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Campus Sustainability Practice Assessment: An Empirical Finding from Jönköping University, Sweden

M M Ulkhaq^{1,2}, R S George Joseph², B Javed², and N R Nadekar²

¹Department of Industrial Engineering, Diponegoro University, Semarang, Indonesia

²Jönköping International Business School, Jönköping University, Jönköping, Sweden

ulkhaq@live.undip.ac.id

Abstract. The role of higher education institutions (HEIs) nowadays in promoting sustainability has outspread over the past decades. This is a result of abundant declarations and conferences about the need for sustainability in higher education. As consequences, several HEIs have integrated sustainability into their curricula, research, programs, projects, partnerships, and assessments. The objective of the research is to assess the campus sustainability practice of Jönköping University, which is located in Jönköping, Sweden. The assessment includes three pillars of campus sustainability, i.e., environmental management, public participation and social responsibility, and research and teaching as well. The assessment is considered could yield various benefits, not only for the university but also for the stakeholders, surrounding society, as well as for the academic purposes.

1. Introduction

Since Stockholm Declaration in 1972—it is acknowledged as the initial declaration about sustainability in higher education, there is a growing number of higher education institutions (HEIs) which have incorporated sustainability into their research, curricula, operating activities, assessments, as well as reporting [1],[2]. The sustainability term could be viewed as an attempt to balance and harmonize the environmental concerns with social and economic issues [3]. In a more formal way, sustainable development can be defined as a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [4].

The HEIs are regarded to be in a unique position to address this challenge. Even though they mostly engage in education—not in the field of environment, social, and even not intended to gain much profit—but they are expected to offer an education to the students with knowledge that could have effects to the environment and influences on local communities [5]. Due to this circumstance, i.e., that HEIs could not embrace three pillars of sustainability (environmental, economic, and social); hence, a sustainable university is defined differently. There is a shared understanding that a sustainable university entails a balance between environmental issue, public participation and social responsibility, and teaching and research in policy formulation [6]. It does make sense as the economic pillar is substituted by teaching and research.

Several studies stressed out the need for sustainability in HEIs, see for example [7]-[9]. Some HEIs believe that this is a challenge to start formulating a sustainable campus program [10], while others employ to implement some established campus sustainability assessment tools or reporting, such as ISO 14001 (e.g., [11]-[13]), green building initiative [14], eco-management and audit scheme (EMAS) [15],



graphical assessment of sustainability in universities [16], environmental impact assessment [17], and sustainability tracking, assessment and rating system [18].

Jönköping University (JU), as a *normal* university in Sweden, also has to promote sustainability. Consequently, JU has launched several programs related to sustainability. From conducting annual JU sustainability day, offering bachelor programs associated to sustainability (e.g., sustainable enterprise development and sustainable supply chain management), establishing a research group in sustainability education, to obtaining certification in the field of environment from Jönköping Municipality, prove that JU has been fostering sustainability. However, in DiVA database¹ with the keyword “campus sustainability assessment”, there is no related publication. This result was surprising since Sweden is awarded as the most sustainable country (tied with Denmark) [19]. In addition, according to a personal interview with Per Askerlund and Ellen Almers from sustainability education research (SER) group of JU on November 16, 2018, the university has not assessed its sustainability programs and practices holistically. These corroborating shreds of evidence motivate us to conduct a research related to the assessment of campus sustainability practices in JU.

Therefore, the objective of this research is to assess campus sustainability practice of JU. The assessment indicators must include all three pillars of campus sustainability, i.e., environmental management system (EMS), public participation and social responsibility, as well as research and teaching [6]. The assessment is considered could yield many benefits, such as: ensure the long-term success of the university, provide a valuable service-learning opportunity to students, enhance the university’s good public image, as well as identify best practices and benchmarks for cross-institutional dialogue and comparison [20].

2. Research Design

2.1. Campus sustainability framework

To assess campus sustainability practice, we employed the framework by [6], see Figure 1. There are three pillars to realise campus sustainability, i.e., university EMS, public transportation and social responsibility, as well as sustainability teaching and research. This framework is considered as being able to tackle some drawbacks in the previous campus sustainability tools, e.g., ISO 14001 only emphasizes in the environmental dimension and gives a little or even no consideration to social as well as research and teaching dimensions [16],[21]; and the rate of implementation of EMAS appears to be decreasing among institutions and companies [6] due to numerous disappointments [21].

The first pillar, i.e., university EMS, forms a set of guidelines, procedures, processes, along with resources to establish, develop, review, implement, and maintain the policy to achieve sustainable environment. It constitutes two approaches, i.e., environmental management and improvement, along with green campus. The first approach can be achieved by diminishing the undesirable effects of university operations, lowering the pollution, using energy and resource efficiently, protecting and improving the environment, reducing waste, and recycling. The second approach could be performed by enabling green building, supporting green transportation, and executing campus preservation.

The second pillar, i.e., public participation and social responsibility deals with the involvement of any stakeholder of the university in attaining campus sustainability; and the university social responsibility of encouraging justice, fairness, and equity to all race and gender. It also relates with fulfilling the needs of the handicap and people with special treatments. There are three approaches to deal with: (i) public participation, (ii) community services, and (iii) social justice. The first approach can be performed by the alumni, campus community, and partnership with third parties. The second approach is through public lectures and community projects, while the last approach could be done through equity and care for handicapped people.

¹ *Digitala Vetenskapliga Arkivet* (stylized as DiVA) is an archiving platform for publications of research, student essays, student theses and dissertations which is used by 47 universities and authorities in Sweden; see <http://www.diva-portal.org/smash/aboutdiva.jsf?dswid=-9816> for the detail.

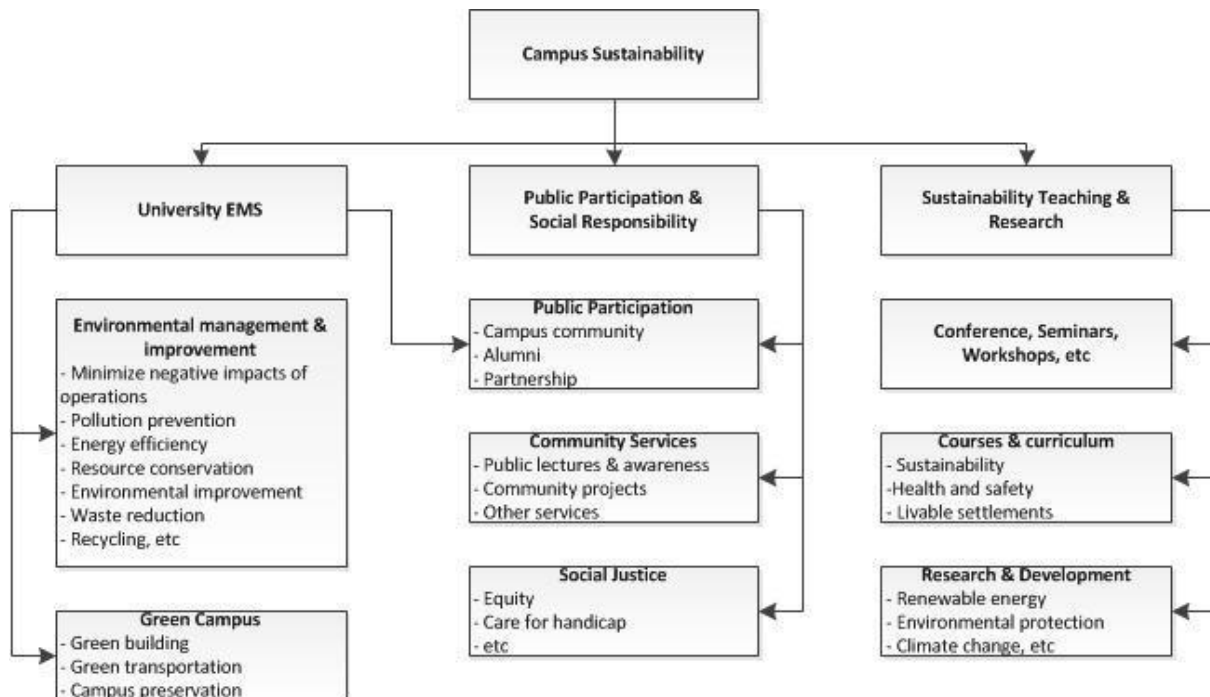


Figure 1. Framework for assessing campus sustainability practice. Source: [6].

The last pillar is related to workshops, seminars, meetings, or conferences conducted by the university in supporting the sustainability issue. The university, moreover, must offer courses related to sustainability. Lastly, research and development related to environmental protection, renewable energy, green technology, and climate change also might support the university to achieve sustainability.

2.2. Data collection

The research was conducted at JU which is located in Jönköping, Sweden. The university is characterized by a high degree of internationalization, an entrepreneurial spirit and extensive collaboration with surrounding society. The university is one of the top universities in international student exchange and among the best in Sweden in terms of attracting international students. The university has four schools as Jönköping International Business School (JIBS), School of Engineering, School of Education and Communication, and School of Health and Welfare. JIBS was accredited by European Quality Improvement System (EQUIS) and the Association to Advance Collegiate Schools of Business (AACSB) since 2015. It is the only institution in Sweden that holds both accreditations.

This research employed a qualitative approach based on case study [22]. The research instruments were observations, data and document collecting, as well as interviews. Observations were performed to be informed about the reality and actual experience took place at JU. Data and document collection have been performed through gathering the useful information through the university website (www.ju.se) and other documents associated with the implementation of sustainability at JU. Finally, the interviews were conducted with the faculties and the students of JU.

We did interviews with four professors related to the campus sustainability practice. They are one of the board members for education and research education, the principles of SER, and the coordinator of the EMS for School of Education and Communication. Furthermore, campus sustainability, will never be accomplished without participation and cooperation from the students as the biggest stakeholders of the university. They, the students, play a critical role to indorse awareness across the institution and urge interactions among various stakeholders [23],[24]. However, few studies speak in detail about the involvement of students in supporting campus sustainability [25],[26]. Therefore, in this study, we included the students' perceptions so that it can be analyzed further the gap between what are the

sustainability programs or events held by the university and what the students have perceived about the programs or the events. Two Swedish students from each school (or faculty) were voluntary and randomly selected to participate in this study.

2.3. Assessment method

The data were analyzed to verify the adherence of the campus sustainability framework given in Figure 1 to the condition at JU. The information was organized based on the three pillars and their subcategories. It is then analyzed in the aggregate form, thus, trying to build a conclusion about the condition at JU based on the framework.

The adherence between the real condition and the framework can be classified into: (i) inexistence adherence, (ii) partially/incomplete adherence, and (iii) full adherence [27]-[29]. Inexistent adherence implies that the university does not adopt any of the practices recommended in the framework. Partial/incomplete adherence refers to the condition that the university has adopted a few of the practices. Full adherence means that the university has adopted all of the practices. To be more specific, for each subcategory of each pillar, the condition can be assessed into three situations, i.e., (i) formally implemented, (ii) exist informally, and (iii) no evidence. Formally implemented implies that there is(are) formal document(s) and/or regular event(s) refer to the existence of the corresponding subcategory. If there is an agenda that was organized by the university but there is no formal document stated about that; or in another word, the agenda is tentatively held, the condition is called exist informally. The last, i.e., no evidence, implies that there is no information related to the compliance of the subcategory.

3. Result and Discussion

3.1. University EMS

JU is currently participating in the environmental certification conducted by Jönköping Municipality. The rationale behind this diploma is that the municipality wants to facilitate the environmental work of companies and organizations in Jönköping Municipality. Therefore, they offer a simpler model of EMS, called *Miljödiplomering* (in English: Environmental Diploma). This diploma is based on the same basic idea as ISO 14001; it is connected to the Swedish Environmental Base, which is a national EMS. To become certified, an organization must meet several criteria with regards to, for example, their premises, use of chemicals, office space, purchasing, source separated recycling, packaging, and transport.

All four schools are currently environmentally certified. The first is School of Engineering which have been certificated since October 2013; and the last is JIBS since June 2018. This means that JU works in an active and structured way with environmental issues. Some kind of issues JU involved in sustainability that can be mentioned here, for instance, removing dangerous chemicals and actively work for safer handling of chemicals, following up environmental certification of the suppliers, educating and informing staff in sustainable development, improving opportunities for web-meetings and distance teaching, and implementing sustainability in teaching and research. The environmental work is driven by the environment officer, through the Environmental Board that consists of representatives from every school which meets regularly during the semesters.

JU and Jönköping Municipality have together developed a campus plan with common strategies and projects for the physical development of the campus in the short and long term. The campus plan describes how the campus should develop over time, as an integral part of Jönköping's urban planning with a focus on interoperability and sustainability. The plan will help the university's existing and new premises to be used in the best possible way. A formal document about the campus plan is documented in Campusplan Jönköping University². In sum, since there are formal documents supporting this pillar, each subcategory is labelled as formally implemented, see Table 1.

² See

<https://www.jonkoping.se/download/18.614797b215f9fd9ce5113b3/1511176337190/Campusplan%20J%C3%B6nk%C3%B6ping%20University.pdf>

3.2. *Public participation and social responsibility*

The university did conduct collaborations with other third-parties regarding sustainability. For example, a collaboration with the Keep Sweden Tidy Foundation as well as with the Jönköping Municipality to implement the so-called Green Flag Initiative (Eco Schools) for teachers in schools and pre-schools. The Green Flag is a tool for teaching activities in the field of sustainable development; while Eco School represents the largest international network of schools and pre-schools involved in environmental and sustainable development. One important objective of Eco Schools is to create action competence among children, young people, and school staff. However, the number of collaborations is considered as minor, since the university does not embrace, for instance, the alumni or *reputable* non-profit organizations that are dedicated to promoting sustainable development and renewable energy.

In term of social justice, i.e., equity and care for handicap, the university is considered as performed very well. As an education provider, JU wants to offer an inclusive study environment in which all students are treated respectfully and everyone enjoys equal opportunities to develop, thrive and perform well. JU works actively to prevent and counteract its students and staff being subjected to discrimination, harassment or sexual harassment. JU as a higher education institute actively helps and supports the students that feel that they have been victimized in any form. The goal is that everyone at JU, students and staff, should be able to go to their study/workplace and feel safe and secure regardless of sex, ethnicity, sexual orientation, age, function variation or religious perception. If the students, for example, feel that they have been harassed or victimized, they can contact the Student Union, the Student Health Care, or the specially appointed non-discrimination representatives (or OLİK in Swedish) at each of the schools. JU institutionally documented this equal treatment work in the Actual Plan for the Equal Treatment of Students at JU.

In sum, due to only one formal document supporting to this pillar, i.e., Actual Plan for the Equal Treatment of Students, only one subcategory is labelled as formally implemented, others are exist informally, see Table 1. Due to this reason, some recommendations will be provided at Subsection 3.4.

3.3. *Sustainability teaching and research*

In terms of sustainability teaching and research, JU has launched several programs and events. One of the events is the JU Sustainability Day. It includes presentations, workshops, and panel discussions from both JU and the local business sector focusing on sustainability which is held annually and regularly. It is arranged by the JU Sustainability Network: “JU Sustainable”. Last year, the JU Sustainability Day was held on September 18, 2018. The theme is “Innovation and Transformation for Sustainability”. The event focused on questions such as “How to educate students to protect our living system?” and “How can we collaborate/stimulate innovation in Sweden and abroad to help achieve the United Nations Sustainable Development Goals?”³

The university has several programs, both for bachelor and master’s degree, related to sustainability. It proved that JU concerns this issue. In bachelor’s degree, there are sustainable enterprise development and sustainable supply chain management; while for master’s degree, the university has sustainable building information management and sustainable communication. Note that the latter is the latest program which was opened for this year replacing the international communication. However, even though the sustainability issue is very fruitfully taught and studied in those programs, unfortunately, it is not done so in other programs.

JU has SER, group research that encompasses research projects in the internationally well-established research in the field of education for sustainable development (ESD), and science education in a sustainability context. In more specific, the SER conducts research into how action competence for sustainable development may be developed in schools, i.e., to investigate teachers’ experiences and perceptions of teaching action competence for ESD. This, in turn, facilitates identifications of what schools need in terms of support for ESD. It also has cooperated with several third-parties to promote

³ Readers might refer to: <https://ju.se/en/collaboration/events-and-conferences/events/ju-sustainability-day-2018.html> for the detail of the event.

sustainable development, e.g., research collaboration on ESD and sustainable development (for example with the University of Pune, India; Waikato University, New Zealand; University of Poltava, Ukraine; and the Universidad San Francisco de Quito, Ecuador); education-oriented and school-related networks (for example with Center for Technology at School, Linköping University, Sweden; National Resource Center for Biology and Biotechnology, Uppsala University, Sweden; Upptech, Jönköping Science Center), and strategic networks and contacts for the platform sustainable development (for example with Jönköping Municipality)⁴.

In sum, due to some formal documents and regular events supporting this pillar, each subcategory is labelled as formally implemented, see Table 1. However, this condition is not without flaws; some recommendations to improve the state of campus sustainability practice at JU will be given in the following subsection.

3.4. *Adherence to the framework*

Table 1 shows the adherence between the campus sustainability framework and the condition at JU. In general, the university has been developed most of the sustainability practices suggested in the framework. Six subcategories are formally implemented, only two are exist informally, while none is labelled as no evidence. In summary, it is concluded that the university at the time this research was performed had a partially/incomplete adherence level with respect to the framework of campus sustainability being used.

In the absence of some practices, it is recommended as follows:

1. Establish a program for recycling some can-be-recycled products inside the university. The university could develop cooperation with the municipality or private organizations to succeed in this program.
2. Establish cooperation with more non-governmental organizations as well as the alumni of the university to promote and foster sustainability since JU is considered as suffering severe lack of third-party collaborations in terms of sustainability.
3. Equip the students with the knowledge of sustainability since not all programs contain sustainability syllabi and curricula.
4. Develop research for renewable energy sources, such as wind, solar energy, and other renewable forms that could provide the long-term key to reduce emissions. The existing research group, i.e., SER, only deals with the research about forest gardens and ecosystem services, actions for sustainable development/sustainability, conceptions of matter, ESD in higher education, and complexity and responsibility for learning.

3.5. *Students' perceived*

A survey has been conducted to identify what students of JU's perceived about their university's sustainability practices and programs. The first question among all is: what do you know about sustainability? It was surprising that all the respondents, i.e., the students, could not answer correctly about what sustainability is. Moreover, many of the respondents answer straight "No" without any further explanation. Even though JU has the programs related to sustainability (see Subsection 3.3), they have to put big attention to disseminate the sustainability issue among the students.

The next question is about the willingness of the students to participate in the seminars or workshops related to sustainability. Most of the respondents turned out to be reluctant to participate in such events. It seems that the sustainability-related event held by JU, such as JU Sustainability Day, did not attract their attention, even though they would gain numerous benefits when they took part in the event. The university, after all, has to organize the event very fascinatingly so that not only practitioners in the field of sustainability but also common students would likely to involve themselves in the event.

⁴ Readers might refer to: <https://ju.se/en/research/research-groups/learning-practices-inside-and-outside-school-lps/sustainability-education-research-ser.html> for the detail information of SER.

Table 1. Case study result

Pillars	Subcategories	Formally implemented	Exist informally	No evidence
University EMS	Environmental management and improvement	V		
	Green campus	V		
Public participation and social responsibility	Public participation		V	
	Community Services		V	
Sustainability teaching and research	Social justice	V		
	Conference, seminars, and workshops	V		
	Courses and curriculum	V		
	Research and development	V		

The students then were asked about their attention to undertaking a course related to sustainability. There are several courses associated with sustainability issue, for instance, the Sustainable Enterprise - Social and Ecological Perspectives, conducted by JIBS. This course introduces students to concepts in the fields of sustainable development and social and ecological sustainability. It provides frameworks to create, scale and replicate sustainable enterprises as a means of eliminating poverty and/or ecological deterioration. The course pays particular attention to the regulatory and voluntary frameworks that sustainable enterprises are expected to relate to, in connection with these themes, at the local, regional and international level. However, even though the brief explanation about the course seems appealing, the respondents, still, were reluctant to undertake the sustainability-related course.

In fact, even it seems the students are still unaware of the sustainability practices. Despite the tangible and intangible benefits gained from it, JU has a student association that concerns in the field of sustainability, namely, Students for Sustainable Action (SSA). It is an association formed by students who are interested in and passionate about sustainability. Students in SSA are currently striving to initiate and support projects encouraging and educating about sustainable development on and around campus according to the three principles of the Triple Bottom Line, i.e., social sustainability, environmental sustainability, and economic sustainability.

4. Conclusion and Further Research Direction

This paper has demonstrated how to assess the campus sustainability practice using the framework that consists of three main pillars, i.e., university EMS, public participation and social responsibility, and sustainability teaching and research [6]. A case study was conducted at JU. The result showed that the university might be classified as having partial/incomplete adherence with respect to the framework being utilized since not all campus sustainability practices recommended by the framework have adopted fully by the university. This result might suggest the university to adopt a campus sustainability framework in a formal manner so that the state of sustainable campus could be achieved.

The number of tools or frameworks to assess campus sustainability is abundant. As those frameworks shared several strengths and weaknesses, it is suggested to develop a cross-institutional assessment framework. The rationale behind the urgency of developing the “universal” framework is most of those are influenced by the socio-demographic condition as well as geographical location. For instance, the framework used in this research is developed in the developing country, yet has been implemented in both developing countries (e.g., [29],[6]) and developed country, i.e., in this research. To some extent, some variables could not be completely compatible with every case (e.g., [30],[31]). The universal framework is believed to have benefits in terms of standardization, comparisons, and minimization of assessment framework development efforts. Another direction that might be interesting to be pursued for the next research is to what extent sustainable campus could affect the students, staff, local, or society, to behave in more sustainable ways.

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