures was the amount of staff time and resources needed, and the difficulty in gaining them. The specific issue of the cost of certification and audit was raised by Sheffield’s Andy Nolan, who wants Sheffield to certify to ISO 14001 but currently cannot justify the cost, noting that bigger universities have the money to do so. This is curious, considering Sheffield’s position on the Time’s Guide relative to Glamorgan, etc., which indicate that those universities have less income.

The most notable effect of the loss of funding was at Nottingham Trent, previously a sector leader, which had lost its environment officer and funding for the development of EcoCampus.

The disastrous consequences of a similar situation are described in van Weenen (2000). One must therefore accept that the maintenance of funding and personnel is of vital importance.

At Hertfordshire, the funding issue was less significant, and the emphasis was placed on the difficulties of staff involvement and integration of environmental responsibilities into existing job roles. Bristol had similar problems in changing attitudes and behaviour.

The level of senior management support was high at Bristol due to the assistant director of facilities previously being the environmental co-ordinator. This issue is intimately tied to funding. Mick Goodyear of Sunderland was of the opinion that vice-chancellors in general view environmental issues as “frilly” – not part of their core concerns. Simon Gerrard of UEA shared his views. This attitude may be shared by other members of staff, leading to Sunderland’s problems of “prevarication, empty promises and…blank face[s].” Such a lack of interest and support is identified as a barrier in Barnes and Jerman (2002) and Dahle and Neumeyer (2001).
The issue of geography (multiple vs. a single site; city vs. campus) was not thought to be significant at any of those institutions (Sheffield, Sheffield Hallam, Nottingham Trent, Sunderland), contradicting Dahle and Neumeyer (2001).

The problem of restricted space was mentioned at Oxford Brookes and Bristol, particularly in regard to waste management and recycling. This is likely to be an increasing problem for the sector as institutions grow in response to demand for places.

The management structure at Sheffield was identified as an issue, with the need for environmental management staff to have authority and influence over people who are not under their direct management – a problem shared by other interviewees. This supports the conclusions of section 5.2, regarding management structure.

At Leeds Metropolitan, no major barriers were identified, other than “hard work” needed by environmental management personnel and that caused by “loading target fulfilment onto existing posts”. This positive response is perhaps due to the length of time that environmental measures have been undertaken at the university, presumably decreasing resistance to them over time.

Both York and Sheffield Hallam have radically different opinions regarding obstacles to environmental management – that there are none, and there should never be. On the part of Sheffield Hallam, this opinion may be due to environmental management having been integrated into the general management system for many years. On the part of York, Gary Tideswell’s aim is to fit environmental activities “around the structures and system” and then make changes to that system.

This approach may resolve some of the consequences of the ‘irrationality’ of a university’s management structure (Sharp, 2002).

7.3 Environmental policy

Environmental policy is discussed in the appendix.


7.4 Objectives and targets

Objectives and targets are generally developed by environmental management staff and then discussed or ratified by an environmental committee, members of which may be responsible for their fulfilment.

Most universities do not have a formalised method of how to set them, however. An innovative exception is Bristol, at which quantitative targets based on UK governmental targets are set against major impacts. This provides a rational suite which may be justified to other parties.

The approach at Leeds Metropolitan is to identify significant impacts, monitor them as needed and then develop targets so that progress may be measured more easily. Similarly, objectives and targets at York and Sheffield are based on environmental audits of the campus which identified major impacts.

The setting of objectives and targets has little resemblance to the best practice identified in the literature (Barnes and Jerman, 2002; Viebahn, 2002), particularly with respect to external stakeholder consultation and lack of an IER.

7.5 Initial environmental reviews

The way in which significant environmental aspects are identified varies considerably. Sunderland has no formal process for assigning significance as “most issues are obvious” such as a “skip full of computers.” Bristol is also in this situation. Cambridge has yet to progress to the Initial Environmental Review stage.

At the other end of the spectrum, Hertfordshire has completed its IER and developed an ISO 14001-compliant document of its policies, objectives, targets and systems. Leeds Metropolitan used a matrix approach in its review to assign significance to aspects according to regulatory issues, likelihood of significant environmental impact, volume, magnitude and other factors. Despite this approach, it did not highlight “previous unknowns,” so one may suspect that the lack of an IER may not be as much of a weakness as one would otherwise fear. Both Sheffield and Sheffield Hallam also use a basic matrix to identify significant aspects.
At York a graduate (the author, 2001) conducted an environmental audit which identified significant environmental aspects based on his own judgement.

Nottingham Trent went as far as using an external consultancy, NQA\textsuperscript{24}. It was the only externally produced audit at any of the institutions. One wonders if its cost contributed to the loss of funding for their environmental management. As an internal IER is cheaper, the author therefore supports these over external IERs.

No university used an approach as sophisticated as ISO 14040 (Viebahn, 2002). The difficulties he describes in doing so make this approach unsuitable for universities in any case.

Regarding the results of IERs, or the opinions of those interviewees of universities that had not undertaken reviews, energy was declared the most significant by Bristol, Leeds Metropolitan, Sheffield, Sheffield Hallam and UEA, presumably being associated with its cost.

Transport was highlighted as an important aspect at most institutions: many either have or are recruiting transport management staff.

Waste (and specifically hazardous waste at UEA) is a significant concern at every institution. Other aspects identified included water, paper, purchasing, staff training, purchasing, construction and redevelopment and biodiversity.

Both Leeds Metropolitan and Hertfordshire identified curriculum greening as an important aspect, this being of primary concern at Hertfordshire, and an issue dealt with in section 7.17.

### 7.6 EMS Deployment

A university has a number of options as to how it can deploy an environmental management system, should it decide to do so.

\[\text{\textsuperscript{24} National Quality Assurance www.nqa.co.uk/slice.htm accessed 31.07.03}\]
As there are a number of discrete divisions within them, such as catering, estates services, purchasing, etc, an EMS can be restricted to one or more of these. Alternatively, an EMS could be kept to one campus or geographical area. This could be with a view to extending the EMS, should it prove successful, to other divisions, areas or even the university as a whole, as happened at the University of Paderborn (Noeke, 2002) and in the SC-SUI (Barnes and Jerman, 2002). Such an approach, using particular areas as pilots, is favoured at the Universities of Leeds Metropolitan and Sunderland.

Leeds Metropolitan is expecting certification of its facilities management and purchasing divisions, with the intention of rolling out an ISO-14001 certified system across the university as a whole. Sunderland is using its reprographics facility as a distinct section with significant identifiable aspects (energy, paper and toner consumption) with a view to extending it to other areas, such as computing, catering or the laboratories. There is no intention of copying Leeds Metropolitan and certifying the whole university, due to cost and “If you concentrate on the big elements, most aspects are included.” (Mick Goodyear).

Sheffield has not yet made a decision, but anticipates that a full EMS would be piloted in the facilities management directorate “to demonstrate it can work and to gain confidence” (Andy Nolan), similar to the author’s conclusions in section 5.2. He also states that “Universities like a testing, re-run approach,” to new measures in general. Should they decide to do so, York expects to pilot in their directorate of facilities management; Portsmouth would use campus services, cleaning, transport and facilities.

A phased approach may also “satisfy fears that [an EMS] is not bureaucratic or too much work,” “block objectors” (Mark Warner), provide a series goals in certifying each department in turn and ensure that not too much is taken on at any one time. Mark Warner is also of the opinion that the approach would help with staff morale and take the same length of time as attempting to develop a certifiable system for the entire university as a single project.
It would appear that the majority of interviewees believe that as the most important aspects identified, namely energy, transport and waste, are the responsibility of estates or facilities management departments, a certified EMS should either be restricted to or be piloted in such a department. However, as the aspects are not created by such departments but by the university as a whole, it is surely short-sighted to do the former. Furthermore, this ignores other aspects, such as purchasing. Therefore, Leeds Metropolitan’s approach is to be commended.

Not all universities support piloting. At Hertfordshire, it is not considered worthwhile to do so as it is relatively small, and other areas may suffer if any particular area is given attention to alone. Bristol also supports a whole-university EMS if one was to be adopted.

At Oxford Brookes a compromise is being used, whereby a whole-university approach is being taken, while concentrating on particular issues (an EcoCampus compatible approach, the university being one of the pilot members).

7.7 Operations
Similarly to that described in section 5.5, universities are concentrating their efforts in the spheres of transport, energy efficiency and waste production, the latter two corresponding to the survey of Herremans and Allwright (2000), providing further emphasis that these are their most significant aspects. This excludes a number of activities recommended in HE21 (1998) including ethical investment, environmental purchasing and integration of suppliers into the EMS (all with indirect impacts), which is a cause for concern.

At Cambridge there have been considerable efforts to gain trade effluent consents for historic mercury contamination. At Leeds Metropolitan, partnering ISO 14001 certification work, new building regulations and a design brief for capital projects have been devised. A decision has been made on how long a cost-saving project should take to recoup its costs too.
Biodiversity was not thought to be relevant to the majority of universities, particularly those in an urban environment. This does, however, ignore indirect impacts through purchasing or other activities.

At Sunderland, the emphasis on dealing with particular aspects has varied cyclically, originally being transport, then purchasing, energy and then waste.

At Hertfordshire, the emphasis on greening the curriculum (as von Oelreich, 2002). At Oxford Brookes EMS implementation is expected to take up most time and effort in the near future.

7.8 Environmental purchasing
One area of significant weakness in many universities’ environmental management is in the field of purchasing. This may be caused by the management structure of the university: existing guidance at Cambridge cannot be enforced as this would be ‘against the grain’ of the devolved management structure. However, increasing centralisation of purchasing may increase its use.

Such political issues also affect Bristol, as individual departments control purchasing budgets, creating inconsistency between them. There is also an issue regarding the energy efficiency of purchased goods – there is a motivation to buy the cheapest, whatever its efficiency, as the university as a whole pays for the energy it consumes. There is therefore a need to integrate purchasing and energy budgets: there is work being undertaken towards a policy

A similarly ad-hoc situation exists at Nottingham Trent, Sheffield, Sunderland, York and Portsmouth. At Oxford Brookes, it is part of their environmental policy to use environmental factors “where possible” – but it is acknowledged that this is a field in which more work needs to be done.

Environmental purchasing is not an issue of legal compliance, so may be reasonably less of a priority for an institution. Also, environmentally sound products may cost
more (but perhaps not on a whole-life basis) making their purchase hard to justify to cost-conscious bursars working with short-term aims (section 5.2; Viebahn, 2002).

Superior performance is evident at Hertfordshire and Leeds Metropolitan.

At Hertfordshire, requests for goods over £2000 require a form to assess their environmental effects. Contractors are sent a copy of the environmental strategy, and environmental aspects are included in the specification for tenders. Environmental purchasing is also part of the staff induction.

Leeds Metropolitan uses a series of criteria, including:
- if a product has the Nordic Swan award for energy efficiency;
- its recycled content;
- if it is from an ISO 14001 certified company;
- Maintenance costs;
- Life cycle costs.

Sheffield Hallam uses a different system, whereby environmental considerations are included in purchasing briefs.

Universities themselves do not conduct all of their own purchasing: there are a series of purchasing groups, to gain bulk purchasing discounts, across the UK. Andy Nolan of Sheffield is seeking sustainability evaluation procedures in the North East University Purchasing Group.

7.9 Information technology

There was relatively unsophisticated use of information technology, especially so in comparison with the environmental information system described in Noeke (2002). Websites are operated by all of the universities and e-mail used for communication, with many using energy management and monitoring packages.

There are some interesting features, however. Portsmouth’s heat engineer has a link between the campus and his home PC to adjust for the weather when not at work.
Sheffield Hallam publishes all of its environmental management documentation on its website (partly to ease document control, section 5.10). Most others contain only the environmental policy, contact details and general information. Hertfordshire uses its intranet to hold questionnaires and impact assessment forms.

There is an intention at Sheffield to use the EcoCampus software (section 7.21) if and when consent is given to do so.

7.10 Indicators and monitoring
The institutions generally had simple suites of indicators to monitor, such as utilities consumption and/or costs, recycling and the volume or mass of waste. Progress against objectives and targets are also assessed. Energy and water use was generally monitored by electronic means, often being able to generate building-by-building results.

Monitoring the production of greenhouse gas was uncommon, being used in York’s 2001 Environmental Audit, and at Sheffield Hallam. This provides a way to combine the consumption of electricity, gas and other fuel into a single figure representing an institution’s total contribution towards climate change. Its use is recommended.

Cambridge includes its production of trade effluent, due to its issues of historic mercury contamination. Portsmouth uses surveying to ascertain which modes of transport its staff and students use.

These disparities in monitoring highlight the need for standardisation previously raised in section 5.8.

7.11 Personnel
The considerable majority of those interviewees with environmental management responsibilities were members of estates, or facilities management departments, following the conclusions of sections 7.5 and 7.6.
As Portsmouth’s environmental consultant had just resigned, the author interviewed her line manager, pro-vice-chancellor Michael Bateman. Nottingham Trent has also lost its environmental officer, due to loss of funding. UEA is, for the present time, not intending to adopt a member of staff with specific environmental duties, due to cost issues, but is intending to use a committee instead (as at Tufts: Starik et al., 2002). The loss of such personnel, and the recent appointment of Harriet Waters at Oxford Brookes, provides support to Barnes and Jerman’s (2002) comment that staff turnover is a significant problem.

Having a member of dedicated environmental management personnel is recommended in HE21 (1998) among other papers. The author strongly recommends that universities without one adopt a new member of staff.

There were often a number of line managers between environmental personnel and the vice-chancellor. Herremans and Allwright (2002) recommend that they should report to a “high level authority” and hence have a high priority and visibility to senior management.

According to Andy Nolan, the EAUC is currently developing a guide as to how to appoint an environmental manager. This will advise that they should be in the estates department, “for access to budget and personnel”. However, Nicola Corrigan of Hertfordshire prefers her position in finance, enabling her to “know what’s going on” and to better influence contract development and suppliers.

Both York and Sunderland integrate the management of health, safety and environmental (HSE) issues. The author received some comments that this is inappropriate, as it may create an excessive emphasis on legal compliance rather than on environmental best practice. This accusation was rejected at York, as in all three sectors legal compliance is a minimum and best practice is the aim. Despite this, the author must conclude that HSE integration reduces the time available for environmental management relative to a dedicated member of personnel. However, this may be the only way, due to internal politics and budgets, that any member of personnel may be given these responsibilities at some institutions.
Therefore, there may be no ‘right place’ for a member of staff in general. It may depend on the environmental aspects, political structures, needs, aims etc. of the university in question.

Many interviewees had experience in consultancy, particularly at those universities seeking or contemplating EMS deployment. One can either take this as a sign that such people are sought to do so, or that having that background, they understand the benefits and decide to implement themselves. It would appear that the situation is the latter.

Generally, environmental management staff operate singly or in small teams (Sheffield, Sunderland, Sheffield Hallam). Additionally, they liaise with staff from other departments with environmental responsibilities, such as an Energy Conservation Officer (York), both personally and through a committee structure. The main characteristics were:

- Creativity;
- Good communicator and presenter to a wide range of people;
- Good at managing and influencing people;
- Good at identifying ulterior motives;
- Good problem solver;
- Practical: not an ‘activist’ as this may ward off other members of staff;
- Accessible;
- Able to work autonomously;
- Able to set own agenda and think in the long-term;
- Able to take on the breadth of activities needed;
- Good project management, research analytical and skills;
- Helpful.

A number added phrases such as “good nagger” or “resilient”, indicating frustration caused by resistance to measures.

Another frustration, which will remain tactfully anonymous, is that “academics hold all the power.” Despite earning similar amounts, administrative staff are not formally
recognised as decision makers (somewhat like the civil service) and academics alone chair meetings. There is also a concern that academics are underqualified to run the major businesses that are the universities of today. These opinions compare well with Sharp’s (2002) predictions of the attitudes of administrative subcultures.

7.12 Training
The training regimes of Bristol, Hertfordshire and Leeds Metropolitan are excellent in comparison to those of others. They include, respectively, workshops, brainstorming, events, seminars, material on their websites and general awareness-raising, with job and group specific training as and when needed according to defined levels of competence. Environmental issues are also part of staff inductions at those and other universities.

The EcoCampus training software is discussed in section 5.21.

7.13 Personal and institutional commitment and student and staff attitudes
In general, there is a feeling that the superior environmental performance of the institutions is due to the personal commitment of the staff interviewed and their colleagues, rather than a pre-existent institutional commitment. This is particularly so in the earlier stages of an EMS or environmental programme, as staff are “often battling against people without commitment” (as in Sharp, 2002) which sometimes necessitates “top-down orders” (Joanna Simpson). The environmental programmes of many universities started with ‘grass-roots’, unofficial activities which slowly led to official support.

Andy Nolan states that personal and institutional commitment “cannot be without the other” as an institution with corporate commitment relies on individuals to carry out measures and individuals need institutional support to be successful in their aims and to gain funding for them. Peter Downey at Sheffield Hallam colourfully states that without the commitment of the vice-chancellor “you are banging your head against a brick wall.”
Contrary to von Oelreich (2002) there was little evidence provided in the interviews to indicate that particular groups of stakeholders hold especially different views towards environmental action, with perhaps the exception of relevant academics. Indeed, there was a general sense that the majority of people were not overtly concerned with their environmental impacts.

Joanna Simpson put this succinctly (but positively) as, “Twenty percent [of the university population] are into it. Twenty percent at the bottom don’t care and the rest are amenable to change.”

However, when environmental measures (such as parking charges) are introduced that cost students and staff money and when extra duties are added to already pressurised staff, resistance to them is certain. There is some evidence that this reduces over time as people grow accustomed and see the benefits for themselves.

The transient nature of students was mentioned at Hertfordshire as a reason that many are not particularly concerned with their impacts on the campus, similar in some ways to a comment by Starik et al. (2002) concerning urban universities (section 5.2).

There is a curious, but rather strong relationship between the having a student ‘green group’ and a university’s position on the aforementioned Times Good University Guide’s Top 100 Universities (section 7.1), in that universities in positions 2 (Cambridge) to 56 (Nottingham Trent) had such groups, but not universities lower down the table, namely Hertfordshire, Sheffield Hallam, Sunderland and Leeds Metropolitan, with the exception of Glamorgan which does.

The exceptions to this correlation were the Universities of Glamorgan and Portsmouth at 66 and 67 respectively. Students’ Unions of the better performing universities (such as York, Cambridge and UEA) also tend to have environment officers or other similar positions, unlike Hertfordshire, Glamorgan, Sheffield, Sunderland and Leeds Metropolitan.

Information was gained from the author’s personal knowledge, via e-mail from Ian Davis of People and Planet, and through a search of the respective student union websites (03.08.03).
While the social reasons for this are naturally outside of the scope of this dissertation, there may be certain consequences of these differences.

If having a student green group and/or an environment officer is a measure of the ‘environmental motivation’ of students (and perhaps of prospective students) relative to those of other universities, this may have relevance to the use of EMS certification in university marketing. The thought occurs that the students that universities seeking certification are presumably attempting to appeal to by doing so may not be especially attracted by the concept and EMS as a marketing tool may be ineffective.

Of course, a further conclusion could be that this information provides another motivation for universities in the second quartile of the Times Good University Guide Top 100 Universities, such as Sheffield, UEA and Oxford Brookes, to implement a certified EMS, as they could use one to distinguish themselves from others and attract more students, due to a presumably greater support for environmentalism. As stated in section 7.2, this would not apply particularly as well to ‘first quartile’ universities with international reputations and perennially oversubscribed courses.

The author does concede that much more thorough research will be needed to establish if these hypotheses are true or false.

### 7.14 Committee structure, lines of responsibility and consultation

Every university had at least one environmental committee. These are used to liaise between different departments and members of personnel, to debate issues and as a forum for the representation of stakeholders.

At Cambridge, one committee operates, which is charged with undertaking the management review part of the EMS, approving objectives and targets and acting as the main means of communication with stakeholder representatives. The environmental implementation group of Bristol develops policy and is in charge of its strategic implementation. Hertfordshire runs an environmental strategy committee, reporting to the director of finance, with transport and waste groups under it.
Following its unified HSE approach, Sunderland has an HSE committee reporting to the executive, with a further environmental steering group as a “think tank”. Its Health, Safety and Environment Team Leader Mick Goodyear also uses the University Consultative Committee to discuss issues with unions and employees.

Sheffield is typical of the number of layers of management committees, which “can create frustrations due to the length of time needed to get any decisions made or approved.” (Andy Nolan. Over its environmental committees (a transport workgroup, a transport policy group and a pro-vice-chancellor chaired environment subcommittee), there lies a facilities management committee, a finance committee and finally the most senior groups, the senate and council.

An alternative system exists at Portsmouth, an effect of being an EcoCampus pilot member. Small ‘theme’ (such as transport, waste, resource use) action teams report to the environmental steering group, itself reporting to the board of governors and the directorate (senior managing staff). York is contemplating a similar structure.

Leeds Metropolitan has a short, clear line of responsibility. The board of governors and the executive board authorise and sign policy; the environmental policy steering group authorises objectives and targets; the Environmental Manager, Mark Warner, facilitates the fulfilment of those objectives and targets; “environmental co-ordinators” are responsible for the fulfilment of objectives and targets, being those responsible for particular areas (such as a heat engineer) and under them are other members of staff to enact measures.

This structure strikes the author as a practical compromise between the structure proposed by von Oelreich (2002), the decentralised approach described in Wehrmeyer (2002) and the integration of Viebahn (2002) (section 5.7).

Less formal structures known as ‘environmental forums’ exist at both Oxford Brookes and Bristol. At the latter, this is an e-mail discussion list for feedback and discussion by staff with environmental responsibilities. At Oxford Brookes, this is a group open to all that meets twice-termly to discuss general environmental issues which also has an e-mail list. It “finds solutions to problems” and the “position on the ground.”
Organised by the environmental manager, it is chaired by a senior manager and has representatives from across the university.

Environmental committees are often chaired by a senior member of staff (such as a pro-vice-chancellor), with a number of operational and environmental staff sitting. They may be joined by health and safety personnel, a community liaison officer (Hertfordshire), and interested academics. Student representation is either being sought or is established at all universities, but not at all of the committees described, through student unions. There may be a degree of senior-level resistance to this (UEA), however much that students may be able to provide information and be able to carry out their own campaigns, as student environmental campaigning groups may be deemed to have excessive influence (as Sharp, 2002).

A number of interviewees either had formal (through committees) or informal links to student environmental organisations, such as People and Planet26 groups. Holding joint activities (such as events and campaigns) may depend on the priorities, attitudes and available time of the interviewee and the students themselves.

### 7.15 Education, student involvement and research

The opportunity for student involvement in the operation of an EMS or in environmental project is often something considered for the future, rather than a current activity. The ability to do so may be thought to depend on the number of relevant courses and the number of their students on them, and their motivation.

This does not have to be the case. The University of Hertfordshire is a notable leader in student involvement, as can be seen by the “Project Shop” on its website27, and ensures that non-environment students are used productively and not excluded. Their environmental advisor notes that this approach saves her time which can be spent more productively on other things. Leeds Metropolitan, Sunderland (through their environmental consultancy, Integra) and Bristol have smaller student involvement programmes.

---

26 People and Planet www.peopleandplanet.org/ accessed 03.08.03
27 University of Hertfordshire Project Shop www.herts.ac.uk/envstrat/psindex.htm accessed 04.07.03.
There is one significant disadvantage to the use of student projects, that “The quality of their work is not guaranteed.” (Andy Nolan). How this may balance with their cost efficiency (presumably being free) is an issue best left to individuals and circumstances.

No university compares to the South Carolina Sustainable University Initiative’s use of students as environmental auditors. Perhaps this reveals different attitudes towards the competence of students to work on the behalf of a university.

In general, in contrast to Mälarden University (von Oelreich, 2002), there is an emphasis on operational issues rather than on improving the knowledge and attitudes of students towards sustainability through “curriculum greening.” A number of interviewees do, however, have this in their remit, such as Harriet Waters, Nicola Corrigan, and Joanna Simpson. The latter two are both currently reviewing the environmental contents of their institutions’ courses.

Here again, internal politics arises (Sharp, 2002; Cohen and March, 1989). At Cambridge, it is highly unlikely that a programme of curriculum greening would be established, as this would interfere with college and departmental independence to set their own syllabi. This is particularly disconcerting, as an opportunity to influence a great many future leaders towards sustainability will be lost.

There is a general feeling that sustainability courses, if not directly relevant to the course in question, should be offered on an optional basis, rather than be compulsory. One may argue that to make such compulsory would adversely affect the core content of most subjects’ curriculum. In response to this, the EAUC is surveying professional bodies to establish what they expect graduates to know with respect to the environment, which may prove to be positive influence on universities’ stances on curriculum greening.

Only at Hertfordshire are research students given training in how to reduce the environmental impacts of their activities, through their induction, reflecting the dearth of information on this in the literature review (von Oelreich, 2002).
7.16 Communication and reporting

The interviewees ensure the profile of environmental management activities by using websites, fora, presentations to new staff, personal contact, posters, leaflets, newsletters, events. Despite these activities, only Leeds Metropolitan engages in public environmental reporting while Sunderland has stopped, due to the time needed to compile theirs. Some are contemplating following the former’s lead, or including environmental issues in their institution’s annual report. Sheffield Hallam does so currently.

A number of institutions report through Business in the Environment’s ‘Index of Corporate Environmental Engagement’\(^\text{28}\), a simple league table of environmental management attainment. While public knowledge of the index itself may be low, high attainment may create a sense of pride and create a useful rivalry between institutions.

According to Mark Warner, an environmental report displays “a level of accountability to users [and] shows integrity and transparency.” He also believes that the government is likely to make it compulsory and that it is good for public relations. Any worries concerning the level of readership may be allayed by knowing that all 2000 printed copies were distributed, the readership of the website copy being unknown.

Leeds Metropolitan University publishes a biennial 30-page environmental report\(^\text{29}\). While less detailed than Mount Allison’s audit (section 5.10), being a summary of available information, it is more readable but is somewhat less self-critical. Its format is recommended by the author and is held as an example of best practice by Chao et al., 2003.

Cambridge University has a termly internal environmental bulletin (“Green Lines”) which acts as both a reporting mechanism, a way of announcing future events and projects, and ensuring university-wide communication. An interesting alternative to traditional reporting, there has been a year-long hiatus in its publication.

\(^{28}\) 7th BiE Index of Corporate Environment Engagement
www.bitc.org.uk/resources/publications/7th_bie_index_re.html accessed 04.08.03

\(^{29}\) Leeds Metropolitan University Environment Report www.lmu.ac.uk/environment/cnt/02envrep.pdf accessed 01.08.03
All institutions are members of the EAUC, reinforcing the value of that association to the sector and two, Leeds Metropolitan and Bristol, are members of HEFCE’s Higher Education Environmental Performance Indicators project. There is also considerable involvement locally, with local authorities and other public bodies, consultation groups, other universities, transportation groups, businesses and campaigning groups, justifying the author’s remarks regarding universities as major components of a community in section 4.1

7.17 Lessons learned
The lessons learned by the interviewees since they came to their positions included:

- That greater time, effort and patience is needed than may anticipated;
- That there is a need for prioritisation and to focus on ‘quick wins’;
- That one should respect other people’s time and understand their motivations;
- That one should engage with people personally;
- That there should be a high-profile environmental vision for the university.

A certain anonymous interviewee adds a Machiavellian touch by advocating that environmental initiatives should be introduced without official approval and through the “back door.”

7.18 Integration of education into an EMS
No British university has yet integrated its educational activities, rather than its non-educational support operations, into an EMS. There is a view to do so at Leeds Metropolitan and Sheffield Hallam and possibly at UEA. Education as part of environmental management is also established in the EcoCampus system.

One may suggest that education is unsuited to being included in an environmental management system, as it is an amorphous aspect with only a presumed impact in the future; an EMS is more normally geared to the management of environmental hazards and liabilities such as waste. Furthermore, there may be political resistance by academics, as an educational EMS would necessitate changes in their teaching and
course development. They may also be suspicious of the involvement of administrators in ‘their territory.’

Yet this does not have to be the case. If academics control the development of their part of the EMS (much as how Viebahn (2002) describes how Osnabrück University used particular departments to develop the particular sections of the EMS that they would be using) and the EMS integrates existing educational management practices the level of political resistance may be expected to be much lower.

An environmental management system can be deployed to ascertain the need for and status of environmental education, develop policy, put it in action and check if that policy has been enacted, just as any other aspect – although this process may be more akin to a quality management system than a traditional EMS.

Would a British EMS assessor reject a university for certification/verification if it did not include education as an aspect in its EMS? Time will tell.

7.19 Does a University need an EMS to have good environmental management?

It is evident to the author that a university does not require a fully certified EMS in order to have good environmental management. Bristol is a good example of this: Joanna Simpson stated that “bureaucracies can get in the way of certification” and knowing the political structures of a university, the author suspects this may often be the case. Andy Nolan is of the opinion\(^{30}\) that many manage their impacts well without an EMS, such as Edinburgh, Bristol, Gloucestershire and the University of Manchester Institute of Science and Technology.

Despite this, this dissertation has shown that good environmental performance is facilitated and encouraged by the adoption of an environmental management system, and that they may be mandatory in the near future, so therefore the author must recommend that universities adopt one.

\(^{30}\) Via e-mail
7.20 Mandatory EMSs and government support

The Department of Education and Skills appears to be favourable to the idea of mandatory EMS in universities (section 5.1). Only Simon Gerrard and Martin Whiteland were so.

Reasons for not supporting compulsion included that it might be thought to be unnecessary interference in the sector; that a university either has environmental commitment or it does not; and that it should be a decision for a university alone.

Despite this, the others were favourable to the concept of university environmental management systems. In general, their suggestions were that HEFCE should create financial incentives to improve environmental management and provide better leadership in this. Its current attitude is that it is for institutions to decide, rather than be instructed to do so.

One mechanism that has succeeded in the past, in ensuring access by the disabled persons, is providing an amount of funding associated with a particular level of performance – a ‘carrot’ rather than ‘stick’. If the funding is significantly greater than the initial outlay required, or its payback period is reasonable, one would assume that all universities would seek to improve their environmental performance post-haste, presumably through the mechanism of EMS, even if their motivations are purely financial.

This is, of course, only one potential strategy. Substantial consultation between the government and the sector will be needed before anything is enacted.

7.21 Which EMS standard should a university adopt?

British universities currently have two choices in systems standards: ISO 14001 or EMAS. A third standard, known as EcoCampus, is expected to regain funding and be reintroduced to the sector in the near future. It is still under development.

Of course, a university may wish to use one of the standards as a guide and not decide to have third-party confirmation of compliance. Some institutions may do this due to
the cost of certification and as it “may create an unwanted binding commitment” (Martin Whiteland).

ISO 14001 is the most well known and only international EMS standard. More people have experience with it than any other system. It has been proven in a university environment (von Oelreich, 2002) but there have been difficulties in interpreting it, especially with regard to education and there is no official guidance for universities adopting it. Furthermore, it was not designed with universities in mind.

A number of European universities are verified to EMAS, and the Polytechnic University of Valencia (Peris-Mora, 2002) was involved in its redevelopment as ‘EMAS II.’ As it is the system endorsed by the government, there is a significant body of experience in implementing it in public sector bodies, universities being an example of these. One may assume that if universities are required to have an EMS in the future, it will be either strongly favoured or mandatory.

EMAS is, though, less well known, more expensive to implement and has more onerous requirements than ISO 14001, through the publication of validated environmental reports, improvement of performance rather than management, and requiring audits at least every three years. This would make universities reluctant to use EMAS without significant motivation: Martin Whiteland declared it “cumbersome.”

EcoCampus, rather than simply being a standard of attainment, presents a structured methodology of staged improvement in the quality of environmental management, in line with BS 8555, a standard for the phased implementation of an environmental management system. It includes flexibility in the number of ‘themes’ or aspects that an institution may seek to manage more effectively, so that waste and energy efficiency could be concentrated on while leaving transport for later consideration.

31 BS 8555 - Environmental Management Systems: guide to the phased implementation of an environmental management system (including the use of environmental performance evaluation) www.bsi-global.com/Portfolio+of+Products+and+Services/Management+Systems/New/bs8555.xalter accessed 06.08.03
It is designed for and by the further and higher education sectors, is the only standard to specifically include education and does not necessitate the acceptance of the aim of attaining ISO 14001 or EMAS, although this is the ultimate aim of the system. It also gives public recognition to environmental attainment before, or without, EMS certification. These factors would make it more acceptable to managers unconvinced of the need for an EMS.

Its adoption by the sector would create consistency of approach, by having a standardised initial environmental review and training programs and an indicator suite.

Criticisms include that it is “reinventing the wheel” due similarities with ISO 14001 and its award system is “self congratulatory” (Mark Warner). Unlike ISO 14001 or EMAS, it is not yet fully tried and tested in practice.

Despite this, there is considerable support: in a survey by a Nottingham Trent student\(^{32}\) of the original pilot members, 73% of respondents believed that EcoCampus fits into the sector, and 100% wanted to use the system.

Therefore, even though it is uncompleted, the author recommends the adoption of EcoCampus by the sector with the exception of universities that have nearly complete EMS structures such as Hertfordshire, where the staged approach is rendered unnecessary. Having attained the highest level of EcoCampus, a university should seek certification to ISO 14001, and then contemplate the adoption of EMAS in the light of possible change of government policy.

The Department for Education and Skills should also provide long-term funding for the development and implementation of EcoCampus across the sector.

---

\(^{32}\) Details available from Peter Redfern, Nottingham Trent University.
8.0 Conclusions

An environmental management system, despite difficulties caused by political structures and cost, is a suitable instrument for a university to use to seek to reduce its environmental impact, display corporate environmental responsibility, reduce expenditure and possibly to market itself.

A university should concentrate on reducing its direct environmental impacts, through such aspects as waste, energy efficiency and transport, while not ignoring indirect impacts such as those through education and purchasing.

A university should consider the staged implementation of an environmental management system, whether by individual elements such as legal compliance and policy, or by confronting individual aspects, geographical areas or departments.

Greater support is required from the Department for Education and Skills to persuade and enable the sector to improve its environmental performance. It is recommended that they fund the development and implementation of the EcoCampus system and encourage its use in all British universities.
9.0 References


www.brookes.ac.uk/services/environment/emsu2002.doc


www.brookes.ac.uk/services/environment/emsu2002.doc

www.brookes.ac.uk/services/environment/emsu2002.doc

www.brookes.ac.uk/services/environment/emsu2002.doc


10.0 Appendix: Best practice in environmental policy

A review of the policies\textsuperscript{33} of several environmentally leading universities in the UK, coupled with information from Barnes and Jerman (2002), von Oelreich (2002), Viebahn (2002), ISO 14004 (General Guidelines on Principles, Systems and Supporting Techniques) (International Organisation for Standardisation, 1996) has lead to the generalised “best-practice” guide below, which incorporates all the aspects raised in them, but not found together in any individual policy.

Universities have incorporated issues concerning management, personnel and responsibilities, facilities, materials and energy, transport, purchasing, education, training and research, external bodies, communication and commitment. No individual policy may be considered to have all aspects of best practice and elements of best practice may be rejected if the cost implications are deemed too great. Indeed, it is expected that an institution would adopt increasing numbers of elements from this best practice guide as the status of environmental management grows.

The following fields, phrases and aims are intended to illustrate aspects of best practice in the content and creation of a university’s environmental policy:

\textsuperscript{33} The environmental policies (or equivalent) of the following universities were used in the review:
Sheffield Hallam: www.shu.ac.uk/services/facilities/sustainability/policy.htm
Sunderland: my.sunderland.ac.uk/web/services/hses/environment/policy/
Portsmouth: www.port.ac.uk/departments/env_link/policy
York: www.york.ac.uk/admin/hsas/epp.pdf
Cambridge: www.admin.cam.ac.uk/offices/environment/guidance/policy.html
Leeds Metropolitan: www.lmu.ac.uk/environment/dwn/envirpol.htm#envpol
Nottingham Trent: www.ntu.ac.uk/green/linkspages/policypages/2000_revised_policy.doc
Oxford Brookes: www.brookes.ac.uk/services/environment/policy.html
Hertfordshire: www.herts.ac.uk/envstrat/policy.pdf
Mälarder University: von Oelreich (2002)
SC-SUI: Barnes and Jerman (2002)

All policies accessed 13.06.03
Management

- The university’s vision and beliefs;
- The policy applies to all aspects of the university (teaching, research, infrastructure, operations, communications, subsidiary companies);
- The policy applies to all employees and students “whilst at work and when travelling to and from the university” (Barnes and Jerman, 2002);
- Promotion of sound environmental management;
- Implementation, maintenance and certification of an environmental management system;
- Continual improvement of environmental performance and minimisation of environmental risk;
- Mechanisms for the creation of annual objectives and targets, development of an action plan, prioritisation of actions, selection of indicators and to ensure policy compliance;
- Frequency of audits, their aims and content;
- Annual review of management practices;
- Acting on complaints and incidents;
- Monitoring, sampling and recording of academic and operational environmental impacts and work;
- Surpassing legislative and regulatory requirements and compliance to other accepted criteria;
- Integration and relevance of other policies, such as quality or health and safety;
- Development of policy discussed with stakeholders;
- Good communications within the university;
- Training and encouragement of all employees to act in an environmentally responsible manner;
- Co-operation with other universities and external bodies;
- Any specific local conditions relevant to the policy;
- Contact details of staff with environmental responsibilities (e.g. environmental manager, energy manager);
- Date of acceptance and date of intended revision of the policy.
**Personnel and Responsibilities**

- Specific personnel responsibilities (e.g. senior management, environmental manager) in overseeing development and ensuring compliance with policy or reference to the documentation containing these;
- Committee roles, composition and minimum frequency of meetings or reference to the documentation containing these;
- Assertion of the environmental responsibilities of all students and staff;
- Assertion of the need to ensure awareness of the policy;
- Duties of individual departments.

**Facilities**

- Grounds maintenance to maintain and improve campus biodiversity;
- Assessing the environmental effects of sites, buildings, developments and alterations and procedures to take results into consideration in decision making.

**Materials and Energy**

- Reduce waste;
- Reduce electricity consumption;
- Adopt and increase consumption of renewably sourced electricity;
- Increase energy efficiency;
- Reduce water consumption;
- Reduce fossil fuel consumption;
- Avoid environmentally dangerous substances, materials and processes;
- Monitoring of waste streams;
- Recycling as much as possible;
- Use of recyclable, reusable, recycled and sustainably sourced materials;
- Environmentally sensitive disposal.

**Transport**

- Encourage environmentally sound transport;
- Environmentally less harmful fuels for university vehicles.
Purchasing
- Assess purchasing on a whole life basis;
- Environmental purchasing policy, incorporating suppliers.

Education, Training and Research
- Use of the campus as a resource for learning and teaching;
- Promotion of research;
- Sustainable development courses available to all students;
- Incorporation of sustainable development issues into existing courses;
- Education, training and “encouragement” for all employees;
- Inform staff and students regarding global and local issues;
- Involve staff and students in university environmental initiatives.

External bodies
- Collaboration with external bodies regarding educational and environmental initiatives;
- Networking of experts for research and teaching;
- Co-operation with local authority regarding transport;
- Promotion of sustainability in contractors and external organisations.

Communication
- Communication of environmental strategy to internal and external stakeholders and the higher education sector;
- Consultation with stakeholders
- Report frequency and content;
- Publication of objectives and targets and their degree of fulfilment;
- Senior management reports regularly on policy implementation.

Commitment
- Signed by university head for staff;
- Signed by student union head for students;
- Reference to documents signed (e.g. the Copernicus Charter) and other commitments;
- Reference to national commitments to sustainable development.