



## Choosing an appropriate university or college environmental management system

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### ABSTRACT

Universities considering integrating an environmental management system (EMS) have numerous decisions to consider. Should they pursue a formal certified model or an informal uncertified one? If informal is appropriate, which framework best meets their needs? Which environmental interactions are most important to manage? Are there any other sector-specific considerations? This article discusses six different campus EMS frameworks, three different categories of drivers, and the six unique features of a campus EMS, and offers suggestions on when each framework is best applied. The frameworks considered are from: ISO 14001; Higher Education 21 (UK); the EMS Self-Assessment Checklist (USA); the Auditing Instrument for Sustainability in Higher Education (Netherlands); the Osnabrück University model (Germany) and the Sustainable University model (Mexico). This article also draws upon the empirical experiences of Dalhousie University in Halifax, Canada.

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### 1. Introduction

There has been a growing movement to implement environmental management systems (EMS) in order to systematically facilitate environmental and sustainability change [1–3]. An EMS is a part of an organization's overall management system. It includes the organization structure, planning activities, responsibilities, practices, processes, and resources for implementing and maintaining the EMS [4]. The implementation and details of this system vary depending on the sector [5]. Higher education institutions have started to implement EMS, and the approaches used vary considerably from formal certified models to informal uncertified ones. They also vary in which environmental interactions are managed, ranging from direct operations risks to indirect research and education benefits. This article considers three different categories of drivers, six different frameworks, and the unique features of a campus EMS. This synthesis of academic literature, selected practitioner tools, and one empirical case leads to suggestions for practitioners on which framework best meets their higher education institution's needs. In essence, the article argues that

universities and colleges require a sector-specific EMS framework that includes both direct and indirect environmental interactions, but the model and choice of environmental interactions (aspects) depend on the type drivers at their particular institution.

#### 1.1. Campus environmental management system literature

There is an ongoing debate in the campus environmental management system literature about the utility of the ISO 14001 certification and model for higher education systems. Some authors have argued that the ISO 14001 model for environmental management systems (EMSs) is ideally suited for any organization, including higher education institutions [3,6,7]. Other authors have argued that a unique university EMS model is required [8,9]. In practice, while there are universities that have found benefit in obtaining formal certification for their EMS [7,10,11], most are pursuing informal (no intention of seeking certification) EMS models [1,3,12] with varying levels of structure [2,13–15]. Most of these informal EMS are based on ISO 14001, EMAS or BS 7750 guidelines [16,17], but others use a different model all together [18,19].

In almost all cases, the formal EMS is only being used to manage direct impacts from operations. The exceptions to this are the examples from Sweden [10,11,15], which include indirect

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environmental interactions, such as teaching and research, in their formal EMS certification.<sup>1</sup> These indirect interactions are some of the largest environmental impacts a university has [11] and are a result of the three missions of a higher education institution of teaching, research and service [20–23]. To ensure the coverage of these indirect interactions, some countries, such as the Netherlands, utilize a complementary tool like the Auditing Instrument for Sustainability in Higher Education (AISHE) [18]. In other countries, tools have been created for both direct and indirect aspects combined, such as the Campus Sustainability Assessment Framework [19] in Canada, yet these tools are not linked to a formal EMS. This article provides a synthesis of selected frameworks to enable a practitioner to consider their options.

## 1.2. Methodology

The majority of this article is based on further consideration and comparison of existing literature that discusses both formal and informal campus environmental management systems; the drivers, models, aspects, and roles and responsibilities. The six frameworks were selected based on: 1) available information; 2) demonstration of having been used by a higher education institution or designed for a campuses; 3) campus-wide (as opposed to one department or unit); 4) inclusion of content relevant to the complete EMS cycle (as opposed to only the assessment phase); and 5) an actual framework or model (as opposed to a case study with no framework presented).

The existing literature is supplemented with a case study from Dalhousie University; a medium size university of 15,500 students with undergraduate, graduate and professional programs which is located in Halifax, Nova Scotia, Canada. Dalhousie University adopted an environmental policy in 1990, which includes content on operations, education and research in the one policy. They also signed the Halifax Declaration in 1991, the Talliores Declaration in 1999, and the United Nations Declaration for Cleaner Production in 2000. The University's Senate Environment Committee has more recently drafted an updated environmental policy and a complementary implementation plan which also includes content related to operations, education, research and finance in one policy [24]. The university has implemented many initiatives related to the original 1990 policy over the years, especially in the areas of solid waste, hazardous waste, toxins, air quality, energy conservation, and environmental education [12]. The existing documentation of the informal EMS at Dalhousie University makes it an excellent case study for a campus environmental management system. Archival research was complemented with 13 interviews which were conducted with senior administrators, senators, and board members.

## 2. Drivers of a campus EMS

The drivers of a campus environmental management system differ from those of most businesses [23]. 'Drivers' are what prompts the organization to undertake environmental action. Different drivers influence whether the organization undertakes the EMS, and the focus within the environmental management system. Unlike businesses, key drivers for a university are not due to external forces such as diligence or market influence; instead, drivers tend to be based around internally-driven responsibilities for the environment, health and safety [25,26]. This section explains the results of four studies on drivers for a campus EMS, how those drivers influence the campus EMS, and how drivers can evolve through three different generations. These studies were chosen because they used quantitative survey methodologies to

show the ranking of drivers of environmental management in higher education institutions, and thus had larger sample sizes, making them more generalizable than case-based studies.

The four studies were KPMG [27], Thompson and van Bakel [23], Davey et al. [25], and Bakker [28]. KPMG suggested driving factors for environmental management in the education sector were, in order of importance, compliance, directors' liability, employees, customer requirements and cost savings [27]. These drivers are particular to environmental management, not environmental management systems, though it can be assumed that they might be the same. Thompson and van Bakel identified campus EMS drivers, by rank, as strict legislation and enforcement, environmental codes and guidelines, financiers and insurers, financial donors and research grants, accounting practices, cost-effectiveness, employees and students, milieu of the academic institution, and community concerns [23]. Bakker found that the drivers for a campus EMS sequentially were: internal pressure to change, financial constraints, directors' liability, compliance, local community concerns, insurance availability and premiums, initiatives at other universities, university associations and agreements, and pressure from suppliers [28]. Davey et al. determined drivers for campus environmental management based on stakeholder groups [25]. Table 1 shows the ranking of importance each group placed on various drivers and environmental problems.

Also, sometimes the drivers could be different for a specific campus. Dr. Elizabeth Davey, Environmental Coordinator at Tulane University explained their driver for an EMS:

The ISO 14000 series of standards is appealing here, in part, because in this region industry is a source of so many major environmental problems. ISO is an industry model, not necessarily a campus model, but people are interested in pursuing it because it creates a way to establish relationships with local industry and provides a way to test out the EMS here. When local industries adopt the standard, we would like to be able to relate to them in an authoritative way. [29: 4]

These four studies and the example of Tulane University indicate that there is a range of drivers depending on who within the campus community is asked. The study by Davey et al., as demonstrated in Table 1, indicates this range clearly. The top half of the table indicates the drivers for each of five different campus stakeholders, while the bottom half of the table indicates priority environmental issues for each of these stakeholders.

At Dalhousie University, from the perspective of the senior administrators, the Board members and the Senators interviewed, the most important driver was for the institution to play a leadership role and to be a role model in higher education. Following that, tied for second place, were the role of the university as a good citizen with its educational responsibilities and the potential for cost savings and long-term pay-offs. Other ranked drivers were employee morale and health, less impact on the environment, community image, potential increase in market, need for self-education, the university's role in research, specific stakeholders, due diligence and reduced liability.

Table 2 provides a comparison of the drivers identified at Dalhousie University with the four other studies mentioned previously. The table includes the list of drivers from all five locations (Dalhousie University and the four studies) in order to present the variances. Davey et al. presented information for five different stakeholders so the employer role was chosen for this comparison. Other drivers not mentioned in Table 2, but mentioned in the literature, are that an EMS: legitimates environmental efforts, both internally and externally; helps with internal and external communication of environmental efforts; improves management; improves internal cooperation; and allows for external certification [10,15].

<sup>1</sup> Note, Swedish institutions are mandated by the government to apply an EMS.

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